Board of arbitration in the controversy

PROCEEDINGS.

ARBITRATION

between the

EASTERN RAILROADS

and

THE BROTHERHOOD OF LOCOMOTIVE FIREMEN AND ENGINEMEN

1913.

Submitted to Arbitration, under the Erdman Act,
By Agreement Dated Feb. 18, 1913

AT WALDORF ASTORIA HOTEL
New York

March 17-25, 1913

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LIST OF WITNESSES (Vol. 2).

LIST OF EXHIBITS (VOL. 2).

FIREMEN'S EXHIBITS.

RAILROAD EXHIBITS.

New York, March 17th, 1913.

Met pursuant to adjournment at 9 A. M.

Present—Parties as before.

W. J. LAUCK resumed the stand, and having been previously duly sworn, testified further as follows:

Mr. Lauck: The first road I wish to take up this morning is the New York, New Haven & Hartford (producing paper).

(The paper so offered and identified was received in evidence, and thereupon marked "Firemen's Exhibit No. 15, Witness Lauck, received in evidence March 17th, 1913," and is attached hereto).

Mr. Lauck: I have taken up the New York, New Haven & Hartford. Having been limited to three roads, I thought I would take a New England road, to cover a different section of the country than what has already been covered by the Baltimore & Ohio. I would like to direct attention first to page 4, taking up the first point covered in the preceding exhibits as to the increase in the productive efficiency of firemen. You will notice that on this road in 1912, as compared with 1902, that an increase of 62.20 per cent. in volume of traffic or ton miles, was handled by an increase of only 38.11 per cent. in freight train miles, due to the fact that there was an increase in the train load of 34 per cent., in round figures, and an increase in the tractive power of locomotives of 64 per cent. As a result of this increase in the freight train load, and in the handling of a greater number of ton miles by fewer train miles, the increase in the number of ton miles with the volume of traffic handled per fireman in 1912, as compared with 1902, is 28.72 per cent., or practically 29 per cent. The fireman was also compelled to handle 25 per cent. more coal on the tonnage basis for the year 1912 as compared with 1902, the coal consumed per locomotive mile increased 33.17 per cent. I would like to call attention to the fact that the total train miles—not freight train miles, but of revenue train miles, was decreased in 1912 as compared with 1902, 7.59 per cent.

The Chairman: Do you account for that upon the theory that the reports upon which you base your deduction are inaccurate?

Mr. Lauck: The decrease in the train mileage?

The Chairman: Yes. Accompanied by an increase of tractive power of 64 per cent., and an increase in ton miles, and so forth.

Mr. Lauck: That was brought about by putting more upon each train. That is, the volume of traffic, freight and passenger, having increased, the amount of traffic handled per train was greater in 1912 than in 1902, and therefore a smaller number of train miles, consequently the ton miles were proportionately smaller than the number of train miles which were required to handle the ton mileage, in 1912 as compared to 1902.

Mr. Atterbury: I assume the total train miles include the passenger train miles?

Mr. Lauck: Yes.

Mr. Atterbury: Freight train miles show an increase of 38%?

Mr. Lauck: Freight train miles show an increase of 38% and the ton mileage of traffic 62%.

Mr. Atterbury: Yes, but your ton miles per freight train—

Mr. Lauck: The freight train mileage increased 34%. By having a freight train load which was in round numbers one-third greater, an increase in total freight traffic of 62% was handled by an increase of only 38% in freight train miles.

Mr. Atterbury: Then there must have been a tremendous decrease in their passenger business?

Mr. Lauck: On the other hand, referring to the table on page 5 it appears that passenger density increased 50%. I can get the figures as to the increase in the passenger mileage, which would be an indication—

Mr. Atterbury: I was just wondering how, with a 38% increase of freight train miles there should be a decrease in the total train miles of 7.59%.

The Chairman: Because the freight train miles are so far in excess of passenger train miles on most roads, and perhaps on all roads.

Mr. Atterbury: I guess that is not so on the New Haven. I think their division is about 40% and 60%, or perhaps a little nearer half and half.

Mr. Lauck: On the New Haven road it is about even.

Mr. Atterbury: I thought it was about 40% freight and 60% passenger?

Mr. Lauck: It is about half and half.

The Chairman: Supposing it to be half and half, if the freight train miles increased 34% and the passenger density increased 50%, it seems remarkable that there should be an actual decrease of 7.54% in total train miles.

Mr. Lauck: I have the actual figures here I think, and can produce them if you wish.

The Chairman: What I am trying to get at, Mr. Lauck, is the reliability of your data?

Mr. Lauck: These are the actual figures reported to the Interstate Commerce Commission by the New Haven Railroad. All the items referred to there, that is the freight train load, the ton miles per freight train mile, the increase in the traffic and the total train miles are the actual figures reported. In the case of the freight firemen there has been a division of the total number of firemen, in accordance with the proposition that freight revenue train miles bear to total revenue train miles. All the other figures are exactly the same as those reported to the Commission.

Mr. Carter: You say "Total train miles." Does that include the company service trains?

Mr. Lauck: No, sir.

Mr. Carter: Revenue train miles only?

Mr. Lauck: Revenue train miles only.

Mr. Carter: Do you believe this discrepancy could arise because of a different method of charging revenue trains? In making this suggestion I do not mean to be understood as criticising anybody; but for instance could it be possible that ten years ago, perfectly properly and perfectly honestly, they based their statistics on all their train miles, and in recent years they have based their statistics only on revenue train miles?

Mr. Lauck: I have no information about that.

Mr. Carter: You do not know whether that is true or not?

Mr. Lauck: I do not know whether that is true or not. I have seen no comment of that kind, or any suggestion of anything of that kind. I think there has been uniformity, so far as I know.

The Chairman: If these roads operated the same number of train miles in each class of transportation, freight and passenger, and there was an increase in freight train miles of 38 per cent.,

there should have been something like a decrease of 42 or 43 per cent in the passenger train miles in order to show an actual decrease in total train miles of 7½ per cent., and there could hardly have been a decrease in passenger train miles of 42 or 43 per cent. accompanied by passenger density 50 per cent. increase.

Mr. Lauck: No, sir; it would assume too great a number of passenger train miles or passenger miles.

The Chairman: Have you the report there of the passenger train miles?

Mr. Lauck: Yes, sir, I was just looking for that.

The Chairman: You will refer to that please.

Mr. Lauck: The passenger train miles upon this road, New York, New Haven & Hartford, 1912, were 16,289,208; in 1902 were 14,687,835, being an increase in passenger—

Mr. Atterbury: That is an increase of ten per cent.

Mr. Lauck: That is an increase in passenger train miles of approximately 10 to 12 per cent.

The Chairman: You have got an increase of 38 per cent. in freight train miles, and an increase of 10 per cent. in passenger train miles, and yet a decrease of 7.59 per cent. in total train miles.

Mr. Lauck: I will get the total miles now, sir. The total revenue locomotive mileage on the New York, New Haven & Hartford—well, that is locomotive mileage. This is train mileage. Total revenue train mileage on the New York, New Haven & Hartford in 1912, was 24,360,754; in 1902 it was 21,327,061.

Mr. Atterbury: That is a 14 per cent. increase.

Mr. Lauck: That figure there is for total train mileage including non-revenue train mileage.

Mr. Phillips: Well, is the table simply for revenue mileage?

Mr. Lauck: I stated it was, but I was mistaken; it is for total train mileage. In the non-revenue service train miles on this road there has been a—in 1912 were 1,268,321; in 1902 were 6,408,150.

Mr. Carter: That is just what I brought out.

Mr. Lauck: Therefore I was mistaken.

Mr. Lee: What are those figures, Mr. Lauck?

Mr. Lauck: The non-revenue?

Mr. Lee: Yes.

Mr. Lauck: 1912, Mr. Lee, the non-revenue service train

miles were 1,268,321; in 1902 they were 6,408,150. I misstated the point. There is no criticism on the railroad's method of reporting at all, but simply my mistake in stating that these were revenue train miles. I thought at first glance they were revenue train miles, but they are total revenue train miles, total train mileage, including both revenue and non-revenue, Judge.

The Chairman: Well, that makes that statement—

Mr. Lauck: That makes that statement correct, I think.

Mr. Carter: Let me ask you, Mr. Lauck, is it not sometimes this way, that the Interstate Commerce Commission get out a new form of report, and require certain different charging, or something of that kind?

Mr. Lauck: Yes, sir.

Mr. Carter: I do not want to say that the New York, New Haven & Hartford purposely does not keep its accounts accurately, but—

Mr. Lauck: I do not think that was true in this case, because they have been very careful about their mileage, so far as I have been able to ascertain. That was my mistake in the first glance, saying it was revenue train mileage, when it is what the name is, total train mileage.

Mr. Carter: It is total train mileage?

Mr. Lauck: Total train mileage, including both company materials and revenue service miles.

Mr. Lee: The statement on page 4 is perhaps more accurate than what you thought it was?

Mr. Lauck: It is accurate, yes, sir.

Mr. Lee: I mean the designation of it?

Mr. Lauck: It is an accurate designation of it, yes, sir. These exhibits have been printed in one section of the country, and edited in another, and I have to stay up at nights correcting them for the next day when I come here, so I feel rather nervous about some of the designations.

Mr. Phillips: Am I to understand, or is it a fact, that the mileage which you have designated as non-revenue mileage on the New York, New Haven & Hartford, was five times approximately in 1902 than it was in 1912?

Mr. Lauck: 1.2 millions, if I remember correctly, and 6.2 millions in 1902. That was probably due to the fact that they were doing a lot of construction work, or hauling company mate-

rial, or something like that, in 1902, which they were not doing in 1912. I do not know what the cause of that was, but theoretically that would be the explanation.

Mr. Phillips: That would apparently make the showing of your table correct?

Mr. Lauck: Yes, sir; that corrects the wrong impression which I created, by saying these were revenue train miles.

Mr. Phillips: This table sets forth all mileage?

Mr. Lauck: Yes, sir.

Mr. Phillips: That is what you are getting at?

Mr. Lauck: Yes, sir. The freight train miles, of course, refer to revenue freight train miles.

Mr. Phillips: Where it so states, that would be freight train miles, but—

Mr. Lauck: Those are revenue freight train miles too.

The Chairman: Why did you not put in your designation here the passenger train miles?

Mr. Lauck: The reason for that was that I had intended to put them in, and have them included in my basic statistics. The diagram was made, owing to the exigencies of printing and so on, before I had these other tables completed. I can tell you the passenger train miles on the New York, New Haven & Hartford per passenger fireman in 1912.

The Chairman: Does that appear elsewhere?

Mr. Lauck: It appears in these basic statistics, which I am going to present.

The Chairman: Yes, because you see, if you had had passenger train miles in this diagram, showing an increase, and the freight train miles showing an increase, and total train miles showing a decrease, you would have had to put on an explanatory note.

Mr. Lauck: Yes, sir.

The Chairman: Just as you have given us.

Mr. Lauck: Yes, sir.

The Chairman: Well, go on.

Mr. Lauck: You will find in this exhibit the passenger train miles and passenger train miles per fireman, and the same method of presentation is shown in the diagram. The point, of course, I wish to bring out there, which I suppose is evident, is that a greater volume of traffic has been handled with proportionately

a smaller number of firemen, and the ton miles per firemen had increased, which had also increased the fireman's work by requiring him to handle more coal in 1912 than in 1902.

On page 6 I raise the second point in the inquiry, as to the revenue gains arising from the increased productive efficiency of firemen and other transportation labor, working in conjunction with heavier train loads and better equipment; and I make a comparison of increases in cost of firemen as compared with increases in operating revenue. During the past fiscal year, as will be seen from the first table, the cost of all firemen upon this road increased $47,810. During the same year, 1912, there was an increase in operating revenue of $2,779,000. During the past six years, representing the period of 1907 to 1912, the increase in cost of firemen to the New York, New Haven & Hartford has been $88,000 in round numbers, and the net revenue gain has been $9,331,000 and proportionately large gains in revenue as compared with expense for firemen in 1912 as compared with 1902.

The next table takes the period 1911-1907 and 1911-1902, in which the same comparison is made, and the table at the bottom of the page shows a comparison which is made as to the increased cost of freight firemen, showing $152,000 in the past 11 years and a freight revenue gain of over $10,000,000.

Mr. Carter: I notice some of the newspaper men understand that the same firemen are getting $152,000 more now than in 1902. That wasn't your intention, was it?

Mr. Lauck: I did not understand you. Will you state that again?

Mr. Carter: I say that some of the newspaper reporters have understood that the same number of firemen are getting this much more money. Now, it wasn't your intention to convey that idea?

Mr. Lauck: No, that is the cost to the railroad for all firemen.

Mr. Carter: For instance, if a factory this year has 100 employees and because of the development of its business ten years from now it has 1,000 employees, they could pay out ten times as much money without increasing the wages?

Mr. Lauck: Yes, sir, if the wages remained the same. It seems to me it would be exceedingly disagreeable for the firemen

to come here with an increase of this amount and ask for an increase of pay. That refers to all firemen, of course.

Mr. Atterbury: Isn't that explained in each case in the second table on page 7? There you get down to the wages per fireman?

Mr. Lauck: Yes, sir. That is per fireman.

Mr. Atterbury: Assuming that the figures are approximately correct—or whether the figures are correct or not, those are comparable statements?

Mr. Lauck: Yes, sir. Passing over the next table which shows increase in the total cost of conducting transportation, to the increase in operating revenue, "Transportation Revenue," there may be misleading—I would say that is practically operating revenue. Let us take up this table Mr. Atterbury just referred to at the middle of page 7. There an attempt is made to show, on the basis of a fireman, what the increased cost to the railroad has been for a fireman in 1912 as compared with 1902. $905 in 1912, $669 in 1902, or an increased cost per fireman of $236. That is, taking the aggregate cost for all firemen in each year and dividing by the number of firemen reported working on June 30th of each year, you have an increase of outlay to the railroads or increase in receipts to the fireman, whichever way you choose to take it, of $236. In the same way the division of revenue is made on basis of total number of firemen reported on June 30th, and you have a revenue gain, per fireman, roughly, of $10,000, not meaning of course that the fireman has produced that much additional revenue or that that much additional revenue has accrued to the fireman—what has accrued to the fireman has been the $236. That is simply stating the tendency in terms of firemen. Of course out of this additional revenue the railroad must pay all of its other expenses in addition to the cost of firemen. But it shows the relation between the increased cost of firemen and the revenue accruing per fireman.

On page 8 the same comparison is made on the basis of freight firemen and of passenger firemen, the division between expenses being made upon the revenue train mileage ratio, which is practically the same on this road.

On page 8, the same comparison is made on the basis of a revenue locomotive mile, a revenue freight train mile, and a revenue passenger mile, the intent being to show simply the rela-

tive proportions in increased cost of firemen, and revenue gained, without any intent, of course, to convey the meaning that this revenue gain has been produced by firemen, or that there has been that net gain to the railroad.

Taking the table at the bottom of page 8, on a freight locomotive mile basis, the increase in the cost of firemen in 1912, as compared with 1908, has been .032 cents; or in other words, for each freight locomotive mile traversed all firemen have received a revenue gain of 3.20 cents, while the railroad has received .64 cents. On a revenue freight train mile basis the increase in cost of firemen has been 1.33 cents, the increased revenue has been .68 cents. On the passenger train mile basis the increase in 1912 as compared with 1902 for firemen has been 1.33 cents and the revenue gain 45 cents.

Now in the next table, on the revenue train mile basis, without any distribution at all between freight and passenger traffic, the attempt is made to work out the increase in cost to the railroad and the revenue gain during the period 1912-1911, 1912-1907 and 1912-1902.

The first table on page 9 shows on this basis the analysis of cost per revenue train mile for firemen and other principal items of transportation and operating cost. It will be noticed that during the past fiscal year, ending June 30, 1912, the cost of firemen has increased .04 cents. The total transportation labor, including firemen, has declined 1.22 cents.

The Chairman: Where is that shown?

Mr. Lauck: On page 9. The minus sign indicates a decrease. The total expenses of conducting transportation upon this road, on the revenue train mile basis, has also declined during the last year, .82 cents.

Referring to the second item under operation, in the second section of the table—

The Chairman: Revenue does not show an increase, does it?

Mr. Lauck: That statement is made there for the purpose of showing the relation between transportation cost and revenue gain, but I think it is hardly fair to the railroad to make the comparison.

The Chairman: I just read in the papers yesterday that the President of that railroad says the dividends will have to be cut.

Mr. Lauck: Yes, sir; well, I think they will.

The Chairman: If there is a minus in the total revenue and a minus in the total expenses, and a very large increase, as this statement shows, in revenues, I do not see why dividends should be cut.

Mr. Lauck: Well, it seems to me Judge, begging your pardon, it is perfectly apparent from the financial history of the New Haven Railroad, that it has nothing to do with operating efficiency.

The Chairman: Well, we have nothing to do with the philosophy of it, but the facts. Can the President of the railroad make a statement different from this one the same facts?

Mr. Lauck: No, sir, I do not think that the president could deny these facts. I think that the case of this railroad, the case of all the railroads, that during the period we are considering there have been remarable gains in the operating efficiency of the railroad; that is, the Operating Department has been exceedingly efficient in getting traffic over the road at less cost, and also that the New Haven, as well as other railroads, would be in much worse financial condition at the present time if it were not for the operating efficiency. I think if the financial management had been as proficient as the operating management, that there would not be any doubt at all that the New Haven could pay increased dividends.

Mr. Carter: We accept that without any further proof.

The Chairman: Mr Lee, I did not know whether you appeared a little restless or not.

Mr. Lee: Not at all, sir; I was merely bowing our thanks to the witness, without in any way admitting his conclusion, merely a personal matter, that was all.

Mr. Lauck: Well, that was just the opinion I gathered from looking at the financial operations of the railroad, and the actual operations. Of course, it is true that the other costs have risen in railroad transportation, that is, the cost for materials and other items of cost have increased. I think that has largely been overcome by this increased operating efficiency.

Mr. Carter: Taxes have been increased?

Mr. Lauck: Taxes have been increased, yes, sir. I do not know whether I covered your question or not, Judge.

The Chairman: No, I do not think you did.

Mr. Lauck: Well, the point has been, of course, that in this particular railroad, although there have been gains in revenues per revenue train mile, per freight train mile, and gains arising from increased productive efficiency of labor and equipment, that these gains have been dissipated by bad financial management; and of course that has prevented the road from maintaining, or perhaps will prevent the road from maintaining its present rate of dividend.

The Chairman: Well, the only bad financial management that appeared to me on the face of Mr. Mellen's statement, was that as soon as the New Haven Railroad bought the Boston & Maine Road, the Boston & Maine Road ceased to make money. That is what you would call bad financial management?

Mr. Lauck: Well, of course it would depend upon what the cause of the Boston & Maine's failure to make money was due to. My inquiries into this particular road led me to believe that the New Haven has lost money almost altogether on all its financial operations, by acquiring trolleys and public utilities at highly inflated values, exchanging their own securities for other securities which did not return them the same amount of money which they had to pay on their own securities, and as a consequence there has been a net loss upon the acquisition of these properties, which the operating revenue must pay. The operating revenue has furnished revenues to meet the delinquencies of the financial department.

The Chairman: And you think that if financial management was such as to overcome entirely the profits of the transportation management, that the fireman, if the cost of living had increased, and his work had increased, ought to be increased in wages notwithstanding?

Mr. Lauck: Yes, sir. I have not considered the financial ability of the railroads at all in this connection, because it seemed to me that that was a matter entirely separate and distinct. That is, that the fireman, if it could be shown, or if the facts indicated that he should have an increase in wages—

The Chairman: Suppose the Interstate Commerce Commission should fix such a rate of freight as would largely increase the volume of freight over the railroads at a loss in its transpor-

tation. That increase in the traffic would necessarily increase the work of the fireman and yet the railroad would be operating under the law at a deficit, at a loss?

Mr. Lauck: Yes, sir.

The Chairman: You think notwithstanding that, if the fireman contributes a little more of his sinew under those circumstances, and there is no money to pay him this increase with, where would you get it from?

Mr. Lauck: I should think the railroad should go back to the Interstate Commerce Commission and tell them they had made a mistake in fixing the freight rate for it.

The Chairman: In other words, you do not think that the compensation of the fireman should have any reference to the earning capacity or the productivity of the railroad?

Mr. Lauck: No, sir, I do not.

The Chairman: That it should be dependent entirely upon the productivity of his labor?

Mr. Lauck: Yes, sir. I think that granting that a railroad gets the same rate as other railroads, and it does not pay from operation, why I think there is no economical justification for the road on its financial status, and it should be reorganized and put on a proper financial basis so it would pay. Of course, we have lots of roads of that kind, and we have had.

The Chairman: You understand that when a railroad is in Receiver's hands and being operated at an actual loss, the court has power to issue Receiver's Certificates and sell them in the market, which are always salable because they even come ahead of the first issue of bonds, and things of that sort?

Mr. Lauck: Yes, sir.

The Chairman: They have the protection of the court back of them, and a court can run a railroad in debt in that way?

Mr. Lauck: Yes, sir.

The Chairman: What I want to get is, how they are going to pay the firemen if the railroad is being operated at a loss?

Mr. Lauck: I should think, sir, that if the railroad is operated at a loss, and is properly operated, that the Interstate Commerce Commission should increase their freight rates. If the railroad has been operated as some railroads have, say the New York, New Haven & Hartford, I mean financially operated, the Interstate Commerce Commission would probably hesitate about

increasing their freight rates; but if the New Haven say, in all its operations, had been acting properly, if its financial operations had been as satisfactory as its actual operations, I should say then, if they could not afford to pay the fireman for his increased labors, certainly they should have increased freight rates; because it seems to me that would be—

The Chairman: These figures that have drawn out this discussion are based upon their reports to the Interstate Commerce Commission?

Mr. Lauck: Yes, sir; and take no account of the financial management at all. It is just sort of an inquiry into the operating efficiency.

The Chairman: Proceed.

Mr. Lauck: We find, therefore, on this railroad that there has been a decrease in the total labor cost of conducting transportation per revenue train mile during the past year and the total cost of conducting transportation.

I was just going to refer to the second item under the subhead "Operation," near the bottom of page 9, in which it is shown there has been an increase in maintenance cost during the past year of 4 cents per revenue train mile, but a decrease of .53 of one per cent. per revenue train mile in the labor cost of maintenance, or of the labor engaged in maintenance work. But the total cost, taking all items of operation into consideration, both conducting transportation and of maintenance, shows a decline of one per cent. per revenue train mile during the past year on the New Haven Railroad. During the same year there has been a revenue gain of three cents per revenue train mile or a net revenue gain of four cents, taking into account the decreased cost of conducting transportation as a gain, which it really is; you would have a net gain in revenue from conducting transportation of four cents per revenue train mile, which is just 100 times the increased cost of firemen during the past year.

Mr. Carter: Before you turn the page, the table next to the last—

The Chairman: What is that last statement?

Mr. Lauck: I was referring to the relation between the first item in the analysis and the last; that there was an increase of .04 of one cent in the cost of firemen and a four-cent revenue gain, which would be 100 times.

Mr. Carter: Now referring to the first two items in the next to the last table on page 9, you show there is .04 of one cent increase in the firemen and yet a decrease of 1.22 in total labor. Cannot that readily be accounted for by the increase in the number of firemen and possible decrease in the number of track men, etc.?

Mr. Lauck: Well, the track men do not appear there.

Mr. Carter: What is a track man—a station man?

Mr. Lauck: That is what I believe you call "C. T." or conducting transportation.

Mr. Lee: In the upper part of the table?

Mr. Lauck: Yes.

Mr. Lee: The lower part takes in those trackmen?

Mr. Carter: What I want to ascertain is this: That increase of .04 of 1 cent can be explained by the additional number of firemen—not the additional pay to the firemen, but the additional number of firemen in service in 1912, over 1911. And the decrease in the other could be a decrease in the number of employees without necessarily showing that they had a reduction of wages.

Mr. Lauck: That is for the firemen employed by the railroad in each year, the total outlay for all firemen divided by the total number of revenue train miles. Now, if you want to get at the per fireman cost, you would have to divide the .04 of a cent by the total number of firemen. I don't know what it is due to. I don't think it is due to an increase in the number. I think it is probably due to the fact of more fireman labor being put upon a revenue train mile.

Mr. Carter: The New York, New Haven & Hartford has not reduced the wages of any employees. I understand it has increased the wages of all employees to a certain extent; yet it has shown that the expense for total labor is less. Would that not indicate that they are performing the same service with a lesser number of employees? That is what I mean. How could they increase the actual payments to labor and yet show a decrease in the payments to labor?

Mr. Atterbury: That is on a train mile basis. In other words, you might have the same number of trackmen on a piece of track and increase the number of trains, and then it would cost you less.

Mr. Carter: The reason I asked that question is that some of the newspaper men have got in their heads that the firemen are the only people who have received increases in wages.

Mr. Lauck: I think Mr. Atterbury's explanation is the one I had gathered, not knowing anything much about the actual operation of a railroad. I had attributed that increase in cost of firemen per revenue train mile as compared with the decrease in other labor, to the fact that per revenue train mile, there were more firemen used than other labor. I don't know to what extent trains are double-headed or to what extent the excess of ten hours would apply.

Mr. Carter: Would you attribute this increase in traffic to the fact that it would be more likely to increase the number of firemen than of some other employees—say station masters, for instance.

Mr. Lauck: Of course. That would apply equally to other transportation labor though. My point is on the freight train load there would be more firemen than brakemen or conductors or enginemen.

Mr. Carter: The point I want to bring out is this, if the same number of station agents handle an immensely greater ton mileage, it would, in this table, show a decrease, would it not?

Mr. Lauck: It would if the number remained the same.

Mr. Carter: But if, when it came to the firemen, it took an increase in the number of firemen, while the number of station agents remained stationary, then this would show that the labor cost of firemen had increased, while the labor cost of station agents had decreased, per revenue train mile, when, as a matter of fact neither of the wages had been changed?

Mr. Lauck: Oh, yes. This has no relation to wages. This is the cost to the railroad in terms of all firemen per revenue train mile.

The Chairman: Then, how can you say it does not affect the question of wages?

Mr. Lee: That is all we are here for.

The Chairman: You said in reply to Mr. Carter, that that did not affect the question of wages.

Mr. Lauck: The rate of wages.

Mr. Carter: Let us assume that they had the same number of station agents in 1912, that they had in 1902, and their

ton mileage had doubled in this table. If it were carried out for station agents, it would show that the expense for station agents had decreased one-half, because the same number of station agents, at the same rate of pay, were now handling twice the tonnage. But in practice they are compelled to increase the number of firemen in some kind of a ratio toward the increase of ton miles. Therefore, while the station agents might remain the same, with the same rate of wages, it would show a 50 per cent. decrease on this table, while owing to the fact that there was an increased number of firemen in order to handle this increased ton mileage, there would be a showing of increase here, while in fact the actual wage might not have increased. I want to bring that out.

The Chairman: That is clear enough.

Mr. Lee: I could not follow you on that.

The Chairman: That was one of his simplest statements.

Mr. Lee: Was it?

The Chairman: Yes.

Mr. Carter: Some of them had been very simple.

Mr. Lee: I have made a note to look at the minutes of what he said, so that I can study it.

The Chairman: It seems to me that is very plain.

Mr. Lee: In other words, what I gather from his remarks is this, that it did not make any difference about this thing, that the rate might have gone up or down, as far as that is concerned. That is the impression I gathered.

Mr. Lauck: If I may reply to the question of the Chairman—

The Chairman: Yes. I am not making much progress this morning. I can tell you that.

Mr. Lauck: Perhaps I had better go back to fundamentals again, and reveal the state of my mind in preparing these tables. The idea in my mind has been to show what has been the cost to the railroad for firemen to operate a revenue train mile; that is, without any reference to the rate paid firemen, but simply taking into consideration the fact that they paid so much to all firemen, that they operated so many revenue train miles, and to ascertain the cost in terms of firemen and in terms of other transportation items per revenue train mile. My reason for doing that is to show that although the cost for all firemen has

increased, the work done by firemen has also increased, and this increased work has resulted in a proportionately greater revenue gain to the railroad than the increase in cost to the railroad for these firemen. In other words, I attempt to show by these tables that after all increased expenses of operation have been met, for firemen and other labor, and for materials, maintenance, and all other items, yet owing to the increase in the freight train load, and the increase in the passenger miles per passenger train, or passenger firemen, a revenue has accrued to the railroad resulting from the increased work placed upon firemen, in conjunction with better equipment, which covers all additional costs, and leaves a net revenue in addition in this specific case. Sometimes it will not leave a net revenue increase, but in this case it does. I am making no attempt to inquire into the relative rates, or the relative rates per fireman whatsoever.

Referring to page 10, considering the longer period of 1912-1902, you have an increase in the cost of firemen per revenue train mile of 1.32 cents. The total labor during this period increased 4.64 cents. That was the increase in total labor on all transportation. The labor cost of maintenance increased 15.03 cents, while the total cost of operation per revenue train mile increased 26 cents.

During this same period, however, the gain in revenue from operation as compared with these increased costs, was 63 cents; or in other words, after all increased operating cost per revenue train mile in 1912, as compared with 1902 had been paid, there was a net increase per revenue train mile available to the railroad company of 37 cents; or, carrying out the theory that I have been applying here, that although there was an increased cost of firemen and other items of operating expense, yet the revenue gain per revenue train mile, resulting from the heavier freight train load, or the greater revenue per passenger train mile resulted in a net gain to the railroad of 37 cents per revenue train mile over and above all these increased costs.

The Chairman: There is a difference on page 9 and on page 10 in the revenue.

Mr. Lauck: One covers just the past fiscal year, and the other covers the longer period.

The Chairman: Oh, yes.

Mr. Lauck: On page 11, the same comparison is made for

the past six years. That discloses the fact that it may be well to look into that also, although I do not want to take up time unnecessarily. I am referring now to the table at the top of page 11. It shows that during the past six years the cost of firemen has increased .32 cents, and the total transportation labor has declined 4.04 cents per revenue train mile; and the total cost of conducting transportation on the New York, New Haven & Hartford per revenue train mile during the last six years has also shown a decline of 1.59 cents per revenue train mile. In other words, there is a decline in cost of conducting transportation during the past fiscal year and during the past six years, but not during the past eleven years. The cost of operation, however, as can be seen from pursuing the analysis further, in the table at the bottom of page 11, has increased 16 cents per revenue train mile, while the gross gain in revenue has been 36 cents and the net gain in revenue has been 20 cents. There has been an increased cost of firemen of .32 cents, and a decreased cost of conducting transportation of four cents, which has been attended with a net revenue gain of 20 cents per revenue train mile.

I do not think it is worth while to go into the period of 1911-1902, having already considered the other three periods, and I should like next to take up Section 10 on page 13.

Exactly the same analysis is made, only on a different standard; that is, per revenue locomotive mile, analyzing the cost.

Upon this basis we find that during the past five years, the cost for all firemen per revenue locomotive mile upon this road has increased .27 cents. The labor cost of the labor engaged in actual conducting of transportation has increased 2.35 cents per revenue train mile. The total expense incident to actual conducting of transportation, the transportation labor and other expenses, has increased 4.03 cents per revenue train mile.

The labor cost of maintenance has increased only 1.48 cents per revenue locomotive mile. The total labor cost of operation including maintenance and transportation and all labor has increased 4.68 cents per revenue locomotive mile, and the total cost of operation—I might say that the general officers show a decrease on this road, also per revenue locomotive mile, but the total cost of operation per revenue locomotive mile has increased 10 cents during the past five years, or in 1912 as compared with 1908, to be more accurate.

The total revenue per revenue locomotive mile has increased 36 cents, leaving a net revenue gain per revenue locomotive mile over and above all these increased costs of 26 cents per revenue locomotive mile. Or, in other words, my contention would be, that, owing to the increased freight locomotive load, there was a greater revenue produced than was there expense incurred in each revenue locomotive mile.

Mr. Lee: Pardon me for interrupting.

Mr. Lauck: Certainly.

Mr. Lee: But would you deduce that the general officers ought to get theirs first before the firemen?

Mr. Lauck: I beg pardon?

Mr. Lee: Would you deduce that the general officers ought to get theirs first before the firemen? They are in worse shape than the firemen are they not?

Mr. Lauck: Well I do not know what the increase in work of the general officers has been during this period. I should judge, though, Mr. Lee, judging from the gains in operating efficiency of the road, that the general officers, so far as the operating department is concerned, ought to have an increase.

Mr. Lee: They ought to get theirs first, too, hadn't they?

Mr. Lauck: I should think they would get it first.

Mr. Carter Are you right sure they have not got it first?

Mr. Lee: This table does not show it.

Mr. Lauck: It shows a decline.

Mr. Carter: Does this table apply to all general officers collectively? Suppose since the Boston & Main and the Boston & Albany have become subsidiary lines of the New York, New Haven & Hartford, their two general managers or presidents lost their jobs; would not that have an effect here?

Mr. Lauck: Well, I think that would not occur. They would retain them and distribute the cost over the different subsidiary roads.

Mr. Lee: His figures do not apply to that situation.

Mr. Carter: The numbers as well as the rates of pay have to do with it, is what I am driving at.

Mr. Lauck: Yes, sir.

Mr. Lee: In other words, this table does not amount to a whoop; is not that what you are driving at?

Mr. Carter: I rather think we are making hay.

Mr. Lee: You think you are?

Mr. Carter: Yes, I believe we will have a fine harvest.

Mr. Lee: I think you have a lot of thistles in it.

Mr. Lauck: On page 14 I made the same analysis on the basis of all locomotive miles, taking into consideration revenues and non-revenue operations. That shows practically the same thing as the preceding table; that although the cost of firemen and other items of operation have increased, the revenues resulting from greater efficiency in operation and greater work done and greater output for firemen and other labor, working in conjunction with better equipment—of course I would not take the credit due to that away from it—has resulted in a net gain in operating revenue, over and above all increased expenses of 25.63 cents per total locomotive mile or for each locomotive mile operated.

The Chairman: Now does that take in every possible feature of the cost of operation and maintenance?

Mr. Lauck: Yes, sir, every possible feature of the cost of operation.

The Chairman: And maintenance?

Mr. Lauck: Yes, sir.

The Chairman: Preservation of the property?

Mr. Lauck: Yes, sir, that is according to all the operating costs as reported to the Interstate Commerce Commission and is supposed to not only cover the cost of actually transporting the locomotive, but also to provide for its maintenance and up-keep and depreciation, and the same way with equipment. That is, if the proper maintenance charges are made, and the proper depreciation charges are made, that after this analysis has been made the property of the road would be theoretically in as good condition as it was before the locomotive started to run.

The Chairman: It includes the purchase of cars and the purchase of locomotives?

Mr. Lauck: No, sir, it does not include that, not the actual purchase. It does not take into consideration the capital; just simply the operating cost.

The Chairman: It includes repairs of locomotives?

Mr. Lauck: Yes, sir, repairs and renewals and depreciation. That is, under the theory of the accounts, the railroad of course

now having purchased equipment would charge it, and credit capital account with that equipment. Then having put—

The Chairman: Let us understand that.

Mr. Atterbury: Charge it to additions and betterments?

Mr. Lauck: Yes, sir.

Mr. Atterbury: And credit additions and betterments with the replacement value?

Mr. Lauck: Yes, sir.

The Chairman: Suppose a railroad has a fixed capital and shares issued against all that fixed capital, how could you charge the purchase of a locomotive to that account?

Mr. Lauck: Probably Mr. Atterbury could explain better than I could.

Mr. Atterbury: Go on.

Mr. Lauck: To purchase the equipment they would either issue their bonds or notes, or they might purchase it by surplus earnings, and the addition of that equipment would be credited to the capital account or would add to the tangible assets of the road. Does that cover the point?

The Chairman: When a railroad buys a lot of new locomotives, they do not pay for them in stock, do they?

Mr. Lauck: No, sir.

The Chairman: Or bonds?

Mr. Lauck: No, sir.

The Chairman: Do you mean then that they go in the market and sell some fresh stock to pay for that locomotive, or sell their bonds?

Mr. Lauck: Why I should think that to get new equipment, or to make any extension or anything of that kind, the railroad would have to depend for its funds to do that either upon the sale of bonds or notes; and it might use, if as a great many well conducted systems do, it might accumulate its revenue, and out of that fund buy them; or the common practice I believe is to take the equipment and secure the makers or the sellers of it by equipment trust bonds or notes which are paid in annual installments. There would be quite a number of ways that they could get the equipment.

The Chairman: What do they charge new cross-ties or rails to—maintenance?

Mr. Lauck: No, sir, not if the charge is properly made. If they get new cross-ties now, under the method of accounting of the Intestate Commerce Commission, before disposing of the old cross-ties, the difference is charged to operating expenses in the form of renewals. Isn't that correct, Mr. Atterbury?

Mr. Atterbury: Well, the difference between the cost of 100-lb. rail and 85-lb. rail would go to additions and betterments. Now that additions and betterments item may be capitalized, or it may be continuing. If it is continuing, why it eventually shows in your surplus.

The Chairman: Well, if a locomotive runs off the track and is completely destroyed and the railroad has to buy another locomotive, what charge do they make then?

Mr. Lauck: They would charge the difference between the value of the old locomotive and what they paid for the new one—that is to say, if they sold the old locomotive as scrap iron—

The Chairman: Suppose it went down in the water?

Mr. Lauck: If it was entirely destroyed, if it disappeared, then they would charge it to additions and betterments, I should think. They could not charge it to operating expenses.

The Chairman: This table seems to be a deduction of all that has gone before it. You said "Net gain in operating revenue" and I asked you if that included every possible item—labor and maintenance and betterments and—

Mr. Lauck: No, sir, it does not include betterments. I think I get your point now, Judge. I was stupid in not getting it before.

The Chairman: You are showing here that firemen got .32 of a cent increase in five years, and the net gain in operating revenue was 25.63 cents.

Mr. Lauck: Yes, sir. Out of that net gain the railroad must pay the interest on the funds which it used to acquire new equipment, etc. That is in this expense here is not included the cost of new equipment, of new cars, new locomotives—it is simply the net operating revenue gain, and out of that would have to be paid all interest charges, or dividend charges arising from the issuing of new stocks or new bonds to acquire locomotives or to acquire any kind of equipment or capital charge. That does cover, however, this feature of maintenance of the capital of the railroad in its original condition. Say after an engine has gone over the

road and some repairs are necessary, that is included in this; or if there has been a depreciation in the value of the engine, that is excluded in this. There is no charge now, under the orders of the Interstate Commerce Commission for any equipment in these expenses, and that must be paid for out of new capital or out of surplus earnings, and then the interest on this new capital which was used to purchase the equipment would come from this net revenue. Of course in former years railroads freely charged new equipment to operating expenses. This road itself, from the '70s on up to 1907, freely charged new locomotives and new equipment to operating expenses. If you will turn to page 23 in that exhibit you will find I have made a notation there—not with any desire to criticise the railroad, but to show the gains accruing to capital—you will find there excerpts from the Presidents' reports to stockholders from 1876, covering various years, in order to show the existence of the practice, down to 1903, showing that new locomotives, box cars, coal cars, sleeping cars, passenger equipment, ten freight locomotives, electrical equipment and so on, were charged to operating expenses, which was all right at that time; but of course was making an addition to the capital of the road which is not permissible at this time. At the present time capital must be charged with these items or they must be secured by new capital or surplus income, and only their depreciation accounted for in operating expenses. My idea in showing that was simply to show that the stockholders of this road, in addition to dividends, had secured other additions to the value of the property.

The Chairman: Well, you can go on now to the next subject.

Mr. Lauck: In Section 11 I attempt to work out the amount of additional revenue produced which may be attributed to firemen.

The Chairman: Let us go over that again.

Mr. Lauck: I frankly acknowledge there is no method of ascertaining—

The Chairman: Where does that occur in your Baltimore & Ohio exhibit?

Mr. Lauck: The same section, probably, "Revenue gains attributable to firemen."

The Chairman: Here it is, No. 12 in the Baltimore & Ohio.

Mr. Phillips: "Is revenue produced by firemen" the same as "Revenue attributable to firemen?"

Mr. Lauck: The same.

The Chairman: Now, you can go on.

Mr. Lauck: Having shown that there had been increased work imposed upon firemen—assuming that is shown, and having shown that this increased work was attended also by greater output, in terms of ton miles or passenger miles, which yielded, after all other expenses had been paid, a net gain to the railroad, it seemed to me that the firemen should have a greater participation in these revenues, and we attempted to indicate what the share of the firemen should be, stating that there is no accurate method for determining that; that is, there is no way, under the present system of accounting, for showing what proportion of revenue should accrue to any factor engaged in producing transportation; but I made an arbitrary and dogmatic assumption that each factor engaged in producing transportation—if each factor should share in the revenue according to the proportion which its cost bore to the total cost of conducting transportation or conducting the operations of the railroad—meaning by "operation" simply the getting of the traffic over the road—this ratio, you will notice, on page 15 of the New Haven is 4.39% of the total cost of conducting transportation, or 2.37% of the total cost of operation—and taking the portion of the revenue accruing to that, and deducting the increased cost of firemen from it, I arrived at the conclusion that on this road the firemen—the revenue attributable to firemen, over and above the increased cost which had been incurred for firemen, was $123,428.

The Chairman: How can you say that is a gain in revenue from firemen any more than you can say it is a gain in revenue from engineers?

Mr. Lauck: The justification in my own mind for saying that it is revenue gain for firemen—you understand, Judge, I do not claim this is accurate, it is simply based on a theoretical assumption which it seems to me is a legitimate assumption, however; but my claim that that was more due to the firemen than to engineers, would be due to the fact that or consideration that the brunt of this increased efficiency of operation has fallen upon the firemen. That is to my mind, the railroads, as indicated by these statistics have made wonderful advances in the efficiency of their operation or transportation.

Mr. Atterbury: Is that the assumption you base this argument upon? I think it would be interesting if the witness would state his assumption.

Mr. Lauck: Right here or for the whole?

Mr. Atterbury: As I understood your statement, you said you assumed something?

Mr. Lauck: In this special connection, I assumed, in working this out, that each factor engaged in conducting transportation should be recompensed in the proportion which its cost bore to the total cost. In other words, if the relation of cost of firemen to total operating cost was two per cent., that the firemen should get 2% of the revenue; and then I later proceed to find out what 2% of the revenue is, and deduct from that what the fireman is now getting, showing that there is so much more due the fireman.

The Chairman: The common deduction I would get then from your position, is that a train crew transporting a given number of passengers, or we will take a freight—transporting a train of 1,000 tons on which the railroad earns a certain net result, and, a year after that, the same crew handles a train that transports 2,000 tons, from which the railroad gets twice as much net results; that all the factors of that transportation, the engineer, the conductor, the fireman, the brakemen and whatever other men they have on the road, should participate in that profit?

Mr. Lauck: Yes, sir, but some, more than others.

The Chairman: That is just what I am coming to now. You think the fireman is entitled to a larger participation in that profit than the engineer?

Mr. Lauck: Yes, sir.

The Chairman: Tell us why?

Mr. Lauck: I think a fireman is entitled to larger participation for the reason that the brunt, or the pressure, or the more arduous work, or the real strain of this increased operating efficiency has fallen upon the fireman. That is, if it is true that the fireman shovels more coal. I can see that the installation of heavier engines would really be a lessening of the labor of the engineer.

The Chairman: How is that now?

Mr. Lauck: I say I can see that the installation of improved

machinery might be attended by a decline in the arduousness of the engineer's work, or of the man who is maintaining that machinery, or I can see that the introduction of the air brake would lessen the work of trainmen; but it seems to me that in this connection (of course I am just speaking my personal opinion), that all the result of this increased labor or this increased efficiency of operation, or not all the result, but the pressure of it, has gone on the fireman, because he has to shovel more coal, he has a heavier train load, and has to work harder to get the train over the road.

The Chairman: And the engineer, due to improved mechanism on the engine, and this increased efficiency in productivity on the part of the fireman, probably has less to do.

Mr. Lauck: Well, of course you understand, Judge, I know very little about actual railroad operation; but theoretically that would seem true to me, yes, sir. That is; it would be the same situation to me as this: If you had a cotton mill, say, and you put in automatic looms, and the weavers would find that it would not require so much attention to the looms as it formerly had, but it would require more power to run the looms, if you had the fireman down in the engine room shovelling more coal to run those looms, I should think it would be a somewhat similar case; the fireman would bear the brunt of the increased productivity of that plant, while the loom tender or weaver or spinner, by the improvement in the machinery, would find an actual decline in the arduousness of his work, while the productivity of the plant would be increased.

Mr. Atterbury: Would you increase the fireman's wages and decrease the wages of the fellow that is tending the loom?

Mr. Lauck: Well, that would depend of course entirely upon whether you paid on the arduousness of the work. On a productivity basis you would have to give everybody something, or that would be so if that were your theoretical basis of determining wages. If it were simply on the basis of the work done, I should think it would depend there altogether whether the labor using the looms were skilled and scarce enough to force the employer to give him more for his labor. I do not know whether that covers the question or not.

The Chairman: Anyhow, no matter whether anybody else gets an increase, the firemen ought to?

Mr. Lauck: That is what the figures seem to indicate to me, yes, sir. The fact that the train load has increased, and that the increased train load has increased the revenue, and that the statistics show that the fireman has to shovel more coal per locomotive mile per fireman, it seems to me evident that the brunt of the thing has fallen on the fireman, as far as work in concerned.

I would like to turn to part 5, page 17. In Section 5 I have attempted to carry the analysis as in preceding exhibits, on a revenue train mile basis from—

The Chairman: What page are you on now?

Mr. Lauck: I beg your pardon, Judge—part 5, page 17, or rather page 18. I was just saying that carrying the revenue train mile analysis further, and taking into consideration the disposition of this net revenue from operation, I raise the point as to the relative shares of firemen and of capital in this disposition of net revenue.

Turning to page 18, a comparison is made on the basis of a revenue train mile in 1912 as compared with 1902, as to the income and its disposition. That is, we find in 1912, as compared with 1902, that there has been 37 cents net operating revenue gain per revenue train mile,—we have already noted that fact in the analysis of operating costs. Then we find on the New Haven Railroad, that they received other income amounting to 31.66 cents per revenue train mile from securities of subsidiaries which they own or control, giving the company a net corporate income in 1912 over 1902 of 35.74 cents per revenue train mile,—an increase of that amount. Now, of that increase you can see, proceeding on down the analysis, that 39 cents was paid in dividends. Well, of course, that is seemingly inconsistent to say that the net corporate income or the total amount available for stockholders increased only 37 cents, while dividends increased 39 cents; and there you have the clue as to why it will be no longer possible for the New Haven to pay dividends probably, if the President makes that statement, due to the fact that it is evident that dividends have been paid from past surpluses of the road. In other words, the surplus of this road per revenue train mile was 63 cents in 1902, and was only 51 cents in 1912, indicating that as there had been no use of capital or surplus income for additions and betterments, that the whole of the net corporate income and part of

the surplus had been used in paying the dividends of the road during this period. The same comparison is evident—

The Chairman: That table you are on there now shows that while the dividends exceeded by .02 of a cent, the net operating income,—am I right in that?

Mr. Lauck: Well, the dividends exceeded the net corporate income 3.26 cents per revenue train mile, and a little over three cents—

The Chairman: And yet the surplus increased?

Mr. Lauck: No, sir, the surplus decreased 11 cents during this period, showing where they got the money to pay the dividends.

And the same thing is true of 1912 as compared with 1907. We find that the cost of conducting transportation on this road declined, and that there was a net gain in operating revenue over and above expenses; but you will find that the dividends paid stockholders exceeded the net corporate income of the company. It does not indicate to my mind, however, that the earnings of the road were not sufficient to pay the dividends, but owing to the difference between the income which they received from securities and what they had to pay on stock which they had to exchange for securities, there was a loss, and that is where the loss really occurred. That is, if their subsidiaries did not pay, they had to use a part of their operating revenues to pay the difference.

The Chairman: The gross corporate income is liable for interest on the funded debt?

Mr. Lauck: Yes, the gross corporate income is liable for interest on the funded debt, and for all fixed charges, rentals and so forth; but the net corporate income is the corporate income remaining after the fixed charges and rentals have been paid, and is available to pay the stockholders. The funded debt is not paid from net corporate income, but is paid before the net corporate income is arrived at. That is derived from gross corporate income, which is not shown.

So there was an increase in the interest charge on funded debt of 37 cents per revenue train mile, due to the fact that a large amount of funded debt had been floated for the purpose of acquiring securities of other companies, and not so much for the purpose of adding to the value of the New Haven property.

You will notice by referring to the last page in the Exhibit

that the net capitalization of this company per mile of road increased from $74,000 to $193,000.

The Chairman: Where is that shown?

Mr. Lauck: On page 27. It is a table inside of the last page.

There was an increase in the net capitalization per mile of road from $74,700 in round numbers to $193,000 in 1911, as compared with 1902. Throughout that period the dividend rate of 8 per cent. was maintained. I mention that in connection with the payment of dividends, evidently from surplus, and as indicating how operating revenues enabled them to maintain dividend payments on such a large increased volume of capitalization. The stockholders of this road received, therefore, on the basis of a revenue train mile, 39 cents more in dividends in 1912 than in 1902.

Mr. Atterbury: Where do you get that?

Mr. Lauck: I was just recapitulating from the preceding tables.

Mr. Atterbury: I know, but where does that appear?

Mr. Lauck: On page 18, comparing 1912 with 1902. In addition to the payment to capital, as represented by the interest on the funded debt and the dividend payments, I should like to call your attention to the table on pages 20 and 21. That covers the whole case. I insert that table, not for the purpose of criticising the financial management, but simply for the purpose of showing that the stockholders of this road, in addition to liberal dividends, and in addition to having the property maintained by appropriations from income for additions and betterments, have also evidently received another return in addition to stock distributions, amounting during this period of 1903 to 1910, to $24,000,000.

The Chairman: Where is that item?

Mr. Lauck: It is the last column, the last figure, 24 millions. The point is there that, during this period, 1903 to 1910, the New Haven Railroad issued for cash, capital stock to the extent of thirty-two million dollars. The market value of this stock was fifty-four million dollars, based on contemporaneous market prices. The amount received by the company was only $45,000,000; or, there was a net loss to the company of $9,000,000. In the same way, in the issue of its bonds and debentures,

there was a loss of $15,000,000. So, for the securities issued for cash during the period 1903 to 1910, the New Haven Railroad actually received in cash $24,000,000 less than their contemporaneous market price. And, that may be considered in either of two ways. It may be considered as an additional distribution to stockholders; or, what is more significant to my mind, is this, that the New Haven Railroad, by not securing all the funds it could have secured for its securities, thereby deprived itself of an equivalent amount of capital upon which it had to pay interest; or, in this case, based on the average interest payments which the New Haven is required to make for capital, say at five per cent., would amount to $1,216,000, which is considerably more than the average annual outlay for firemen on this road. Or, in other words, if the New Haven Railroad, in issuing these securities for cash, had secured the actual cash value of the securities, it could have had the use of capital sufficient to pay its firemen what it is paying them at the present time.

I have put this illustration in for the purpose of indicating that in spite of the productive efficiency of firemen and other labor and the productive operations of the Operating Department, that these gains in operating revenue are used to pay interest on securities for which the company received no proceeds, or nothing was added to the earning capacity of the road. This table is based on figures made by the New Haven Railroad itself, for the former United States Securities Commission, but which have never been published. The data are in the files and records of the Interstate Commerce Commission, at the present time, so there cannot be any doubt as to the figures there. Do I make the table clear?

The Chairman: Yes, it is perfectly clear to me.

Mr. Lauck: Of course it is seemingly complicated, but this table was prepared for the former Railroad Securities Commission, but never published, and the idea in its preparation was to show that the securities issued for cash were worth so much on the market, but the company through granting stock rights or through underwriting commissions sold the securities for considerably less than their market value, or received in cash less which during their period aggregated $24,000,000. Of course, if you take a longer period of time, it is proportionately an in-

creased amount, but as I am only considering this period, I only put the figures in for this period.

Mr. Atterbury: Now, up at the top of page 20, it shows the per cent. of par 142.50; is that the selling price to the stockholder, the average for $88,000,000?

Mr. Lauck: Yes, sir.

Mr. Atterbury: That is the selling price to the stockholder for $88,000,000 of securities?

Mr. Lauck: Yes, sir, you are correct in that, sir; that is correct.

Mr. Atterbury: Now, he has been getting 8 per cent. on that.

Mr. Lauck: Yes, sir.

Mr. Atterbury: That gives him about 5½ per cent. income.

Mr. Lauck: Yes, sir.

Mr. Atterbury: Is that an unreasonable return?

Mr. Lauck: No, sir; I think that is about the current rate of return.

Mr. Atterbury: If they had sold it themselves—mind you this is, as I understand it, the stockholder selling to himself stock; he is getting a return of 5½ per cent.

Mr. Lauck: Approximately that.

Mr. Atterbury: That is not an unreasonable thing, is it?

Mr. Lauck: No, sir, I do not think it is unreasonable, but that is not the point I am making. The point I am making it, that they could have gotten more; the road could; the stockholders could have gotten more. In other words, they gave themselves that difference.

The Chairman: The market price of those same securities at the time they were sold for $124.50 on the average, was $169.63.

Mr. Lauck: On the average, yes.

Mr. Atterbury: What is it selling at to-day?

Mr. Lauck: I do not know what the New Haven is; it is very much lower than that, sir; it is about, I should think—well, I do not know the actual quotation, but I know the New Haven has been steadily going down.

Mr. Atterbury: So, although they paid $142 for it, they could not realize on it to-day?

Mr. Lauck: No, sir. Well, they are responsible for that, the railroad management is, just as they are responsible for this.

If we assume that the stockholders were responsible in giving themselves a 5½ per cent. return there, they are also responsible for the management which has permitted the stock to decline.

The Chairman: Of course you do not know that the public would have given $169 a share for $88,000,000 of new securities?

Mr. Lauck: No, sir; that is based on contemporaneous market prices, I think, four months preceding and four months subsequent to the issue of the stock, so that was the prevailing market price.

The Chairman: The subsequent price, as well as the preceding, you have taken into account?

Mr. Lauck: Yes, sir. You see I did not prepare this table, Judge Chambers.

The Chairman: Well, is it the fact, that after the stockholders took these securities at the price you have named, the market price continued for four months afterwards as high?

Mr. Lauck: That is my impression, yes, sir. I have the actual note here as to how the man who prepared this table arrived at his actual market value. My recollection is he took four months preceding the issue of the security, and four months afterwards. Therefore, the stockholders could have sold these securities at an average of $169 and made the $27.

The Chairman: The individual stockholder after getting his share of the rights, could have sold his stock out on the market at this increased price?

Mr. Lauck: Yes, sir.

The Chairman: And, therefore, your argument is that the company could have done the same thing?

Mr. Lauck: Yes, sir.

The Chairman: And been $24,000,000 to the good?

Mr. Lauck: Yes, sir, which invested in the property, would have yielded $1,216,000 a year more than they are now paying all their firemen; but, my main point is that the stockholders in addition to receiving other benefits from the operation of this road, received this distribution amounting to $24,000,000 according to this computation, and that the operating efficiency of the road is being used to pay interest on this stock now. You see this stock is still paying 8 per cent., or did, in 1911, pay 8 per cent. dividends, I think.

The Chairman: And the public in the shipments of freights,

and in the passenger rates and charges are paying the interest on $24,000,000 of lost capital?

Mr. Lauck: Yes, sir, that is what it amounts to. That is all I have about the New Haven, unless there is something else.

(A recess of ten minutes was taken.)

(After Recess.)

Mr. Lauck: The next railroad which I wish to take up is the Lake Shore & Michigan Southern.

(The witness here produced a statement, which statement was received in evidence and marked "Firemen's Exhibit No. 16, Witness Lauck, received in evidence March 17th, 1913," and is attached hereto.)

Mr. Lauck: Referring to page 4, to the same diagram we have been considering in all the exhibits, it is seen that the tractive power of all the single expansion locomotives of this railroad, the Lake Shore & Michigan Southern, has increased, in 1912, as compared with 1902, 163.95 per cent. In the same period the freight train load has increased 17.19 per cent.; the ton miles of freight traffic has increased 57.7 per cent.; the freight train miles have increased only 34.09 per cent.; the per cent. of total train miles has increased 54.7 per cent. The conclusion there being the same as in the preceding exhibits, that a much larger volume of traffic, in 1912, as compared with 1902, has been handled with fewer freight train miles, and that the output, per fireman, in ton miles or in traffic, or in transportation produced or manufactured or transported has been 13.01 per cent. In other words, the productive efficiency of the freight fireman has increased 13 per cent. Along with this additional traffic handled, per fireman, has gone an increase in coal consumed, per fireman, of 30 per cent.; or, considering it upon the basis of a locomotive mile, an increase of 40.66 per cent. In 1912, as compared with 1902, the coal consumed per locomotive mile has increased 40 per cent.

Turning to page 6, a comparison is made as to the increase in cost of firemen, in terms of dollars and cents, and the revenue gains during the past fiscal year, during the past six years, and during the past eleven years. It is found, by referring to the first table on page 6, that the money cost of firemen to the Lake Shore & Michigan Southern has declined, during the year 1912, $73,000,

which was attended by a revenue gain in operating revenue of $2,200,000 in round numbers. In 1912, as compared with 1907, the cost for firemen increased $153,000, which was attended by a revenue gain of $7,000,000. In 1912 as compared with 1902, the increased cost of firemen in terms of dollars and cents was $502,000, and the operating revenue gain was $20,800,000.

Referring to the last table on the same page, it is seen that according to the method of distribution employed on a revenue train mile basis, that the increase in cost of freight firemen on this road in 1912, as compared with 1902, was $215,704, while the increase in freight revenue was $13,237,582. And, the same comparison is made as regards total transportation expenses or the expenses for the actual conducting of transportation and operating revenue on top of page 7.

The comparison in total transportation expenses during the past fiscal year shows an increase of $853,000, and the operating revenue increased $7,000,000.

I wish to make the same statement in connection with these comparisons that I have made in connection with all others, that these are put forward, not with any intention of indicating the gain in revenue from firemen, but simply indicating the increased cost of firemen, and the increased revenue gain. Nothing is attempted to be proved by this except the fact that revenue has greatly increased, as well as cost.

In Section 7 the comparison is again made on a fireman basis.

We find, in 1912, the cost of a fireman to the Lake Shore & Michigan Southern Railway Company was $835. In 1902 it was $675, being an increase in cost to the Lake Shore & Michigan Southern in 1912 as compared with 1902 of $160, or an increase in earnings of the firemen of $160. The operating revenue per fireman, according to a simple division, increased during this same period $3,147, leaving a net gain per fireman over and above increased expenses per fireman of $2,987. By using the word "net," I do not mean a surplus, but simply the gain over and above increased expenses per fireman. For a freight fireman it was $3,891, as can be seen from the top of the preceding page. I have not the passenger firemen there, but that would be comparatively low. The intent there is simply to show on the basis of dollars and cents, as in the preceding section, the relation between the

increased cost and the increased revenue, the only difference being the change in the standard of comparison.

Coming then to the real analysis on page 8, Section 8, that is per revenue train mile, which does not necessitate any distribution of cost, and accounts for all costs as well as all revenue, we find that during the fiscal year ending June 30, 1912, the cost to the Lake Shore & Michigan Southern Railroad for firemen per revenue train mile decreased .15 of a cent. We find also that during this year the total cost of transportation labor decreased .36 of a cent per revenue train mile, but the total expenses of conducting transportation increased 2.21 cents.

We find that the total cost of maintenance during the past fiscal year declined 5.05 cents. The labor cost of maintenance declined 6.5 cents, and the total cost of operation declined 3 cents per revenue train mile.

In other words, during the fiscal year 1912 the cost of operation of the Lake Shore & Michigan Southern Railroad, on a revenue train mile basis, declined 3 cents per revenue train mile.

During this year there was a gain in revenue per revenue train mile of 22 cents, which, added to the saving or reduction in transportation expense, made a net gain in revenue of 25 cents per revenue train mile.

The next table considers the past eleven years. We find in 1912 as compared in 1902 that the cost for firemen on this road increased 1.21 cents per revenue train mile, that all transportation labor, including firemen, increased 6.43 cents, and that the total expense of conducting transportation increased 9.55 cents.

During the same period, 1912, compared with 1902, the total cost of maintenance decreased 6.53 cents. The labor cost of maintenance increased 14.52 cents. The seeming inconsistency there would seem to me to be explained by the fact that, in the total cost of maintenance, labor became an increasing charge as compared with material. You see you have a decline in the total maintenance and an increase in the labor cost of maintenance.

Now, the total cost of operation, therefore, including maintenance, transportation labor, and all charges per revenue train mile, increased ten cents per revenue train mile. The revenue increased, however, 30 cents, leaving a net gain in revenue over and above all increased costs of operation including maintenance, transportation labor, firemen and so on, of 20 cents per revenue

train mile as compared with an advance of 1.21 cents to firemen, the immediate factor we are considering here.

During the past six years, as can be seen from referring to the table on page 10, the cost for firemen, or the outlay in wages for firemen per revenue train mile, increased .36 of 1 cent, total labor increased 4.11 cents, but the total cost of conducting transportation declined 3.62 cents, indicating that there was an increased labor cost in conducting transportation, but a decrease in other costs of conducting transportation, which resulted in a net reduction in operating expenses of 3.6 cents.

The Chairman: Conditions seem to be materially different on this road from the other, in the relative positions of the cost of labor and of materials.

Mr. Lauck: Yes, sir, in this one period. Well, in the last fiscal year, too, yes, sir. No, we had in the past fiscal year a decline in labor cost, but an increase in other costs. We had in 1912 a decline in cost of firemen, a decline in total transportation labor, but an increase in the other expenses of transportation.

The Chairman: Yes, that is what I mean.

Mr. Lauck: We had a labor cost declining all the way there. In the eleven years we had a labor advance but the other cost declined. But, referring to the continuation of the table on the top of page 11, we find that the cost of maintenance shows exactly the reverse that it did for the eleven years. We find an increase in the total cost of maintenance, and a decrease in the labor cost of maintenance, the increase in the total cost being roughly five cents, and the decrease in the labor cost being 1.67 cents.

As a net result of these relative increases and decreases in costs of the different factors per revenue train mile, we find that the total cost of operation increased 8 cents per revenue train mile, but the revenue increased 15 cents, leaving a net gain in operating revenue, over and above all increased costs of 7 cents per revenue train mile. The object, as heretofore explained, of course, of these tables and my object in presenting them is to attempt to show that the increased productive efficiency, or the increased efficiency in operation, and the increased work required of firemen, especially, has resulted in a revenue gain over and above the increased costs, which has met the increased costs and yielded a surplus.

The same object we are holding in view, in the locomotive cost analysis on pages 12 and 13. We have these statistics only for the past five years and, therefore, I compare 1912 with 1908. It is found that, in 1912, as compared with 1908, the increase for firemen per revenue locomotive mile of locomotives engaged in revenue producing service, was .32 of a cent. The labor cost of transportation including firemen, increased .14 of a cent. The total expenses increased 2.29 cents. The labor cost of maintenance increased 4.8 cents. The total labor cost of operation increased 7 cents. The labor cost of general administration, which of course is a part of the labor cost of operation and which means here the labor cost incident to the general expenses of the road, the securing of traffic and so forth, increased 2.11 cents. The total cost of operation increased 7.1 cents, but the total revenue increase was 15 cents per revenue locomotive mile, leaving a net gain over and above the additional operating expenses incurred per revenue locomotive mile, of 8 cents for each locomotive mile traversed which, of course, is many times the increased cost for firemen.

The same analysis is made on basis of locomotive miles, on page 13, including revenue and non-revenue service locomotive miles, which shows practically the same as the table just analyzed, a net gain of 7.97 cents per locomotive mile in excess of all increases in expenses per locomotive mile. The object there, the same as in the locomotive train mile tables, being to show that, owing to the increased efficiency of the locomotives or the increased efficiency of firemen working in conjunction with those locomotives, the revenue produced has been sufficient to cover the added cost and to yield a net return to the railroad.

On page 14 I again make use of this arbitrary assumption, relative to the share which the firemen should receive from the increased productive efficiency, or the share in revenue which the firemen should now receive, over and above the increased outlay for firemen and, in the case of the Lake Shore & Michigan Southern, applying this assumption and working it out, I find that in addition to the outlays which have been made for firemen during the ten years, 1902 to 1912, that the firemen should receive $222,653 more from the revenue produced.

Mr. Lee: Where is that?

Mr. Lauck: On page 14, the last table.

The Chairman: You mean that much distributed over the years 1902 to 1911?

Mr. Lauck: No, sir, I mean on the basis of comparing the operating results in 1911 with 1902.

The Chairman: That the firemen should have received that much more in one year?

Mr. Lauck: Yes, sir; that per annum, in addition to the total amount expended for firemen by the Lake Shore & Michigan Southern Railroad; this arbitrary and dogmatic assumption would indicate that the firemen should have a greater participation in revenue, amounting to $222,653.

The Chairman: Per year?

Mr. Lauck: Yes, sir; for all firemen.

The Chairman: On that road?

Mr. Lauck: Yes, sir. I do not know what per cent. that would be; it would be very small; I have not worked it out. On the basis of a train mile—

The Chairman: What do the firemen on that road get now?

Mr. Lauck: The total cost for all firemen on the Lake Shore & Michigan Southern during the past year $1,038,000, or to be exact $1,038,131.

The Chairman: Then you think they ought to have an advance of about 22%?

Mr. Lauck: Yes, sir; that is about the way this would work out.

Mr. Lee: 22%?

The Chairman: Yes.

Mr. Lee: I thought he said it would not amount to very much?

Mr. Lauck: I did, but I retract that statement.

The Chairman: That is the reason I asked him.

Mr. Lauck: I thought the cost of firemen on this road was more than that.

Mr. Carter: This $222,653 I understand is just a gain in revenue from firemen over increase in cost of firemen in 1911, as compared with 1902?

Mr. Lauck: Yes, sir.

Mr. Carter: That refers to the revenue and not to the labor, does it not?

Mr. Lauck: Yes, sir; that is giving to each labor element engaged in conducting transportation or to each factor of any kind whatsoever, a proportion in revenue equal to the proportion which its cost bears to the total cost.

Mr. Carter: Do you mean to say that had the firemen in 1911 received the same proportion of revenue in 1911 as they did in 1902, it would have been just this much more; is that right?

Mr. Lauck: No, I do not mean to say that at all.

Mr. Carter: I cannot get it clear.

The Chairman: No, I do not understand him to say that.

Mr. Carter: What I want to know is on what basis this increase is computed?

Mr. Lauck: This is the way I work it out; and, I might say also, that this assumption does not take account of the increase in efficiency or productivity of firemen, if there has been any, for the reason it puts all labor on the same basis. In other words, it assumes that if the cost of conducting transportation is 100 and the revenue return is 150, the firemen cost of transportation, or, the cost of firemen to the railroad, is 2½ out of 100 or 2% out of the 100 and that if you give the firemen 2% of the revenue, that you would have on this road, on the basis of these relative proportions, an amount still due to firemen of $222,653, in addition to the increased amount which has been paid in 1911, as compared with 1902. In other words, applying this assumption, there would be $222,653 in 1912 additional revenue due to firemen. It is simply an arbitrary assumption.

The Chairman: In the aggregate?

Mr. Lauck: Yes, in the aggregate.

The Chairman: Not per fireman?

Mr. Lauck: No, sir.

The Chairman: But, the aggregate of the firemen in producing these results, entitles all the firemen on that road in the aggregate, to a distribution among them of $225,000?

Mr. Lauck: Yes.

Mr. Carter: That is simply a problem of proportion, is it not?

Mr. Lauck: That is all.

The Chairman: Taking the same data that you have worked on, have you any idea what an expert employed by the engineers would figure out the engineers were entitled to.

Mr. Lauck: No, sir, I have not, but I was just remarking that this method would put all labor on an equal basis. That is, it would not account for the relative degrees of efficiency, only as exemplified in cost.

The Chairman: Now, I get your idea.

Mr. Lauck: The engineers' cost would be higher, probably, I should think the engineers' cost would be 4 or 5.

The Chairman: Notwithstanding your idea that the engineer in this problem ought probably to be entitled to less than the firemen, the engineers' share would work out proportionately just as you have worked out the firemen here?

Mr. Lauck: In so far as the cost to the railroad exceeded the firemen's cost, yes.

The Chairman: This calculation, then, of the proportion of these increased earnings that ought to go to the firemen, does not prejudice the engineers?

Mr. Lauck: No, sir.

The Chairman: Or the conductors?

Mr. Lauck: No, sir; or any other class of employees.

Mr. Carter: In fact, it is rather—

Mr. Lauck: It is rather to their benefit.

Mr. Carter: It is rather to their benefit, because their proportion would be eighty per cent. more.

The Chairman: Yes, in proportion to the amount they are now getting.

Mr. Lee: The more the firemen get, the less the others will get.

Mr. Lauck: Why, certainly, yes.

Mr. Carter: That is not polite.

Mr. Carter: The witness is under oath, while counsel is not under oath.

Mr. Carter: You do not mean to say that, if this $225,000 went to the firemen, there would not be practically $300,000 going to the engineers and $300,000 going to the conductors, would you?

Mr. Lauck: There would be a proportionate amount. I do not say how much it would be.

Mr. Carter: Whatever the proportionate expense of the firemen was to the entire expense. Would not that be true?

Mr. Lauck: The entire revenue.

Mr. Carter: I do not mean the expense. I mean the revenue.

Mr. Lauck: There is so much surplus revenue over and above operation. Of course, you could not follow this out to its logical conclusion on account of the fact that you would not have anything left for capital, if you applied it to all of them (laughter).

Mr. Lee: Honest confession is good for the soul.

Mr. Lauck: There is no confession about that. I think that is perfectly evident.

The Chairman: He laughs best who laughs last, and you had better let Mr. Lauck say something more on that. Do you mean to say, Mr. Lauck, that if you take the engineers' scale now, and the conductors', and every other factor that enters into the cost of transportation, and by that I mean every labor cost of transportation, that the distribution among them all would run into capital?

Mr. Lauck: Oh, yes, it would. We take all operating expenses. You have there all operating costs. You have general officers, superintendence, labor of all kinds, and material of all kinds. You have this item of depreciation, and so on.

If you would apply this theory to all operating costs, to each factor in those operating costs, as I applied it to firemen, you would simply have a result that all revenue gains resulting from operation would be absorbed and the property would be static; there would not be any improvement to the property; it would be maintained just as it is now, because I haven't taken into account the interest to firemen of new capital, but my claim is that new capital ought to produce its own interest to firemen; that is, if a railroad issues its securities and acquires locomotives, the locomotive ought to produce sufficient, under proper management, to provide for its depreciation, its repairs and renewals, and to yield a sufficient revenue to pay the interest on the capital which was used to purchase it. So, all new capital requirements ought to produce the same revenue gains as we do.

Mr. Lee: Your theory would not permit that though, would it, because you are only talking about operating revenue?

Mr. Lauck: Well, it would not permit it in this way. Before you go into the market to get money for your road, you have got to show the earning power before you get the money, I should think, but theoretically it would be the same thing.

Mr. Lee: Is that all, Judge, on that point?

The Chairman: Yes, sir.

Mr. Lee: I do not want to interrupt too much, but, coming back to that point I was mentioning before, suppose these firemen should get this $220,000 this year and the other classes of labor not get any increase, next year the fireman would be entitled to a greater proportion of the surplus, wouldn't he, because his wages had been increased this much, and their cost has been increased this much? Their proportionate cost would go up?

Mr. Lauck: Well, that is if the revenues remained the same it would, yes, but that is about as arbitrary an assumption as mine is.

Mr. Lee: Well, their proportion, of whatever revenue there was, would be greater than the other classes of labor, wouldn't it?

Mr. Lauck: If their proportionate cost increased, yes; but, we are assuming that the cost is related to the efficiency of the labor. I do not mean to say that all classes of labor are similar in their productive efficiency. I should think that firemen should be more efficient than maintenance labor or many other forms of labor. Their cost, in this proportion, is an indication of their relative efficiency.

Mr. Lee: Under your assumption.

Mr. Lauck: Under your method of paying them. If you do not pay them for that purpose, why just as you pay a general officer a great deal more than you do an engineer or a division superintendent, because he is supposed to be worth more to the road. But, I do not hold to this assumption; it is a purely arbitrary matter.

The Chairman: You can go on to something else.

Mr. Lauck: My theory is that the capital invested in the road should reproduce itself and yield a rate of interest. I think any capital that you did not borrow on those terms would be an evidence of bad financial management.

Mr. Atterbury: What about the elimination of grade crossings? That doesn't bring any return with it?

Mr. Lauck: That has been much mooted. I think the Interstate Commerce Commission has held that it would not be productive; that it should be paid out of income or surplus. I have noted that they have commented on the fact that removing

grade crossings passing through a city has enabled the trains to travel faster and the traffic to be handled more expeditiously and that it was productive. In my opinion, it would not be.

Mr. Atterbury: Where would you get the income to do it with, if you are going to pay it all out, under your theory?

Mr. Lauck: You would not have any income for that, under this theory.

Mr. Lee: You couldn't issue any stock for it, because it is non-remunerative.

Mr. Carter: If a man had hired ten men to dig a ditch in 1902 and, at that time, his profits were so much, and, in 1911, presuming the same men were working for him and digging the same ditch, at the same price, but because of the increased productive efficiency they were increasing his profits, your idea is that whatever they had increased his profits would be divided among the men because of the increased productive efficiency?

Mr. Lauck: That is about my idea.

Mr. Atterbury: To carry that illustration just a step further, Mr. Carter, say you have a ditch digging machine in general use out west that, we will say, cost $20,000, and you can reduce the cost per yard for digging that ditch from 40 cents to 20 cents, we will say. Now, you have got to return interest on that investment in some way, and yet, if you give it all out on Mr. Lauck's theory, you have got nothing to pay the interest on the capital invested in the machine that has enabled you to make this reduced cost.

Mr. Carter: But, perhaps there you would have fewer men digging.

Mr. Lauck: The only point I see in this theory would be for unproductive investment of capital. In the case of the ditch digging machine you would have an instrument maintained at its value, would you not?

The Chairman: In the case of a railroad,—the railroad is the machine in Mr. Atterbury's illustration,—and you do not provide anything, in your calculations, for the interest on the cost on that machine and the wear and tear on that machine, do you?

Mr. Lauck: According to this theory, all that would be provided for would be depreciation or wear and tear on the ma-

chine; but, as I stated in speaking of the totals, and considering all roads as one system, it would not provide for remuneration on that machine at 6%, say.

The Chairman: So you provide nothing; not 6% or any other per cent. for the capital invested in the railroad?

Mr. Lauck: No, sir.

The Chairman: You do not provide any sinking fund or surplus or whatever you call it to buy a new digging machine if that one was to explode or break to pieces?

Mr. Lauck: No, sir. All that this assumes—you will remember I stated that in the beginning, that this neglects the capital factor altogether, except in the way of maintaining it at its original cost.

The Chairman: You think the stockholders and bondholders ought to get some participation in this distribution, don't you?

Mr. Lauck: Undoubtedly.

The Chairman: But, if you did let them participate in the distribution, we will say on a 6% basis, in the case of this railroad, there would not have been $222,000 left to be distributed amongst the firemen?

Mr. Lauck: I would answer that by the statement—

The Chairman: (Continuing) That is, provided there was any increase in capital in that year?

Mr. Lauck: No, sir. If you gave this same increase to all the other factors engaged in producing transportation.

The Chairman: Is it fair to give it to one factor and not give it to all?

Mr. Lauck: No, sir, I don't think so. I think the fireman has done more work, and the brunt—

The Chairman: I might agree with you that if you get the same money result, at the end of the year, from the productive factors entering into its production, that perhaps the fireman might be entitled to a little more percentage, some more, and may be a good deal more than some, I might agree with you about that, but, if you deduct from this net corporate result, or whatever you call it—

Mr. Lauck: "Net corporate income."

The Chairman: —a reasonable dividend to the stockholders and bondholders on increased capital, I think that ought to come out just as well.

Mr. Lauck: Yes, sir; otherwise it would be a confiscation of property, of course.

The Chairman: And, if the engineers and conductors and trainmen were all here in this arbitration, they might get along harmoniously like the Allies in the Balkans, until they come to divide.

Mr. Lauck: I would like to make a statement—

Mr. Carter: Let me ask you the difference between the parallels there. We have tried to compare the experience of railroads with the experience of a man digging a ditch. In digging the ditch, the installation of a digging machine would perhaps reduce the aggregate cost of the employees, because it would be a labor-saving machine; while, in the practice on railroads, the addition of the big locomotives has increased the labor of the firemen, from the fact that this increased traffic has increased not only the number of the firemen, but the labor of each fireman, so the analogy is not correct, between the ditch digging machine, and the big locomotive.

Mr. Lauck: It seems to me I am being very magnanimous to other items of labor and expense in making this theory. I did not assume we were going to give everybody and every item something in proportion. Of course, if you logically carry it out that way, it would be just as Judge Chambers and Mr. Atterbury say, it would absorb all your surplus operating revenue. But, considering the fact which, to my mind, is taken from these statistics, that the brunt of this more efficient operation which has resulted in revenue gains has fallen upon the firemen and, you might say, upon the operating officers, it seems to me that the firemen and the people who have really brought this about, are the ones to get a share in the returns. Of course, if you carry this theory to its logical conclusion, you will include every one; but I do not see any reason for including every one, at the present time.

The Chairman: If you could get the other brethern to agree to that proposition, the railroads might have quietly given you what you want.

Mr. Lauck: Yes, but my idea is that we are considering it now on the basis of what they deserve, and that is the point I am concerned with; and, if it can be shown that the firemen deserve more, I am not considering what the others ought to get.

Mr. Carter: You mean to say that if one fireman is hauling

twice as much tonnage today as he was then, you believe he is the man you should think about?

Mr. Lee: Knowing nothing about the other factors.

The Chairman: If the fireman is handling twice as many tons of coal per day—

Mr. Lauck: That is the point.

The Chairman: If the fireman is handling twice as many tons of coal per day, in moving a train over 100 miles of railroad, he is doing proportionately more work in accomplishing that result than any other man on the train?

Mr. Lauck: That is my idea exactly.

Mr. Carter: Not only as compared with any other man on the train, but to the men in the offices?

The Chairman: Proportionately more than anybody connected with the railroad. Everybody knows he is doing more than the officers.

Mr. Carter: Does that include the general managers?

The Chairman: It includes the lawyers for the railroads too.

Mr. Lee: Present company excepted, I suppose.

The Chairman: Now, we have got an honest statement about this thing. You are working here for the firemen.

Mr. Lauck: Yes, because I believe—

The Chairman: Just as I would if I was hired to do it.

Mr. Atterbury: Mr. Lauck, can you not conceive a situation where, from a very serious falling off in business, while operating expenses would go on, the revenue might be so diminished that this figure, that now shows $222,000 on the plus side, would show on the minus side? Operating expenses go on whether business is large or small. Under such conditions would your theory be that the firemen's wages should be reduced?

Mr. Lauck: Do you mean a depression in business coming about, not through any fault of the railroad officials, but a financial panic or breakdown like we had in 1907?

Mr. Atterbury: Yes.

Mr. Lauck: I should say logically they ought to be reduced, yes.

Mr. Carter: Wait a minute! Suppose the first thing that happened when business was reduced was that half the firemen lost their jobs, and the other half did not work more than half time; then your basis would be entirely different, would it not?

Mr. Lauck: Yes, the basis would be different.

Mr. Carter: If the same number of firemen continued on the pay roll and drew the same amount of pay during a period of depressed business that they did in a time of good business, then Mr. Atterbury is right but, in practice, the roads have a peculiar idea that the proper thing to do when business falls off is to lay off the men.

Mr. Lee: What bearing has that on your theory.

Mr. Lauck: Mr. Carter's idea is that, if you lay off a certain number of men, the ratio of cost to the total cost would decline.

Mr. Carter: Would decrease.

Mr. Lauck: And, while you would have a lower cost for all firemen because the number would be less, the remuneration of each fireman ought to remain constant.

Mr. Carter: And, that would apply to all train men?

The Chairman: Then, you do not mean that the individual fireman would get less?

Mr. Lauck: No, sir, I am speaking of the cost to the railroad. I simply wanted to be logically consistent in my own idea, and I should like to say that I do not want to put in anything for the fireman here that may not be shown forth by the statistics, but my idea is and my belief is that the brunt of this thing has fallen on the firemen, as is clearly indicated by the statistics and, therefore, I firmly believe that the firemen should receive some of the reward growing out of this increased efficiency.

That is, that the operating officer has not done the arduous work, but he has done the brain work that has brought it about, and the fireman is having to do the physical work to put it into operation.

The Chairman: Brother Carter, I think you got even with them on that; so we will go on now.

Mr. Lauck: I think I had about completed the analysis of costs and gains per revenue locomotive mile. I would like to return to Part 5, now, sir, page 16. In Part 5 I attempt to show the distribution to the different factors as I have in the preceding exhibits, the revenue gains.

The Chairman: I think you need not dwell on that now, Mr. Lauck.

Mr. Lauck: All right, sir, I should think that was getting—

The Chairman: We will read that.

Mr. Lauck: I would like to call your attentioa to the fact that the surplus earnings of this road have been sufficient to maintain this property in a very high state of efficiency, and also to acquire the securities of quite a number of other railroads, as shown on page 21; that is, after paying liberally, I think this road pays 18 per cent. now.

The Chairman: What, dividend?

Mr. Lauck: Yes, sir, and in addition to that in 1910 the rate was 18 per cent.

The Chairman: Where are those percentages now?

Mr. Lauck: On page 23, the dividend record, last column.

Mr. Atterbury: I was wondering how you got that 18 per cent., Mr. Lauck, because apparently your stock outstanding is $104,000 per mile on which you pay a dividend of $5,354, or a little over five per cent. How do you get your 18 per cent.?

Mr. Lauck: You are referring to the dividend payments?

Mr. Atterbury: Apparently your second column shows $104,000 on page 23.

Mr. Lauck: All right, sir.

Mr. Atterbury: For 1910, stock outstanding, $104,000. Now, your dividend record shows amount per mile, common dividend paid, $5,355, which would be approximately 5 per cent. of the $104,000.

Mr. Lauck: The net capitalization, you will notice, is $98,000, or, well, it would have to be paid on the gross. I will correct that. This table is taken from Moody's Manual of Railroad Investments, and there must be a mistake there, in the $104,000. If I remember correctly, if my memory is correct, the common stock of the Lake Shore & Michigan Southern is only $50,000,000? Is that correct?

Mr. Atterbury: I really do not know.

Mr. Lauck: I think it is $50,000,000, and they have a small amount of what they call special stock on which they are required to pay a dividend of ten per cent., and then the remaining net earnings go to the $50,000,000 common stock.

Mr. Atterbury: Would that be included in this 18 per cent.?

Mr. Lauck: Yes, that is what they paid the dividends on.

Mr. Carter: I understand from this introduction there.

in Chapter 18, on page 21, that you state these tables are introduced to corroborate your previous statements, from Moody's Analysis of Railroad Investments?

Mr. Lauck: The tables are transcriptions from Moody's Analysis of Railroad Investments. I do not understand the point brought up by Mr. Atterbury, myself, and I will look it up.

Mr. Atterbury: What is that?

Mr. Lauck: I do not know how that could be, either, but I know the earnings have been 18 per cent. last year, and in addition to that they have made liberal appropriations for additions and betterments, and have had a large increase in surplus.

The Chairman: What does "margin of safety" mean?

Mr. Lauck: Applied to bonds, it is the proportionate amount of money that is remaining after the interest payments; that is if the funded debt is $1,000, and they have $500 left over, the margin of safety, as I understand, after that payment, would be 50 per cent.; they could incur some more indebtedness, and still have a good margin to work on. Of course, the Lake Shore has been one of the most profitable and most economically operated railroads in the country, and shows these large returns, and shows a very high rate of appropriations for additions and betterments, and a large part of their property has been acquired from surplus returns.

The Chairman: Are you through with this statement now?

Mr. Lauck: Yes, except I would like to call attention to what I did not refer to before, which we went over very carefully in the totals on page 4, the ratio of different items of cost to total operating expenses and operating revenues. I do not know whether it is necessary to go into that or not.

Mr. Carter: Page 16?

Mr. Lauck: Pages 15 and 16. On page 15 is shown the ratio of costs to total operating expenses and on page 16 is shown the ratio of costs to total operating revenues.

The Chairman: Well, if there is any point involved there that you have not explained, you may do so.

Mr. Lauck: There is no special point, the main idea being to attempt to show that the fireman has not been a predominant factor in bringing about increased labor cost of operation.

Mr. Carter: On page 18, you also referred to that in your previous testimony?

Mr. Lauck: What was the question?

Mr. Carter: I say you have generally referred to that "Part 15, payments to capital," on page 18.

Mr. Lauck: I have been over that, Mr. Carter, and Judge Chambers said he did not think it was necessary to go further into it.

The Chairman: Yes.

Mr. Carter: Have you another statement there?

Mr. Lauck: Yes, sir, for the Erie Railroad.

(The statement so offered and identified was received in evidence, and thereupon marked "Firemen's Exhibit No. 17, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.)

Mr. Lauck: The next road I have taken up has been the Erie Railroad. Having been limited to three roads, owing to the pressure of time, I thought it best to take one New England road, and one road that was operated at a very low labor cost, like the Lake Shore & Michigan Southern, and which was a very profitable road, from the standpoint of capital; then I thought it would be well to take the Erie, in view of the fact that it has had rather an unfortunate financial past, and the operating efficiency, at the present time, contrasts so sharply with what its financial management has been in the past, that it seemed to me to be very significant, along the lines that we are now considering. It seems to me that the operating efficiency of the Erie during the past ten years, or since it passed under the present management, has been marvelous, almost. You find on referring to our—

The Chairman: I thought somebody stood up there.

Mr. Carter: I have been bowing to Mr. Quick over there, but he would not look up at all.

Mr. Atterbury: I was at a loss to know whether he meant marvelously good or marvelously poor.

Mr. Lauck: Marvelously good, I think.

Mr. Quick: That compliment is appreciated.

Mr. Lauck: Which all goes to prove of course that the firemen should receive higher wages.

Mr. Carter: What are you going to say now?

Mr. Lee: Why, he is not a qualified expert; he has not qualified sufficiently to make such a statement.

Mr. Lauck: I did not go into the finances of the Erie. Referring to the same diagram—I guess it is getting rather monotonous at the present time—on page 3 we find that the locomotive tractive power on the Erie has increased 100% in round numbers in 1912 as compared with 1902. During this same period the increase in ton mileage or freight traffic has been 42.29%. The freight train load at the time I made up these diagrams, I did not have the data available from the report of the Erie Railroad to the Interstate Commerce Commission, but on referring to secondary sources, that is to Moody of Poor's Manual, I find that the freight train load on the Erie increased from 377 tons in 1902 to 527 tons in 1912, or 39.7%.

The Chairman: You haven't that in this table?

Mr. Lauck: No, sir; I will be glad to insert that later. The percentage of freight train load increase is 39% in round numbers.

Mr. Carter: That is not shown here in the diagram?

Mr. Lauck: No, sir.

Mr. Lee: 39% is it?

Mr. Lauck: 39.7.

Mr. Phillips: Would that be the second item, if inserted?

Mr. Lauck: Yes, the second item. If you will just put 39.7 right under the bracket, as to tractive power of locomotives, you will have it comparable with other roads. The very significant thing, it seems to me, in connection with the Erie Railroad is that, along with this increase of 42% in round numbers in freight traffic, there has been an increase of only .71 of 1% in freight train miles, clearly indicating that a larger amount of traffic, of course, much larger proportionately, has been handled per freight train mile. The total train miles on the Erie show an actual decrease of 22%, during the past 11 years.

Referring to the third bar from the bottom of the diagram, another significant feature which, of course, is especially interesting to me in this connection, is the fact that the ton miles per freight firemen, or the amount of traffic handled per fireman, in 1912, as compared with 1902, increased 45.7%, while the coal consumed per fireman increased 33%, or the coal consumed per locomotive mile 29.3%, the conclusion being, of course, as in the preceding analyses, that the increased train load which is indicated in the handling of a greater amount of traffic with fewer

freight train miles, has imposed an additional burden upon the firemen, in the way of more shoveling of coal or handling of coal, and that the fireman has given a more than commensurate return, by the showing as to the amount of traffic per freight fireman, an increase of 45%.

This showing of course is evident in comparison with other roads; it is that the Erie is getting much more traffic moved per fireman, and the fireman is not having to do proportionately as much work as on some other roads to move the same amount of traffic. That, I suppose, is due to the fact that the Erie is more suitable for heavier train loads than some other roads in the same territory.

The Chairman: Is the difference between the increase in coal used, on the New York, New Haven & Hartford and the Erie Railroad, for instance, per fireman—being a difference of about 7 per cent. in favor of the Erie—due to the electrification of the New Haven Railroad?

Mr. Lauck: It may be. I don't know, sir.

The Chairman: Because the road has increased in the number of tons handled and all that, in equally as large per cent. as the Erie, but the coal consumed, per fireman, has increased only 25 per cent. on the New Haven road, while it has increased 32 per cent. on the Erie, and, therefore, the fireman would seem to be doing, comparing the per cents., more work on the Erie than on the New Haven.

Mr. Lauck: Yes, sir. He is turning out more ton miles on the Erie. I would not know anything about the cause of that.

Referring to Section 6. I don't know whether you would wish me to take the time to go over that or not, Judge Chambers. That is the same comparison as to relative increases in cost of firemen. It is on page 5, bottom of the page. As to relative increase in cost per fireman, in 1912, as compared with 1902, and revenue gains. We have, during the past six years, an increase in cost or outlay for firemen, on the Erie Railroad, of $67,000, in round numbers, and an increase in operating revenue of two and a half million dollars. In freight firemen, referring to page 6, we have an increase in outlay for all the freight firemen of $156,913, and an increase in freight revenue of 7.9 million dollars. Perhaps, as before, I had better explain, in order that there will be no misunderstanding as to showing anything accurately by that

exhibit, that it is simply the intention to show the relative tendency of increase in cost and revenue. On the per fireman basis, the Erie paid, in 1912, as compared with 1902, $226 more per fireman, or the fireman has received $226 more, while the net revenue per fireman over and above this additional outlay of $226 was $6878. As to the freight firemen, the revenue over and above, the increased outlay for freight firemen, was $14,689, and for passenger firemen (page 7) $556. I would again remark there that those figures simply express, on a per fireman basis, what the preceding section expressed in dollars and cents, and have no significance beyond showing the relative increase in the cost and the relative gains in revenue.

The Chairman: According to those two statements, Mr. Lauck, the coal consumed per fireman has increased 32 per cent.?

Mr. Lauck: Yes.

The Chairman: And his pay has increased 38 per cent. Is that correct?

Mr. Lauck: You mean on page 6?

The Chairman: Take the diagram statement on page 3, the coal consumed per fireman. I take that to mean that the fireman has handled that much increase in coal, or has done that much more work, 32 per cent. more work in handling the coal. Then, by the statement at the bottom of page 6, it appears that he has received an advance of $226. I understand that to be per freight fireman, to use your own expression?

Mr. Lauck: Yes.

The Chairman: Each fireman on the road is now getting $226 more than each fireman got in 1902?

Mr. Lauck: According to these statistics, yes.

The Chairman: Of course, we understand that; and each fireman to-day is doing 32 per cent. more work than he did in 1902?

Mr. Lauck: Yes.

The Chairman: His responsibility being the same, the actual physical work done by him has been increased 32 per cent., while these figures show that his pay has been increased 38 per cent.?

Mr. Lauck: Yes. Of course, that statement would be subject to the criticism of the figures?

The Chairman: Yes.

Mr. Lauck: But, the figures there are the number of firemen

on June 30 of one year, divided into the total amount paid to firemen during the year.

Mr. Carter: Mr. Chairman and gentlemen, I do not want to be as emphatically expressive, at this time, as I was when the same matter came up on the B. & O., but take it from me, I mean the same thing.

Mr. Lee: And, that is absolutely erroneous.

The Chairman: I should like to hear you again on that, Mr. Carter.

Mr. Carter: I said that the number of firemen reported to the Interstate Commerce Commission, bears but little resemblance to the number of firemen actually in the service. May I present the table which you have handed to me?

Mr. Lee: Certainly.

Mr. Carter: In reply to your request for information, we find that, in 1912, if you will include all the firemen, the average earnings for the month of December were $79.55. There being 31 days in that month, that would be an average daily compensation of $2.56.

Mr. Lee: I have copies of this which I will hand to the Commission.

Mr. Carter: I supposed you had handed it to them.

Mr. Lee: I furnished it to Mr. Carter before I furnished it to the Commission.

Mr. Carter: Then perhaps I had not better talk about it then. I thought you had already furnished it to them.

Mr. Lee: No, I did not care to furnish it to them until you had seen it.

Mr. Carter: Perhaps I am a little premature then.

Mr. Lee: They will have copies of it in three or four minutes, so you can go ahead and talk about it.

Mr. Carter: This statement, prepared by the assistant of Mr. Lee, is evidently based upon the number of firemen in the service—all the firemen on the payroll in December, 1912. He finds by this statement that the average earnings for all the firemen during the month of December, were $79.55. This is not evidence, but I believe this statement is absolutely correct. Now, under the method adopted by the Interstate Commerce Commission, as applied by the different railroads, they show that

the average earnings per fireman on this road were $3.37 daily, for 1912, or nearly 50 per cent. more, as shown in the reports of the Interstate Commerce Commission, than as shown in this statement.

Mr. Atterbury: Mr. Carter, may I ask a question right there. Has the railroad any option as to how it shall furnish that information?

Mr. Carter: Very little. Yes, if they follow the strict letter, they would not.

Mr. Atterbury: They are simply following instructions that are laid down by a body entirely apart from the railroad organization.

Mr. Carter: I will say, in reply to that, and to use an expression that has been used here, theoretically that is correct, but, in practice, each road interprets that rule largely as it honestly believes is true. For instance I had occasion two or three years ago to make a little investigation on this line and I found in my home town that the Peoria & Pekin Union Railway was making a report to the Interstate Commerce Commission as to the average daily compensation of exactly the rate of wages that appeared in the schedule. I inquired around, and they said the officers of that road thought that, if a man actually earned a certain amount of money in a day, that that would have to be his average earnings for that day. And, they have reported to the Interstate Commerce Commission, or did at that time, the actual rate of pay. For instance, if they were paying a man we will say, $2.50 a day for doing work, they reported that his average wages were $2.50 for doing the work. Now, under the interpretation placed by many railroads upon the rule laid down by the Interstate Commerce Commission, it results in this peculiar circumstance. In 1912, based on the month of June, the Pennsylvania Railroad, Lines East, reported to the Interstate Commerce Commission that the average daily compensation of firemen was $3.37. Notwithstanding the fact that the month of December is a month in which firemen usually earn more money than in June, according to this statement the average daily compensation is only $2.56. Now, I am saying that they have done this without any intent to be unfair. They have simply placed this intepretation upon what the Interstate Commerce Commission wants, and as I understand it, it is what

the average daily compensation of the highly paid full time workers is, without regard to 50% of the men that are not highly paid full time workers.

Mr. Atterbury: Were those instructions in force, in 1902?

Mr. Carter: I presume that they were.

Mr. Atterbury: Then is it not fair to assume that the same factor of error that exists in the 1912 figure also exists in the 1902 figure, and therefore ought not the results to be reasonably compayable?

Mr. Carter: Well, I do not believe that they are comparable. For instance, one railroad will maintain a large emergency list, as they call it. We call it an extra list. They want plenty of men to do the work. Now, there is another road paralleling it where the men are compelled to work perhaps 25 per cent. more time than the men on the other road are permitted to work. For instance, I have learned that, in the last four or five months, I get these reports from our men, that they cannot lay off anywhere; when they want to lay off there is nobody to take their place, and they are earning more money lately than they ordinarily would. But, I will say to you, in the month of December they always earn more than they do in the month of June and for that reason, I do not believe if you go right down to bed rock you will find that there is very much increase in the firemen's wage, on the same engine, on any road—not anything like this.

Now, I will confess if, in 1902, a railroad had 100 little, 16 inch, 8-wheel engines, and today they haven't any of those engines, but have 100 big Mikados, that you can show this increase in wages, not for performing the same work but for performing double the work. But, if you take the same engine in 1902 and compare it with 1912, there is nothing like this appears.

On one division on the B. & O., I think it was, it was reported to me, if I remember right,—I think it is the Philadelphia Division,—in 1902, they had an entirely different class of engines than they have there now. There is no way of comparing it. I tried to make a comparison by taking the schedules. It is impossible to make a comparison, because the rates of wages in 1902 were based upon a small class of engines which were quite numerous. Now, today those engines are all gone; they have got very large engines. Now, if you are going to compare the wages of a fireman on a Mallet engine in the West, we will say at $4.00

a day, with the wages of a fireman on a little 8-wheel, 16 inch cylinder we will say at $2.95 a day, why, I will confess that you can show a wonderful increase in wages; but, I protest that is not an increase in wages; it is a different compensation for performing a different service.

Mr. Lee: If the Board please, the instructions that are issued by the Interstate Commerce Commission, on the point that Mr. Carter speaks about, ask for the aggregate number of days. Conditions vary so widely on different roads that it is not possible to make up the number of days in the same manner on every road. That is, one road may take one basis, which is proper for its road, and another road may take a little different basis, which is proper for its road. So far as we know, these different roads have taken this same basis all the way through a series of years. As to the figures quoted by my confrere where he quoted, I think, the average daily wage from the Interstate Commerce Commission and the wages from this statement, taking the monthly wage, the Interstate figures for average daily wage are obtained by dividing compensation by the number of day's work. His figures, that he quoted as $2.57 or $2.54, as I understand it, are taking the figure on the sheet at something like $78 and dividing it by 31, giving the value per calendar day.

Of course, the same remarks that we made the other day are applicable at the present time; that, "if this witness has drawn deductions from figures that counsel says are absolutely erroneous," I believe was his expression, it would seem that his deductions must always be absolutely erroneous and, therefore, irrelevant.

Mr. Carter: Now, let me show you how they might be still more erroneous than I said the other day. I don't want to prolong this discussion. There is another factor that enters into this; we have found by testimony submitted here that, in 1902, they could get over the road in nine hours. Now, it takes them, we will say, twelve hours. Now, a nine-hour day at 30 cents an hour would be $2.70. If they work twelve hours, it would be $3.60. I mean to say that the days are getting longer and longer with each year; we are doing more work for a day now than we ever did before.

The Chairman: We will adjourn until 2 o'clock.

(Whereupon, at 12:32 P. M., a recess was taken to 2 P. M.)

After Recess 2:00 P. M.

W. J. LAUCK, having been previously sworn, resumed the stand and further testified:

The Chairman: You may proceed.

Mr. Lauck: I had just reached the conclusion of Section 7 on page 6, if I remember correctly. At that point there was some discussion about the average daily and average annual earnings.

Mr. Carter: I think it was the last table on page 6 that caused the last discussion.

Mr. Lauck: Then I will take up Section 8, dealing with the same analysis of revenue train mile costs and increases in revenue that we have had for the preceding roads. I do not know whether it is the desire of the Commission that I go into this as much in detail or not. I can go through it more quickly if that is desired.

We find that the increased cost of firemen in 1912 as compared with 1902 was 1.37 cents per revenue train mile. The total expense of conducting transportation increased 4.89 cents. It is not possible to ascertain the other labor costs of conducting transportation per revenue train mile in 1912 as compared with 1902, for the reason that the Erie does not or did not report to the Interstate Commerce Commission in 1912, the total cost of labor engaged in conducting transportation.

Continuing the analysis: At the top of page 8 we find that the cost of maintenance upon this road per revenue train mile was 21.6 cents more in 1912 than in 1902. The total increase in cost of operation was 33 cents, including this heavy maintenance charge, which, it seems to me, is above normal as compared with other roads.

We find therefore that the net gain over and above these increased charges was 7 cents per revenue train mile. In other words, after all increased costs had been paid, including the increased cost of firemen, and this heavy maintenance charge, which was probably due to the heavy expenditures that were necessary owing to the condition of the Erie Railroad after 1902, when this new policy of management was adopted, there was a net gain in revenue of 7 cents per revenue train mile.

I will next take up section 9, page 10. I do not think it is necessary to go into the other analyses. They are similar to the ones we have already had.

Taking up the revenue locomotive mile analysis on page 10, we find that the increased cost of firemen during the past five years has been only .11 of 1 cent per revenue locomotive mile. The total transportation increase has been only .07 of 1 cent.

The labor cost of operation has increased 2.91 cents. The total cost of operation has decreased 6.82 cents, while the revenue has increased 9 cents, giving a net gain in revenue per revenue freight locomotive mile of 16 cents upon this railroad in the last five years. In other words, owing to the efficiency of the firemen and other labor, working in conjunction with the enlightened policy in the way of better equipment, and improvement of roadbed, there was a net gain of 16 cents. There was an actual decrease in the cost of operation per revenue locomotive mile, and a net gain in revenue, amounting together to 16 cents, which as you can readily see is many times the increased cost of firemen.

The Chairman: This table showing the cost of maintenance for five years shows that the cost for one year was abnormal?

Mr. Lauck: Yes. The situation as regards maintenance from what I have read in the financial manuals shows that when this new policy was inaugurated, the road was in a dilapidated condition, and a great deal of the earnings was put back into the road, and heavy maintenance charges were necessary, which have now developed the road to a very high degree of efficiency comparatively speaking. Of course the necessity for heavy maintenance charges will decrease as the years go on. In other words, if these facts are correct, they may have very light maintenance charges in the future.

Turning to page 11, the same method of analysis discloses practically the same result. It shows a decrease of practically the same amount in cost of operation per locomotive mile, all locomotive miles being considered, and a net increase in operating revenue, or net gain over and above all increased costs of 15.68 cents per locomotive mile.

The Chairman: Why should not that work out exactly as 16 cents?

Mr. Lauck: The reason is that in the first table I have considered only revenue locomotive miles, which are somewhat fewer in number than all the locomotive miles. The only difference is in the second table, that I have added the locomotive miles which

the company used for its own service; that is, in hauling its own work trains, or hauling its own material trains, or for any other purpose, its own cars, so that would be slightly more than just the locomotive miles.

The Chairman: The caption of both those statements says, "Revenue locomotive miles."

Mr. Lauck: The first says, "Revenue locomotive miles," and the second says "Costs and revenue per locomotive mile." It should be just "Per locomotive mile."

In Section 10, the same comparison is made. I do not think it is worth while going into that. It is the same comparison we have had all along, and simply indicates the relative increase in cost upon a freight locomotive mile, and revenue freight train mile, and a revenue passenger train mile, the cost of firemen as compared with revenue gain, exhibiting the relative tendency of the cost of firemen to increase and the relative gains in revenue. For instance, on the freight locomotive mile, the increase in cost of firemen has been the same as it practically has for all locomotive miles of 1/10 of one cent, and the revenue gain is 11 cents. In revenue freight train miles, the increase in cost has been 1.41 cents, due to the fact, of course, that probably more locomotive miles are used for each freight train mile; 1.41 cents and a revenue gain of 72 cents.

Page 12 in the case of the passenger mile, the increased cost of firemen for the past 11 years has been 1.39 cents, and the revenue gain 15.76 cents.

Applying the arbitrary that I have on preceding roads, I estimate, on that basis—the middle table on page 12, that the gain in revenue from firemen, over and above increased cost of firemen, which should go to the firemen from this road, is $213,878.

Turning to page 16, the same method identically is used to work out the disposition of these revenue gains, the relative shares to firemen as compared with what accrued to capital requirements of the road. You will find in the left column, 1912, compared to 1902, as we have already seen, the increase in cost of firemen on the revenue train mile was 1.37 cents. The net gain in operating revenue per revenue train mile, during the eleven years, was 7 cents. The income from securities owned during this period also increased 8 cents, but the net corporate income decreased

7.53 cents. The dividends in 1912 were 8 cents less per revenue train mile than in 1902, while additions and betterments were 2.22 cents more in 1912, per revenue train mile, than in 1902, and the surplus accumulated, reduced to a revenue train mile basis was 83.29 cents more per revenue train mile in 1912 than in 1902; these figures clearly indicating that although dividends had been paid by this road from 1902 to 1907, it was decided as the better part of financial policy, to devote the earnings of the road to the up-building of the property, and the net corporate income from 1907 was therefore used to put the road into an efficient working order and to accumulate a surplus. This surplus amounted to, in 1912, expressed in dollars and cents (bottom of page 16) $25,850,482.

Mr. Atterbury: How do you know that that surplus has been accumulated from earnings?

Mr. Lauck: I don't know that exactly. It might be accumulated—they might have made a profit on stock sales or anything of that kind.

Mr. Atterbury: I assume that it is possible to do that by marking up the enhanced value of any assets that they might have?

Mr. Lauck: Yes, sir.

Mr. Atterbury: That would affect the surplus in the same way?

Mr. Lauck: Yes, sir. That is, if there should be an appreciation in real estate holdings or income holdings. I do not mean to claim any surplus may be entirely due to revenue gains; all I mean to claim was that there was an asset there gained through revenue or some other source. The point I wish to bring out in connection with this road is the fact of its highly developed efficiency during the past 11 years, the fact that the revenue has been generally accepted, or the increased revenue gains have been put back into the road to make the road more efficient, and that the road is gradually approaching a stage, resulting from this highly developed efficiency, where its financial status will be satisfactory. The object that I have in bringing this out is to show the general claim that I am making that the firemen have not participated in the proportion that the capital requirements of the road has.

I proceed further then to show the amounts of gross corporate

income, interest on funded debt, dividends in terms of dollars and cents, and the amounts, page 17, which have been put back into the property in additions and betterments from the earnings of the road. You will see for the period 1903-1912 this has amounted to $14,848,000. The conclusion or the estimate at page 18, second column right below the page is that for every dollar additional paid to firemen during the past eleven years, about $4.00 has been used for the benefit of the stockholders.

Mr. Atterbury: Where is that?

Mr. Lauck: Page 18, second column, immediately following the table. The entire outlay for firemen during this same period was only $10,000,000. For every dollar paid to firemen, the stockholders therefore received more than $4.00, based upon the benefits that have accrued to stockholders through additions and betterments, through accumulation of surplus, and through dividends.

I also call attention to the fact that during the past a considerable amount of additions and betterments, or additions to the property in this form, page 17, have been charged to operating expenses by this road, as was the practice of all roads prior to 1907.

The concluding statement, page 19, is taken from Moody's "Analyses of Railroad Investments," in which he comments upon the fact that the operating performance or management of the Erie is rapidly putting the Erie back into a satisfactory financial condition.

Mr. Atterbury: That statement on page 19 says per mile of road. How many miles of road did you use as your basis in that figure?

Mr. Lauck: That statement is taken verbatim from Moody's "Analyses of Railroad Investments." I can give you the mileage. By the way, the point you called my attention to this morning, the Lake Shore & Michigan Southern, where the capital was indicated as $104,000, I believe, that was a typographical error, due to the fact that the printer had transposed the box heads. That should be bonds, and the capitalization is Twenty-five thousand eight hundred and some dollars per mile, the division of the Fifty million dollars common stock.

The Chairman: That Five thousand and odd dollars per mile was dividend on $25,000?

Mr. Lauck: Yes, sir; about eighteen and a fraction per

cent. In 1907, Mr. Atterbury, he states 2265 miles as the mileage; and 1912 is 2258. These tables are taken verbatim from some proof sheets for 1912, that I have of Moody's "Analyses of Railroad Investments," which anyone is welcome to use.

Mr. Lee: 1912 is not yet published?

Mr. Lauck: No, sir; just 1911. These are the 1912 sheets that I borrowed.

Mr. Lee: 2265 referred to 1911?

The Chairman: Why is it that there are no surplus earnings distributed on the stock for dividends since 1908?

Mr. Lauck: The reason for that is they have taken the earnings of the road and used them to improve the property; that is, the stockholders have decided evidently, that it is better policy, as a long time proposition, to improve the property and get it into efficient working order by the surplus earnings than to use them as dividends.

It is an ultimate benefit to the stockholder, just the same as the dividends would be.

Page 19, you will notice Mr. Moody comments upon that and commends the policy and states that—of course the Erie Railroad has been notorious for its financial manipulation. I did not say anything about that for the reason I did not think it would be in place here, and also it would be sort of like hitting a cripple to say anything about the Erie's past financial performance. I think the capitalization now is very excessive per mile. The claim has been made that if the Erie was capitalized on the same basis per mile as the other railroads shown for the United States, that it could pay dividends and still have sufficient funds left for—

Mr. Atterbury: Does not that show in your fixed charges?

Mr. Lauck: To some extent.

Mr. Atterbury: That is, it shows the average of a ten-year period is $5,739 as against $8,694 for the D., L. & W.; $4,600 for the Lehigh Valley; $6,300 for the New York Central, and $10,484 for the Reading.

Mr. Lauck: The common stock is what I was referring to, Mr. Atterbury, which they used to get out on printing presses, you know. That is all I believe I have to say about the Erie, unless there are some questions.

Mr. Phillips: I understood Mr. Atterbury called attention to some apparent discrepancy and that you made some correction?

Mr. Lauck: Yes, sir.

Mr. Phillips: Was that in your Lake Shore Exhibit?

Mr. Lauck: The Lake Shore & Michigan Southern. I would like to correct that in the record.

Mr. Carter: What page?

Mr. Lauck: Page 23 of the Lake Shore & Michigan Southern Exhibit. The second box-head, you will find the statement "Bonds outstanding and per cent. of whole." Scratch out "bonds" and substitute "stock." In the third column you will find "Stock outstanding and per cent. of whole." Strike out "stock" and substitute "bonds" which makes it correct. That concludes what I have to say on that exhibit.

Mr. Carter: Have you some more?

Mr. Lauck: Yes, Judge Chambers, that concludes the three roads to which you limited me.

The Chairman: If there is any other one road—we said three, but you might take another one.

Mr. Lauck: I think that the point I have been trying to make is clear, I mean my intent, and the Board can judge as to the validity of it by the other exhibits. I have several other exhibits I would prefer to submit rather than take some more roads, one or two corroborative exhibits.

Mr. Carter: Do you want the typewritten statement headed "Gains in Operating Efficiency" introduced as an exhibit before you introduce the exhibits as to the other roads?

Mr. Lauck: Yes. We have not the others ready yet.

The Chairman: We expect you to file the others.

Mr. Lauck: Yes. I will file them before four o'clock. They have so many typographical errors as a result of haste in printing them, that we wish to correct them.

The Chairman: We prefer to have them filed in numerical order, and this exhibit will be numbered to follow the others, instead of being numbered consecutively at this point to follow the others which have been consecutively numbered.

Mr. Carter: Please explain the purpose of this exhibit?

Mr. Lauck: The purpose of the present exhibit is to give, briefly speaking, an official verification of the general theory which I have been putting forth here. That general theory with reference to the firemen, is, that the railroads have greatly decreased their cost, or increased their operating efficiency, by

handling a larger amount of ton miles with fewer freight train miles. The deduction that I drew from that was that the brunt of that fell upon the firemen. That fact is plain, that the fireman's work has been more arduous, and the output of the firemen in terms of traffic has been greater. All I want to show by this exhibit "Gains in Operating Efficiency," is, that this theory is not peculiar to me as regards the general question. Of course, they do not refer particularly to the firemen; but from reading quotations from a number of the railroad presidents, as I read from the report of President Weller of the Baltimore & Ohio a few days ago. It shows that this has been going on on the various railroads.

On the first page of this exhibit we find a quotation which I read several days ago, from the last annual report of President Weller of the B. & O. In the same connection I should like to read some of the other quotations which seem to me to be especially pertinent or significant in this connection.

I select No. 3, the Delaware, Lackawanna & Western Railroad, and quote from the report of President Truesdale for 1911, page 12. He says:

"During recent hearings before the Interstate Commerce Commission at Washington—"

The Chairman: What page of this exhibit are you reading from?

Mr. Lauck: Page 2, the third road, the Delaware, Lackawanna & Western. I did not read from the annual report of the President of the Baltimore & Ohio, because I read that several days ago.

Mr. Phillips: I call your attention to the fact that these typewritten exhibits are not exact copies of one another.

Mr. Lauck: The roads are numbered consecutively.

Mr. Phillips: The language quoted and the numbers of the roads may be identical but the arrangement is not exactly the same.

Mr. Lee: You are reading from the Delaware, Lackawanna & Western?

Mr. Lauck: Yes, Delaware, Lackawanna & Western, No. 3.

Mr. Phillips: We will follow the reading and see if the language is the same.

Mr. Lauck: President Truesdale says:

"During recent hearings before the Interstate Commerce Commission at Washington—"

Evidently referring to the advanced rate case of 1910.

"—a very general attack was made on the methods of management of the railways of the country. It was claimed with great assurance and audacity that they are wastefully and inefficiently administered. As bearing on this question little, if any, proof is submitted substantiating the claims made. A general sweeping indictment was drawn and argued by the legal talent representing certain interests."

The Chairman: That evidently refers to Mr. Brandeis?

Mr. Lauck: Yes, it evidently refers to Mr. Brandeis.

"Without attempting any general defense of the railways to this unjust claim, a brief comparison of the operating results of this company for the years 1900 with those for the year just closed—"

I should like to call your attention there to the fact that this covers almost the period that we have been considering here. We have been considering the period from 1902 to 1912 inclusive, while Mr. Truesdale was considering the period from 1900 to 1910 inclusive—

"will be of interest and show that the sweeping charges made are erroneous and unjust as applied to the railways of the country as a whole. The operations of the year of 1910 as compared with those of 1900 show the following increases:

"Total tons of freight handled	60%.
Tons handled one mile	80%.
Total passengers handled	80%.
Passengers handled one mile	77%.

"This service was rendered with an increase of but five per cent. in freight train mileage,"—this is a lower per cent. than anything I have claimed in any of my exhibits,—

"and 8% in passenger train mileage. The increase in tons handled per freight train mile was 74%,—" I don't think we had a figure that high. We may have had. We have some in the sixties, but not that high,—"the earnings per freight train mile was 65 per cent. and per passenger train mile, 60%. Total increase in cost of transportation was but 46.6 per cent. The results as to total cost of transportation as applied to units of

traffic, i. e., the cost per ton mile and per passenger mile, combined, show a decrease of 19.9%. There was substantially no increase in mileage of main tracks and the increased traffic was handled without an increase of but 19 per cent. in number of locomotives, 17.5% of passenger train cars, and 4.3% of freight train cars in service.

I would like to read No. 5.

Mr. Carter: What road?

Mr. Lauck: Hocking Valley Railroad. That is in a different territory, a soft coal road, while the other is a hard coal road. "Page 7, Annual Report for 1910. 'Revenue per train mile was $2.97, an increase of 4.2%. The revenue tonnage per train mile was 649 tons, an increase of 61 tons, or 10.4 per cent. The average tonnage per loaded car was 34.2, an increase of 6.2 per cent. Passenger revenue per train mile was $1.03, an increase of 6.2 per cent.; including mail and express, it was $1.21, an increase of 7.1 per cent.'"

Mr. Carter: Was that 1910 over 1909?

Mr. Lauck: That was during the fiscal year 1910 compared with 1909,—fiscal or calendar year, I don't recall which. In 1911, the same comparison is made. "Revenue per freight train mile was 3.25, an increase of 9.4 per cent. The revenue tonnage per train mile was 735 tons, an increase of 86 tons, or 13.3 per cent., including company's freight. The tonnage per train mile was 759 tons. The average per locomotive mile, including company's freight, was 674 tons, an increase of 12.9 per cent," for the fiscal year 1911, or for the year which the report covers.

Mr. Lee: You have two tonnage statements there, I think, in revenue train miles—I am not sure—one is 735 and the other is 759. This 759 is inclusive of company's material?

Mr. Lauck: In the first statement he makes the statement that it does include company's material, you will notice. At the bottom of the page. The way I understood that was that—

Mr. Lee: Isn't it a question of punctuation there? Where you say "Including company's freight," in the third line of the statement, should that be a comma before that?

Mr. Lauck: I think that is correct. I am not certain of that. That would be the logical thing. A capital "I" "Including company's freight."

Mr. Phillips: It is taken from whose report?

Mr. Lauck: I don't know whether it was the President or the Board of Directors. It is in the Commercial and Financial Chronicle, June 30th, 1911.

Mr. Phillips: You copied it from that?

Mr. Lauck: Yes.

Mr. Phillips: And reference to that would show. I think you are absolutely right, Mr. Lee.

Mr. Lee: I thought it was a little involved, and I was just trying to straighten it out.

Mr. Phillips: The sentence is incomplete.

Mr. Lee: Yes, it did not read right.

The Chairman: It seems to me there ought to be a period after "13.3 per cent."

Mr. Lee: And start a new sentence.

The Chairman: Start a new sentence with a capital "I," with a comma after "freight" and a small "t."

Mr. Lauck: I think if we corrected it that way, it would be correct; I mean if the alteration was made.

Mr. Lee: It would seem so, yes.

Mr. Lauck: Referring to the Pennsylvania Railroad No. 8, I think this is the usual statement that you find in this road but very few others; they work out the average revenue per ton mile and expense per ton mile, and the average revenue per ton mile. That would be the net operating revenue. You see there that in 1911 as compared with 1910, there was a gain in revenue per ton mile, and the statement is made that with the exception of 1909, this is the lowest expense per ton mile since 1902.

Mr. Lee: That last column in the table is the average net revenue per ton mile?

Mr. Lauck: Yes, sir.

Mr. Lee: The heading does not show it.

Mr. Lauck: Well, I think it is evident there as it is a deduction of expenses from revenue.

Mr. Lee: You say this is the lowest—

Mr. Lauck: This is the lowest expense per ton mile according to the report, since 1902.

Mr. Lee: It is not going up very fast then, the net revenue per ton mile?

Mr. Lauck: No, I think that is a common complaint of all, isn't it? Referring to the Pennsylvania Company, we have a

similar statement, not similar as compared with the Pennsylvania Railroad, but we have the statement No. 9, the same page, that the decrease of $1,156,564 or 6.20 per cent. in transportation expenses was due to a reduction of 17.91 per cent. in mileage of freight trains and to a heavy reduction in yard forces.

Mr. Carter: I understand that all these statements are comparisons of the years stated there with the previous years, are they not?

Mr. Lauck: Oh, yes, except the report of President Truesdale, in which he referred to the so-called indictment of the management of the railroads, in which he took a 10-year period from 1900 to 1910, which was somewhat similar to our period; but these all refer to the past fiscal year just as President Willard's the other day did. In the Pittsburg, Cincinnati, Chicago & St. Louis No. 10, we find the statement that the reduction in transportation expenses of $855,000 in round numbers, or 5.95 per cent., was principally due to a decrease in freight train mileage of 14.64 per cent., train mileage.

Mr. Lee: Which one is that you are reading?

Mr. Lauck: No. 10.

Mr. Atterbury: Apparently there is some mistake in there, isn't there, Mr. Lauck?

Mr. Lauck: Yes, sir; I just caught that while I was reading it. Freight train mileage; there should be a comma after freight train mileage I think. There is evidently something left out there, something omitted. "Principally due to a decrease in freight train mileage of 14.64 per cent." I will refer that back and I will correct that in the record.

Mr. Carter: This purports to be simply a quotation.

Mr. Lauck: This is a quotation but I think the typewriter (I haven't had a chance to verify it, or not to verify it, but read it over), I think has inserted ton mileage there which sould not be there, but I would not want to put any presumption of that kind into the record. I will change that. The main point from the statement, however, is clear, that the decrease in transportation expenses was accomplished by a reduction in train mileage largely through the increase in train loads on the line between Bradford and Logansport. The other quotations are similar, and I do not think it is necessary to take the time of the Board in reading them.

Mr. Lee: I might say that the report if the Board please, of the Panhandle, does not include those three words "in ton mileage."

Mr. Lauck: Have you a copy of the report?

Mr. Lee: I have.

Mr. Lauck: Suppose you correct the statement then.

Mr. Lee: The statement that is made, for the benefit of the witness and the Board, should read "the reduction in transportation expenses of $885,000—"

Mr. Atterbury: $885,000?

Mr. Lee: $885,000.

Mr. Atterbury: This reads $855,000.

Mr. Lee: "$885,653.42 or 5.95 per cent., was principally due to a decrease in freight train mileage of 14.64 per cent."—

Mr. Atterbury: You mean "ton mileage" comes out?

Mr. Lee: Yes, sir. Then there is a whole lot in here that is not in that.

The Chairman: Give it.

Mr. Lee: "Which while partially caused by a decrease of 7.19 per cent. in ton mileage"—

The Chairman: That ought to go in?

Mr. Lee: They have got a little twisted; they have left out a part of a sentence there.

The Chairman: Probably a line.

Mr. Lee: "Was largely accomplished through the increase in train load on the portion of the line between Bradford and Logansport where the grade reduction work had been substantially completed in the latter part of 1910." That part was omitted.

The idea I had in presenting these, as I stated in the begenning, was to substantiate the statements made in the exhibits by roads and by totals for all roads, as to the decrease in operating costs or the relative gain in operating revenue as compared with operating cost increases.

Mr. Carter: What is next?

(The Witness here produces a statement which was received in evidence and thereupon marked Firemen's Exhibit No. 50, witness Lauck, received in evidence, March 17th, 1913, and is attached hereto.)

Mr. Lee: That quotation from the annual report of the

Panhandle Road from which I have read will be substituted for this quotation?

The Chairman: Yes. I understand Mr. Lauck will revise all the quotations in this to correspond with the original?

Mr. Lee: And the full quotation and not only a portion of it?

The Chairman: Yes.

Mr. Lee: Where it is material.

Mr. Lauck: Do you mean about the grade improvement?

Mr. Lee: Yes.

Mr. Lauck: Yes, that is perfectly agreeable to me.

Mr. Lee: Because that is the reason for it?

Mr. Lauck: It did not lessen the work any.

Mr. Lee: What?

Mr. Lauck: That does not have any significance to me except that it is the reason for it. Of course the train load was increased and the work was to be done.

Mr. Lee: The reduction of grades does not increase the work of the firemen, does it? I do not understand it was anything intentional on your part.

Mr. Lauck: No.

Mr. Lee: It was not my purpose to bring out the thought that you intended to leave anything out.

Mr. Lauck: No. This exhibit which is entitled "Effect of Increased Wage Payments to Locomotive Firemen upon Operating Revenue" is an exhibit which I referred to the other day as stating that I intended to submit it, and is taking the ratio of cost of firemen to operating revenue for 1912, for each road and then taking say 10%, 15%, 20%, 25%, 30%, 40% and 50%, to show what increase it would make in the ratio of cost of firemen to total operating revenue; in other words the ratio of cost of firemen to operating revenues, or the amount or revenue absorbed would be a better term, by locomotive firemen in 1912 was 2.66% for the Baltimore & Ohio Railroad. Continuing that in a 10, 15, 20, 25, 30, 40 and 50 per cent. basis, you get an idea as to what the increase in the ratio to operating revenue would be. I would like to submit these exhibits showing what the actual amount of mileage would be.

Mr. Atterbury: Have you this in percentages or averages, these other columns?

Mr. Lauck: The totals?

Mr. Atterbury: Yes.

Mr. Lauck: No, I have not the totals. I think you will find that in the exhibit for all roads.

Mr. Atterbury: That is all right, that gives what I want.

(The witness here produced a statement which was received in evidence and thereupon marked Firemen's Exhibit No. 51, witness Lauck, received in evidence, March 17th, 1913, and is attached hereto.)

Mr. Lee: One of these is to be considered with the other?

Mr. Lauck: One shows the increase in the ratio of revenue absorbed and the other shows the increase in the amount of money which would be taken from the ratio. In other words, 10% increase in the ratio of revenue absorbed by locomotive firemen in 1912 on the Baltimore & Ohio Railroad would be equivalent to 2.66%. That would be equivalent to $246,301 absorbed from the revenue. Similarly, continuing, 15% increase on the Baltimore & Ohio, for the purpose of illustrating the object which is all I had in view with this exhibit, would be 39.9 cents increase in the ratio and the amount of money would be $369,451; and similarly through the other roads in the other columns. In other words the ratio of revenue absorbed for each road by wage payments to firemen in 1912 is given in the exhibit first presented, and on the basis of that ratio an increase of 10, 15, 20, 25 and so on per cent. is given, as to the effect it would have by increasing the ratio, and in the other exhibit the proportionate amount of money is shown.

Mr. Carter: Take the roads as a whole, what does it mean?

Mr. Lauck: For the roads as a whole, I have not all of them.

Mr. Carter: I mean all the roads you have here. Go back to the start.

Mr. Lauck: Ten per cent. would be $2,261,912. Fifteen per cent. would be $3,386,326.

Mr. Carter: I will ask you, when did you prepare this statement?

Mr. Lauck: It is based on the operations for 1912.

Mr. Carter: When was this typewriting done? How long ago did you accomplish this work?

Mr. Lauck: Just a few days ago.

Mr. Carter: About two or three months ago I told the Managers' Committee that 15% increase would be about $4,000,000, as I read it in the stars.

Mr. Lee: Oh, no, that was not what you read. That was another $4,000,000 estimate. You frankly state that this 15% of the total wages was about $4,000,000?

Mr. Carter: Yes, it is.

Mr. Lee: You did not get that from the stars?

Mr. Carter: I said if our wage request was granted, it would amount to about 15% increase, or about $4,000,000. These figures, prepared without any collusion, or any forethought on my part, are a little better than I thought.

Mr. Lee: Anybody can figure what 15% would amount to if they have a basis to figure on. 15% on the payroll of the firemen would amount to about $4,000,000. Anybody can figure that. The $4,000,000 my confrere is talking about is some other proposition.

The Chairman: Are these tables of operating revenue correct, Mr. Lee?

Mr. Lee: I have not had a chance to check them. I do not know anything about these figures.

Mr. Lauck: You remember we had a question up about the Lake Shore & Michigan Southern. You will find there we were speaking about 22% increase, and I am consulting the second exhibit showing dollars and cents. It shows that ten per cent. on the Lake Shore & Michigan Southern is $103,000. 15% is $155,000. 20% is $207,000. I believe the figures we referred to this morning was $222,000, so the estimate there was approximately correct.

Mr. Lee: Answering the question of the Chairman as to whether these figures of operating revenue are correct, I can answer as to our own road that these figures are not correct as to the Pennsylvania Lines east of Pittsburgh.

Mr. Lauck: What do you mean by the Pennsylvania Lines?

Mr. Lee: You have got it marked "Pensylvania Lines (East of Pittsburgh)." By that I mean all the roads owned and operated by the Pennsylvania Railroad East of Pittsburgh.

Mr. Lauck: All I mean by that is the Pennsylvania Railroad.

Mr. Lee: The Pensylvania Railroad proper?

Mr. Lauck: Yes. I do not mean the Philadelphia, Baltimore & Washington and other lines.

Mr. Lee: You do not mean to include the Northern Central?

Mr. Lauck: No, sir.

Mr. Lee: Those firemen get no increase then.

Mr. Lauck: I have nothing to say as regards that. I do not know anything about their status.

Mr. Carter: Is this the way they reported it to the Interstate Commerce Commission?

Mr. Lauck: I think they call it the Pennsylvania Railroad.

Mr. Lee: But then there is the Northern Central. No doubt, this is a transcript of what you found.

Mr. Lauck: I might say that in all my exhibits I have simply called it the Pennsylvania Railroad, knowing that that was not the absolutely correct designation. Where it says, "Pennsylvania Lines (East of Pittsburgh)," it means "Pennsylvania Railroad."

The Chairman: Is that likely to create any confusion?

Mr. Lee: I am rather inclined to think it may. I am not clear on that yet.

Mr. Lauck: I understand that "Pennsylvania Railroad" is the designation of the operating company, and its operating revenues cover the companies which it manages. It does not include the subsidiary companies which it controls.

The Chairman: The word "Pennsylvania Line (East of Pittsburgh)," and "Pennsylvania Line (West of Pittsburgh" do not include them all the railroads that belong to the Pennsylvania system?

Mr. Lauck: No, sir, they include what are technically known as the Pennsylvania Railroad and the Pennsylvania Company.

Mr. Lee: Do the words "Pennsylvania Lines (West of Pittsburgh)" include the Panhandle, the C. C. C. & St. L., or do they include simply the Pittsburgh, Fort Wayne & Chicago?

Mr. Lauck: Just the Pittsburgh, Fort Wayne & Chicago, according to my understanding. It includes what you designate to the Interstate oCmmerce Commision as the Pennsylvania Company, if you know what that is.

Mr. Carter: What is the Pennsylvania Railroad Company which is designated to the Interstate Commerce Commission?

Mr. Lee: Wait a minute, Brother Carter. Do not get mixed up here. The Pennsylvania Company is one thing, and the Pennsylvania Railroad is another thing, and the Pennsylvania Lines are another thing.

The Chairman: The Pennsylvania Railroad does not own anything west of Pittsburg, does it?

Mr. Lauck: No. The Pennsylvania Company is west of Pittsburg.

Mr. Lee: The Pennsylvania Railroad does not operate anything west of Pittsburg.

Mr. Carter: It is like the Rock Island Lines, the Rock Island Railroad Company, and the Rock Island Railroad?

Mr. Lee: I beg your pardon, it is not. I think perhaps we are going a little too fast.

The Chairman: Whatever the Pennsylvania Railroad owns west of Pittsburg is through its ownership of all of the stock of the Pennsylvania Company.

Mr. Lee: It does not own all of the stock.

The Chairman: Except a share or two.

Mr. Lee: The Pennsylvania Railroad does not operate west of Pittsburg. The Pennsylvania Company and the Pan Handle operate west of Pittsburg.

The Chairman: The Pennsylvania Railroad owns 999/1000ths of the stock of the Pennsylvania Company, doesn't it?

Mr. Lee: I am not clear as to that. Some one here says it owns it all. My point was that the Pennsylvania Railroad does not operate the line west of Pittsburg.

Mr. Atterbury: I will straighten the Judge out on that.

Mr. Lee: I think Mr. Atterbury can do better than any of us on it.

The Chairman: When you get out in Ohio, when you are travelling, you find pretty nearly everything is Pennsylvania; that is, it has looked so to me.

Mr. Lee: It is Pennsylvania Lines west of Pittsburg and Pennsylvania Railroad east of Pittsburg. It is a division of operation. I think for further explanation I will refer you to Mr. Atterbury.

Mr. Lauck: The point I wanted to make clear in my own case was this, that "Pennsylvania Lines East" should be designated "Pennsylvania Railroad" and "Pennsylvania Lines West," should be "Pennsylvania Company."

Mr. Lee: Now we are straight.

Mr. Lauck: And that should apply to all my exhibits.

Mr. Carter: I rather suspect perhaps the confusion arose out of the negotiations—all our negotiations were conducted on the principle of "Pennsylvania Lines East" and "Pennsylvania Lines West."

Mr. Lee: They are two operating companies.

Mr. Lauck: I realized all along that was not an absolutely accurate designation and it should have been changed but I just never got around to do it, that is all.

Mr. Lee: So this "star gazing" estimate of four millions may be away off?

Mr. Carter: I have a margin of $700,000.

Mr. Lee: You have six or seven roads that aren't in here.

Mr. Carter: These are only $3,300,000, including the other roads, my "star gazing" might make it $4,000,000.

The Chairman: This list hasn't got all of these 54 roads in it?

Mr. Lauck: No, sir, only 44.

Mr. Phillips: Why didn't you include those?

Mr. Lauck: I explained the first day here that I started the list, and I found it was ample to take up my time.

Mr. Carter: The fault is mine. I gave this list of roads to Mr. Lauck early in May, as I remember, as being the roads I thought might participate in this movement. In June or the first of July, I believe, we had progressed only partially then, and it was therefore before we knew all the roads that were going to participate. This was simply an arbitrary list of roads selected by myself for him to work on.

Mr. Lauck: I will be glad to complete thost two exhibits for the roads, if the board will like to have it.

Mr. Carter: You have the data here?

Mr. Lauck: Yes, sir; I have the data.

Mr. Lee: What is that?

Mr. Lauck: I say I would be glad to complete them.

Mr. Lee: You mean the other six or seven?

Mr. Lauck: Yes, these two. Judge Chambers asked if this was complete. I say I would be glad to complete it for all roads if it is so desired. Simply a division, as you know well, of expenses into revenues.

Mr. Lee: Additions, multiplications and subtractions, that is all?

Mr. Lauck: Yes.

The Chairman: These figures then represent percentages stated at the top on the present firemen's revenue?

Mr. Lauck: Yes, sir.

The Chairman: The present firemen's pay I mean?

Mr. Lauck: Yes, sir. That firemen's pay now absorbs so much of the revenue, 2.31%. Then if you increase the amount of revenue absorbed by firemen, you increase the ratio so much which is equivalent to so many dollars as shown in the other exhibit.

The Chairman: If you would put down at the bottom of this column here the amount, just like you have at the foot of these others, it would be better. Now that column is just the same as this, isn't it (indicating)?

Mr. Lauck: Yes, sir.

The Chairman: You say it is about two and what?

Mr. Lauck: For the B. & O. Railroad I say I just remember it was 2.66%. I will be glad to fix those that way for you. It would be much clearer.

The Chairman: And then Mr. Carter's estimate was that 15% on the present pay roll would be about $4,000,000?

Mr. Carter: Only through star gazing, I had no figures; I just guessed it. The reason I referred to it, it was referred to so often during the negotiations as to what would be the expense of our increase if granted.

Mr. Lauck: Have you that first exhibit I put in, Mr. Lee? I want to make a correction in these tables, and I will let you read the correction in. It is on that passenger train mile you remember of 56,157.

Mr. Lee: Yes, I think you read it to us yesterday.

Mr. Lauck: Yes. Well, it would affect the totals; I have not corrected the totals yet. I suppose that is sufficient, to leave it in the record.

Mr. Lee: 23,218 and 25,407.

Mr. Lauck: And the difference is 2,555?

Mr. Lee: 2,555.

Mr. Lauck: Much obliged.

Mr. Lee: Is that what you wanted to get it?

Mr. Lauck: Yes, that is all I wanted.

Mr. Carter: Mr. Lauck will you make that correction to-night on the volumes we are going to give them in the morning?

Mr. Lauck: Yes.

Mr. Carter: We are going to give them binders a complete set of exhibits.

Mr. Lauck: Yes.

Mr. Carter: You correct that to-night.

Mr. Lauck: Yes, I think that is made, Mr. Carter.

The Chairman: Can you refer to any document you have there and show us what the pay roll of the firemen on the Baltimore & Ohio Railroad was last year?

Mr. Lauck: Yes, sir.

The Chairman: You have them together, the Baltimore & Ohio and Baltimore & Southwestern?

Mr. Lauck: Yes, sir. The amount you asked for is $2,463,-256.

The Chairman: That is right.

Mr. Lauck: Mr. Atterbury, that Pennsylvania Railroad does not include a number of your lines.

Mr. Atterbury: Yes, it doesn't include the P. B. & W., the West Jersey & Sea Shore and the Northern Central.

Mr. Lauck: No, sir.

Mr. Atterbury: And the Pennsylvania Lines West doesn't include the Panhandle, does it?

Mr. Lauck: No, sir.

Mr. Atterbury: It does not include the Panhandle?

Mr. Lauck: No, sir; it is just the lines you directly operate.

Mr. Atterbury: By the Pennsylvania Company?

Mr. Lauck: Yes, sir.

Mr. Atterbury: If you wanted to get the total firemen's pay-roll of 1912 of all roads, you would simply multiply this first column here by 10, wouldn't you?

Mr. Lauck: I didn't get that question exactly.

Mr. Atterbury: I say this shows a 10% increase?

Mr. Lauck: Yes, sir; on the basis of those roads.

Mr. Atterbury: Therefore, if that is 10%, 100% would be ten times that?

Mr. Lauck: Yes, sir.

Mr. Atterbury: So that would give you the total payroll of the firemen of all these roads?

Mr. Lauck: For those roads, yes, sir. If you would like to have that completed, I will withdraw it and put the additional roads on it.

The Chairman: You need not withdraw it. You may complete it for us.

Mr. Atterbury: I think it would be interesting to submit the additional roads.

Mr. Lauck: I would be glad to do it, and the totals also.

Mr. Carter: Hadn't you better get a list of the roads, so there will be no mistake again?

Mr. Lauck: Yes. Have you a list of them?

Mr. Carter: No.

Mr. Lee: It is in the Arbitration Agreement.

Mr. Carter: I thought you meant the lines making up the Pennsylvania Lines, East and West.

Mr. Atterbury: No, I think he ought to submit a list of the roads parties to this agreement.

Mr. Carter: The reason I do not think it is practical is because—well it may be practical, but for instance—

Mr. Lauck: It is perfectly practical.

Mr Carter: I want to show the difference in our negotiations. In our negotiations the New York Central Lines practically insisted that each separate auxiliary property should be treated separately. For instance, I think we have, oh, I do not know, half a dozen lines in the New York Central Lines that we have not even committees on, that is, we consider them part of the parent system; but at the suggestion of the New York Central people they were treated as separate roads. Now, in our negotiations with the Pennsylvania there was no such suggestion. I did not know how they had arranged their road. I did not know that the Northern Central was reckoned as a different road from the Pennsylvania Lines East; I thought it was all one road. I am not saying that Mr. Lauck thought so, but I thought so.

Mr. Lee: The Northern Central?

Mr. Carter: Yes. We have the same committee on it and we thought you treated it all as one.

Mr. Lee: It is all under the Pennsylvania mangement.

Mr. Carter: I thought you said just now it is not part of the Pennsylvania?

Mr. Lee: It is not, but it is operated by the Pennsylvania Railroad. It is all under one general management.

Mr. Carter: We do not know anything about the intricacies of the financial management.

Mr. Lauck: Shall I proceed, Judge Chambers?

The Chairman: Yes.

Mr. Lauck: Here is my next exhibit.

Mr. Carter: This is from a Washington printer, and in his distress he left out the pages and folios. We have been trying to put them on with pen and ink, but have not got that far yet.

(The statement so offered and identified was received in evidence and thereupon marked Firemen's Exhibit No. 48, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.)

Mr. Lauck: These are the general statistical tables from which the individual exhibits have been compiled. In other words, these tables are simply the statistical bases for the exhibits.

Mr. Carter: By the way, did you not suggest to me that as soon as we can have the pages numbered, we will exchange the copies so you can have them complete?

Mr. Lauck: Yes, sir, we will substitute the numbered copies for each one of these copies so the index will run all right. We have a numbered index, but have not the pages numbered, owing to the hurry in getting it out.

There are only several points to which I wish to draw attention in order to make the use of the book clear. I thought it would be more useful, if any reference should be wished to be made of it, if I should arrange the tables in the same order in which they are arranged in the exhibits; so I have arranged or collected the tables under the designations I, II, III and IV, according to the general headings in the individual exhibits. For instance the first number, I is "Increased work and productive efficiency of locomotive firemen." That covers all of the tables that are shown in the exhibit under Part I. Part II is the section reflecting the revenue gains of locomotive firemen. In Part III is grouped the tables relative to advances in operating costs or ratios of operating cost to total operating expenses. Part IV has to do with the disposition of the net receipts

or the disposition on a revenue train mile basis and a dollar and cent basis of the net and gross corporate income.

The Chairman: This is the basis then upon which you made all these other calculations?

Mr. Lauck: Yes, sir; that is the basis of them. Wherever there is an error—

The Chairman: And we can refer, through your index, when these pages are numbered, and see whether your calculations are made right, is that it?

Mr. Lauck: Yes, sir, or you can see where there is a mistake in any exhibit, or if there is a mistake in the basic tables, the mistake will appear in the exhibit, of course. Part V is where the general numbered tables underlying perhaps one or two sections of the others are shown. For instance, in Part V, I have the number of tons carried one mile, and the number of freight train miles and number of firemen employed and the coal consumed in tons by selected railroads, together with the number of freight train miles, passenger train miles and the ratio between them, and the different labor costs expressed in dollars and cents. I believe that concludes all I have to present except the individual roads, which will be here in a few minutes; they are correcting them.

Mr. Atterbury: This is a compilation of the various individual roads.

Mr. Lauck: Yes, sir. The exhibits I have been presenting are really not exhibits, in the true sense of the word; they are a conclusion as to each road.

The Chairman: I did not want to say that about them but—

Mr. Lauck: I think in a real legal sense, although I know nothing about law, that they may not be admissible.

The Chairman: In brief, these forty odd exhibits constitute your argument?

Mr. Lauck: Yes, that is correct.

The Chairman: Now, Mr. Lee, it is up to you to show that the facts in this book "basic statistical tables" are not correct.

Mr. Lee: The burden of proof is on us, then?

The Chairman: I belitve Mr. Lauck is through with his direct testimony, unless Mr. Carter wants to ask him some more questions.

Mr. Carter: No.

The Chairman: Do you want to begin your cross-examination now, Mr. Lee?

Mr. Lee: No, sir, we prefer to start in the morning, subject, of course, to the pleasure of the Board.

The Chairman: Mr. Lauck needs some time to get the exhibits corrected and revised, and we will meet to-morrow morning at nine o'clock.

Mr. Carter: It will be our purpose to-night, to number this last exhibit here, paged as it is indexed, and exchange with you in the morning. The necessity for carefully numbering that exhibit arises in this way: You cannot number it from page 1 on up. After page 76, there are pages 76A, 76B, and so on. Therefore, we will have to be very careful in numbering it to get it exactly right, and will just exchange the numbered pages in the morning for those that are not numbered.

The Chairman: Mr. Phillips has made a suggestion that, I think, will facilitate things very much when we come to consider the matter in conference, that in doing that you also note on these pages, the references to these forty small exhibits.

Mr. Carter: Do you mean—

The Chairman: This is a compilation of all of them, as we understand it.

Mr. Carter: Do you mean that the individual exhibits shall contain marginal references, so that you can turn to the page of this larger exhibit here?

The Chairman: Yes.

Mr. Carter: Do you understand that, Mr. Lauck?

Mr. Lauck: As I understand it, the idea is on the individual exhibit, when you take the B. & O. Railroad or the Pennsylvania Lines East of Pittsburgh, to refer to the page in the Basic Tables. Is that correct, Mr. Phillips?

Mr. Phillips: That was not exactly my suggestion.

Mr. Lauck: The exhibit is now arranged according to the same order. For instance, if you will take the exhibit of the Pennsylvania Lines East of Pittsburgh if you will turn to the Basic Tables, you will find the tables which underlie this, arranged in the same order as they are in the railroad exhibits.

Mr. Phillips: My thought was this: On account of you not having several of your exhibits here which you want to submit at this time, we were unable to continue the numbers. Now, it

occurred to me that following your individual exhibits, or exhibits of individual roads, this basic table should come numerically.

Mr. Lauck: Oh! I did not understand.

Mr. Phillips: Then this other matter which has been introduced here but not numbered, should follow this exhibit.

Mr. Lauck: I thought you were referring to cross references.

Mr. Phillips: My idea was to keep all of these exhibits in their consecutive order.

Mr. Atterbury: For instance, here are exhibits 15, 16, and 17, the last being the Erie Railroad. How many more of these have you?

Mr. Lauck: I have 31 more.

Mr. Atterbury: 31 and 17 make 48, and this exhibit would be No. 49. The exhibit I am referring to as 49 is "Gains in Operating Efficiency." In other words, that should be marked 49, and the following ones 50, 51 and 52.

(Whereupon, the paper entitled "Gains in Operating Efficiency," so offered and identified, was received in evidence and marked "Firemen's Exhibit No. 49, March 17, 1913," and is attached hereto.)

Mr. Phillips: I think they should come in in their numerical order, so that in referring to them you first have your individual exhibits, and then the Basic Tables for them all, so that they will fit right together, and not have the Basic Tables away off in another exhibit by itself.

Mr. Carter: We have two men down at the Hotel trying to bring up the rest of these exhibits. They are all prepared, and ready to be introduced. I should greatly dislike to adjourn at this time and be compelled to introduce them in the morning. We would rather have them to-night, and if you will just pardon me, I will go to the 'phone and see if we can get them.

The Chairman: Yes.

Mr. Lee: I understand that these basic tables are the tables as taken from the Interstate Commerce Commission—what are the basic tables?

Mr. Lauck: The basic tables are the compilations based upon the reports of the Interstate Commerce Commission. The individual exhibits are simply comparative exhibits by roads. There are forty-four roads in each table, and I drew off thirty-four roads.

Mr. Lee: These are the basic tables?

Mr. Lauck: And the exhibits.

Mr. Lee: And the exhibits?

Mr. Lauck: Yes, sir.

Mr. Lee: They are not the tables of the Interstate Commerce Commission?

Mr. Lauck: Exactly, because the exhibits are based on that.

Mr. Lee: I think perhaps you do not understand me quite, Mr. Lauck.

Mr. Lauck: Perhaps I do not.

Mr. Lee: The tables that you have in here, are they exact transcripts of the Interstate Commerce Commission reports?

Mr. Lauck: Oh, no. You can use that "basic" in a more fundamental sense, though. The computations in there are based upon transcripts from the Interstate Commerce Commission.

Mr. Lee: The Interstate Commerce Commission's reports themselves are not in here?

Mr. Lauck: Partly. For instance the number of firemen, the amount paid firemen, the labor cost—

Mr. Lee: Mileage, etc.?

Mr. Lauck: Mileage, and all those are in there; but you see if I had put everything in there I would have had a very voluminous document. There is enough here to verify anything you want, and if not and you want anything more basic, I can let you have the typewriten tables.

Mr. Lee: If any point arises where there is any question as to the authenticity of a report, we will feel at liberty to call on you.

Mr. Lauck: Oh, certainly.

Mr. Lee: I don't anticipate we will find any serious difficulties so far as the figures themselves are concerned. We may differ as to the use those figures are put to.

Mr. Lauck: You will probably find some errors in computation and typographical errors. I found quite a number myself, but they were unavoidable under the circumstances.

Mr. Lee: Do I understand that this finishes the direct testimony of this witness?

The Chairman: And all direct testimony, as I understand?

Mr. Lee: And all direct testimony from the firemen's side

The Chairman: Yes, sir.

Mr. Lee: I might say that for the last two days we have been endeavoring, or rather we have refrained as much as possible from asking any questions, in order that we might get through, and I would suggest, if the witness sees fit, that he go over the minutes and make any corrections, and the first thing in the morning, because we will have to consider the minutes after that as a true expression of his views and ideas. My only point is this, or my main point is that there may be some slips of the tongue or something of that sort.

Mr. Lauck: You mean you want me to look over the minutes to ascertain whether I will stand for what I have been reported as saying?

Mr. Lee: Yes. There may be some misquotations. I do not want to put you in an embarrassing position—

Mr. Lauck: I will duly deliberate in the future upon what I say.

Mr. Atterbury: Where is the supporting data for these statements?

Mr. Lauck: For the roads?

Mr. Atterbury: Yes.

Mr. Lauck: It is partly in the basic tables.

Mr. Atterbury: But, these basic tables were made up from something else?

Mr. Lauck: They were made from the reports of the roads to the Interstate Commerce Commission. They can be verified. Part of the transcriptions are in there and part are not. I have a typewritten table for the others and any reference can be made to the report. They are all based on the data in the reports of the Interstate Commerce Commission.

Mr. Carter: In order to report progress I will say that we have two messengers en route who have been out 20 minutes. They ought to make port very soon.

The Chairman: Where are they to come from, Mr. Carter?

Mr. Carter: Broadway Central; it is not the Waldorf-Astoria.

Mr. Lauck: I think they are approaching now.

The statement entitled "Boston & Maine Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains

in revenue" was received in evidence and thereupon marked Firemen's Exhibit No. 18, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Buffalo, Rochester & Pittsburg Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resulant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 19, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Central New England Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 20, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Central Railroad of New Jersey. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 21, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Cincinnati, Hamilton & Dayton Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gain in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 22, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Cleveland, Cincinnati, Chicago and St. Louis Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 23, received in evidence March 17th, 1913, Witness Lauck, and is attached hereto.

The statement entitled "Delaware & Hudson Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 24, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Delaware, Lackawanna & Western Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 25, received in evidence March 17th, 1913, Witness Lauck, and is attached hereto.

The statement entitled "Grand Rapids & Indiana Railroad.—The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 26, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Hocking Valley Railroad.—The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 27, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The Statement entitled "Kanawha and Michigan Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 28, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The Statement entitled "Lake Erie & Western Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 29, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Lehigh Valley Railroad. The increased productive efficiency of locomotive firemen during the period of 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemens' Exhibit No. 30, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Long Island Railroad. The increased productive efficiency of locomotive gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 31, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Maine Central Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue," was received in evidence and thereupon marked Firemen's Exhibit No. 32, William Lauck, received in evidence March 17th, 1913, and is attached hereto.

The statement entitled "Michigan Central Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue", was received in evidence and thereupon marked Firemen's Exhibit No. 33, Witness Lauck, received in evidence March 17th, 1913, and is attached hereto.

The Statement entitled "Monongahela Railroad. The increased productive efficiency of locomotive firemen during the period 1902-1912, and the disposition made of the resultant gains in revenue", was received in evidence and thereupon marked Firemen's Exhibit No. 34, Witness Lauck, received in evidence March 17th, 1913, and same is attached hereto.

The statement entitled "New Jersey & New York Railroad,—The Increased Productive Efficiency of Locomotive Firemen During the Period 1902-1912, and the Disposition of the Resultant Gains in Revenue" was received in evidence, and thereupon marked "Firemen's Exhibit No. 35. Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The statement entitled "New York Central & Hudson River Railroad,—The Increased Productive Efficiency of Locomotive Firemen During the Period 1902-1912, and the Disposition Made of the Resultant Gains in Revenue" was received in evidence, and thereupon marked "Firemen's Exhibit No. 36, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The statement entitled "New York, Chicago & St. Louis Railroad.—The Increased Productive Efficiency of Locomotive Firemen during the period 1902-1912, and the Disposition made of the Resultant Gains in Revenue" was received in evidence, and thereupon marked "Firemen's Exhibit No. 37, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The statement entitled "New York, Philadelphia & Norfolk Railroad.—The Increased Productive Efficiency of Locomotive

Firemen During the Period 1902-1912, and the Disposition Made of the Resultant Gains in Revenue" was received in evidence, and thereupon marked "Firemen's Exhibit No. 38, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The Statement entitled "New York, Susquehanna & Western Railroad. The Increased Productive Efficiency of Locomotive Firemen During the Period 1902-1912, and the Disposition Made of the Resultant Gains in Revenue" was received in evidence, and thereupon marked "Firemen's Exhibit No. 39, Witness Lauck, received in evidence March 17th, 1913", and the same is attached hereto.

The Statement entitled "Pennsylvania Railroad. The Increased Productive Efficiency of Locomotive Firemen During the Period, 1902-1912, and the Disposition Made of the Resultant Gains in Revenue," was received in evidence, and thereupon marked "Firemen's Exhibit No. 40, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The Statement entitled "Pennsylvania Company,—The Increased Productive Efficiency of Locomotive Firemen During the Period 1902-1912, and the Disposition Made of the Resultant Gains in Revenue," was received in evidence, and thereupon marked "Firemen's Exhibit No. 41, received in evidence March 17th, 1913, Witness Lauck," and the same is attached hereto.

The Statement entitled Philadelphia & Reading Railroad, "The Increased Productive Efficiency of Locomotive Firemen During the Period, 1902-1912, and the Disposition Made of the Resultant Gains in Revenue," was received in evidence, and thereupon marked "Firemen's Exhibit No. 42, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The statement entitled "Rutland Railroad, The Increased Productive Efficiency of Locomotive Firemen During the Period 1902-1912, and the Disposition Made of the Resultant Gains in Revenue," was received in evidence and thereupon marked "Firemen's Exhibit No. 43, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The statement entitled "Toledo, Peoria & Western Railroad, The Increased Productive Efficiency of Locomotive Firemen During the Period 1902-1912, and the Disposition Made of the Resultant Gains in Revenue" was received in evidence, and there-

upon marked "Firemen's Exhibit No. 44, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The statement entitled "Toledo, St. Louis & Western Rail road, The Increased Productive Efficiency of Locomotive Firemen During the Period 1902-1912, and the Disposition Made of the Resultant Gains in Revenue," was received in evidence, and thereupon marked "Firemen's Exhibit No. 45, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The statement entitled "The Western Maryland Railroad, The Increased Productive Efficiency of Locomotive Firemen During the Period 1902-1912, and the Disposition Made of the Resultant Gains in Revenue," was received in evidence, and thereupon marked "Firemen's Exhibit No. 46, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The statement entitled "Wheeling & Lake Erie Railroad. The Increased Productive Efficiency of Locomotive Firemen during the Period 1902-1912, and the Disposition made of the Resultant Gains in Revenue" was received in evidence, and thereupon marked "Firemen's Exhibit No. 47, Witness Lauck, received in evidence March 17th, 1913," and the same is attached hereto.

The Chairman: The Board will adjourn until nine o'clock to-morrow morning.

(Whereupon, at 3:55 P. M., on the 17th day of March, 1913, the hearing was adjourned to Tuesday, March 18th, 1913, at 9 o'clock A. M.)

(Next Exhibit No. 52.)

PROCEEDINGS.

ARBITRATION

between the

EASTERN RAILROADS

and

THE BROTHERHOOD OF LOCOMOTIVE FIREMEN AND ENGINEMEN

Submitted to Arbitration, under the Erdman Act,
By Agreement Dated Feb. 18, 1913

AT WALDORF ASTORIA HOTEL
New York

March 18, 1913.

HULSE & ALLEN, Official Reporters,
115 Broadway,
New York.

New York, March 18, 1913.

Met pursuant to adjournment at 9:00 o'clock A. M.

Present—Parties as before.

The Chairman: As I understand it, Mr. Carter, you have rested at this point, with the privilege, if you wish to do so, of introducing other witnesses after Mr. Lauck's cross-examination.

Mr. Carter: Gentlemen of the Commission, I thought it was largely by courtesy, if not favor, that we were extended the use of two days of this week for Mr. Lauck. We have had a witness here that we would gladly have placed on the stand for a few minutes, but after having agreed last week that if Mr. Lauck was permitted to continue his testimony over the week we would not ask that any other witness be used, we have permitted this witness to go home. Now, Mr. McNamee was here, but unfortunately because of illness he did not arrive until we were through with our other witnesses and Mr. Lauck was on the stand. I told him that I did not think we could use him as much as we would like to. He remained here quite a while, but unfortunately for himself and ourselves he had business elsewhere during the unexpected intermission of yesterday and we could not find him anywhere because I had told him I did not think we could use him. Last night I told him that we would not ask him to stay any longer because it would not be possible to call him in this matter, under the limitation of time fixed by the Erdman Act. It had been our purpose to complete the presentation of the direct testimony within the first week. It now appears evident that we will take two days more than the first week, and I can see that we could prolong this matter by introducing additional witnesses whom I believe would be greatly to our benefit, all this week, but I recognize that under the limitation fixed by the Erdman Act we must restrain ourselves and we are going to do so with our witnesses. I understand, of course, if certain testimony should be presented here that, in rebuttal, we will have opportunity to present evidence of that nature.

The Chairman: Of course.

W. J. LAUCK, resumed the stand:

CROSS EXAMINATION:

Mr. Lee: Mr. Lauck, did I understand that you are a professor of political economy?

Mr. Lauck: Yes, sir; an associate professor, not a full professor.

Mr. Lee: Associate professor?

Mr. Lauck: Yes, sir; to be exact.

Mr. Lee: I understand you are also an expert statistician?

Mr. Lauck: Well, I suppose, in the ordinary accepted use of the word I am, yes, sir.

Mr. Lee: As I understand it, an expert in your position, in the position you are placed in at the present time, takes certain figures, or sets of figures, that are furnished him and deduces certain conclusions from those figures?

Mr. Lauck: Yes, sir.

Mr. Lee: In deducing from any set of figures I presume an expert should know what those figures mean or represent?

Mr. Lauck: Yes, sir; so far as he is able to ascertain.

Mr. Lee: Well, in drawing conclusions from figures, should not a man who draws conclusions know what those figures represent?

Mr. Lauck: I should think so, undoubtedly, yes, sir; but if there is any dispute—there may be some dispute, of course, as to what the meaning of the figures is—such as we have had here.

Mr. Lee: You mean—

Mr. Lauck: As to how they may be applied.

Mr. Lee: Or how they may be obtained?

Mr. Lauck: As to what they really mean, yes, sir.

Mr. Lee: To draw a proper conclusion, an expert should know what they represent, shouldn't he?

Mr. Lauck: Yes, sir. I should accept that.

Mr. Lee: As a general proposition?

Mr. Lauck: Yes.

Mr. Lee: Previous to this investigation, had you made any analysis of the reports of the railroads to the Interstate Commerce Commission?

Mr. Lauck: No, sir.

Mr. Lee: Were you familiar, before you began this investigation, with the basis of the reports to the Interstate Commerce Commission, made by the railroads?

Mr. Lauck: No, sir.

Mr. Lee: This then, is your experience with these reports?

Mr. Lauck: Yes, sir.

Mr. Lee: And the first analysis that you have made of the reports of the railroads to the Interstate Commerce Commission?

Mr. Lauck: Yes, sir.

Mr. Lee: Are you familiar with the terms used in the accounts of the railroads to the Interstate Commerce Commission?

Mr. Lauck: I studied the accounts very carefully, and the instructions of the Commission to the railroads in making up these accounts, and where there was any doubt in my mind I consulted experts as to the meaning of certain terms, and as to the practice of the railroads in supplying information to the Commission.

Mr. Lee: Are you then, familiar with the meaning of those terms used in the reports of the railroads to the Interstate Commerce Commission?

Mr. Lauck: I think so, yes, sir.

Mr. Lee: Taking your combined report, the one you discussed first, on page 3, No. 12, that figure at the top of the diagram, the combined tractive power of all locomotives, just what does that represent?

Mr. Lauck: That represents the combined tractive power of single extension locomotives. The reports report to the Commission three classes of locomotives, as I recall, single expansion, and two forms of compound locomotives. This is merely the single expansion.

Mr. Lee: This does not take in the compound locomotives in any way at all?

Mr. Lauck: No, sir.

Mr. Lee: This includes, I presume passenger, freight and switching locomotives, of single expansion?

Mr. Lauck: It includes all single expansion, yes, sir, of every class.

The Chairman: Let me ask, are single expansion engines limited in size, or is it just a description of the type?

Mr. Lee: Why, it is a description of the way the steam is

used, sir. If the steam is used with one expansion of the steam, why it is a single expansion locomotive; if it is used with two expansions of the steam that is a first expansion, and then using that same steam again in another cylinder with an additional expansion, it is a double expansion engine.

The Chairman: The terms "single expansion" and "compound" then, have no reference to the size of the engine?

Mr. Lee: None whatever, I take it. That is, you might have a single expansion engine that was very much larger than a compound engine, or you might have a compound engine that was larger than a single expansion engine.

Mr. Atterbury: Do I understand, Mr. Lauck, that this figure is worked up as a compound engine worked as a simple?

Mr. Lauck: No, sir, the figure is simply the addition of the tractive power of single expansion locomotives, as reported to the Commission.

Mr. Atterbury: I know, but some of the engines from some of these diagrams show working simple and some working compound.

Mr. Lee: That was not in Mr. Lauck's statement, as I remember it?

Mr. Lauck: No, sir.

Mr. Lee: That was in the statement prepared by Mr. Steinberger?

Mr. Lauck: The reason I neglected the compounds, they were comparatively small. Of course, that would increase the total tractive power, if I should have used the compound.

Mr. Atterbury: No, but isn't there tractive power quoted working compound and working simple?

Mr. Lauck: I do not recall that; no, sir; there may be, I do not know.

Mr. Lee: We did have a table, Mr. Atterbury, I think it was Mr. Steinberger introduced it, with a table of diagrams of eight or ten locomotives, perhaps 12.

The Chairman: The percentage of compound engines in this period of 1902-1912 has increased more rapidly than the percentage of simple engines, hasn't it?

Mr. Lee: I wouldn't say so.

Mr. Lauck: Indeed I do not know.

Mr. Carter: My understanding of the question, gentlemen,

is what did Mr. Lauck find in the records of the Interstate Commerce Commission about these compounds, and it has nothing to do with any exhibits that he presented before he reached that.

The Chairman: Why did you take merely the simple engines?

Mr. Lauck: Just for convenience in computation. The tractive power of the compounds is comparatively small, almost negligible I should say as compared with the total of single expansion engines. If I had added that to this table it would have made a slightly greater total of tractive power; but for convenience in computation I took only the simple engines.

The Chairman: Would you admit that statement, Mr. Lee?

Mr. Lee: I did not quite get that.

Mr. Lauck: I say that the reason the compounds were omitted was merely in order to facilitate the computations. That is, I would have had to add two classes of compound tractive power to the single expansion tractive power, and then have added it all together to get the total, and it seemed to me that it was giving every consideration to the opposite point of view to eliminate the compounds. So I simply left them out in order to facilitate the work.

The Chairman: The thing I asked you if you agreed to, Mr. Lee, was the statement that the relative proportion of the compounds to the simple is negligible.

Mr. Lee: That is a question on which I am not altogether clear myself. It is my impression that there were fewer compounds in 1912, than there were in 1902, but I am not clear on that proposition. I would not want to take issue with the witness at this time on that question.

The Chairman: Just to clear up one other point in my mind which is undoubtedly already very clear to both my colleagues; does your computation of tractive power of simple engines apply to all the engines in that class that were put in that agreement?

Mr. Lauck: I would like to see the form for reports to the Interstate Commerce Commission.

The Chairman: I hand you one of the forms.

Mr. Lauck: The data upon which I based this diagram are taken from page 103, and we have there single expansion locomotives, tractive power, grate surface, heating surface and so on.

On the next page we have four-cylinder compounds and on the next page two-cylinder compounds, and cost account of compound locomotives.

Mr. Atterbury: Does that show working simple and working compound, and the tractive power?

Mr. Lauck: I do not know, sir; I have just taken the single expansion locomotives.

Mr. Lee: Just at this time, without knowing what we are talking about, we would not like to state whether the proportions of compounds were greater in 1912 than in 1902.

Mr. Carter: I will say that we have a statement prepared that will cover that entire matter, that will show the exact decline in popularity of the compound year by year; the number in service on each road, reported to the Interstate Commerce Commission by each road, showing the number each year and the gradual decrease year by year.

The Chairman: You do not disagree with Mr. Lee then?

Mr. Carter: I say, we will present that.

Mr. Lee: It is my impression that there were fewer compounds in 1912 than there were in 1902.

Mr. Carter: With the exception of the Mallet engines, and the engines now in service that represent too much capital to be scrapped, they are very, very rapidly disappearing.

Mr. Lee: We may have something to say on that later.

The Chairman: You may proceed with the examination.

Mr. Lee: This exhibit then represents the combined tractive power of simple, single expansion engines, on the 44 roads in your computation?

Mr. Lauck: Yes. That should have been stated in the box head, but by some change in printing or fixing up the diagram, it was omitted.

Mr. Carter: Will you read that correction of it into the record?

Mr. Lauck: I think I have read that correction of it several times.

Mr. Lee: And this includes all engines owned?

Mr. Lauck: It includes all engines reported on the pages referred to.

Mr. Lee: You do not know whether or not this takes into account the number of engines in the shops for repairs?

Mr. Lauck: No, sir. By the instructions to the railroads you could ascertain that, if you have the data. I do not know just what that instruction from the railroads is.

Mr. Lee: Mr. Lauck, what is tractive power?

Mr. Lauck: I understand tractive power in the original sense of the word, the drawing power of a locomotive.

Mr. Carter: I suggest that in these questions it should not be attempted to qualify the witness as a mechanical expert. He does not pretend to be one.

Mr. Lee: Not at all, if the Board please; but the witness has used certain terms here, and drawn certain conclusions from those terms, and it is my purpose, with the permission of the Board, to find out if he knows what those terms mean; because if he does not know what those terms mean, it does not seem to us that he can draw the conclusions that he does; and if he does know what those terms mean, it is a question whether he would draw the conclusions that he does.

The Chairman: I think you have the right to ask the witness if he knows what he is talking about.

Mr. Lee: That is what I am trying to get at, sir. From your knowledge Mr. Lauck, would you say that tractive power represents the amount of force a locomotive or similar device can exert?

Mr. Lauck: I cannot explain in technical or mechanical terms what you would mean by tractive power. I have taken it, in the designation I have indicated, as the power of a locomotive in connection with moving a train; that is, the drawing power.

Mr. Lee: It is the power it exerts to haul the train?

Mr. Lauck: Yes, sir.

Mr. Lee: That is substantially what I am getting at, the amount of force a locomotive or similar device can exert. That is perhaps a little technical, but tractive power or tractive effort or tractive force is the power; that is, if a locomotive had no tractive power it would stand still.

Mr. Lauck: That was my understanding of the term.

Mr. Lee: Yes. Now the railroad uses that force in overcoming resistance, that is the resistance of the train behind the engine. That resistance may be of three or four different component parts. I want you to follow me as closely as you can.

Perhaps I am testifying instead of the witness, but I think the witness will agree with me by the time I am through.

Mr. Lauck: I am glad to permit you to use the technical phraseology.

Mr. Lee: Well, I am trying to help you out of a hole, Mr. Lauck.

Mr. Lauck: All right.

Mr. Carter: Trying to educate him in mechanical matters.

Mr. Lee: Exactly. This is his first experience in railroading and we want to make it pleasant for him.

The Chairman: That is, assuming he is in a hole.

Mr. Lee: I rather think he is, sir, if he draws conclusions concerning things when he does not know what they are.

Mr. Carter: If the Commission please, we are not objecting to this series of questions because, pardon the insinuation, I believe that the Commission can discern that which is of value and that which is of no value in these questions. He has said that a certain amount of coal was burned. I doubt very much whether he can answer questions on combustion, showing the different gases formed by the burning of the coal and such as that, and we do not pretend to prove that by him. Our purpose was only to prove a certain conclusion from the records filed by the railroads with the Interstate Commerce Commission. Now, so far as his mechanical ability is concerned, I said to you before that we tried to hire mechanical experts, and they all begged to be excused, upon the theory that they were absolutely disinterested, they loved the railroads and they loved the firemen, but they were afraid if they came here the love might cease in a certain direction.

Mr. Lee: All that Mr. Carter has said is perhaps true, if the Commission please. But this expert has drawn mechanical conclusions, and we want to find out whether he knows what he is talking about, and I think we have that right, sir.

Mr. Carter: What mechanical conclusions has he drawn, and then maybe I will understand your purpose?

The Chairman: You need not answer that question, as to what mechanical conclusions he has drawn.

Mr. Lee: Those will develop as we go along.

The Chairman: I think so. Let us try this line now for a while and see how we get along.

Mr. Carter: All right.

Mr. Lee: I am not going to go into all this gas proposition or hot air proposition of my friend over here.

Mr. Carter: We think there was a good deal of hot air and gas throughout the whole proceedings.

Mr. Lee: Well, we have thought so, too.

Mr. Carter: I will not object any more. Go ahead.

Mr. Lee: This resistance that the locomotive overcomes, a certain portion of it, is due to lifting the load behind the engine up a grade, is it not?

Mr. Lauck: I should think so, yes, sir.

Mr. Lee: A certain amount of this resistance that is overcome is due to the journal friction and the rolling friction of the cars behind the engine?

Mr. Lauck: I should think so. I know nothing about the details of the technical friction.

Mr. Lee: Haven't you drawn certain conclusions here that are not consistent with that meaning?

Mr. Lauck: That may be true. My idea is the increase in tractive power is the expression of the drawing power of the locomotive.

Mr. Lee: Just for the present, we will leave the tractive power, and go to something else. This will perhaps come back again. You say the figures, taking now these freight train miles, these figures for freight train miles are the revenue train miles—revenue freight train miles?

Mr. Lauck: Yes, sir.

Mr. Lee: Do you know whether the number of freight firemen shown includes number of firemen in yard service?

Mr. Lauck: The figures shown there—you mean just the freight firemen?

Mr. Lee: Yes.

Mr. Lauck: The figure arrived at, as freight firemen, is the simple ratio between freight revenue train miles and the total revenue train miles. It includes all classes of firemen in the original figure. As I have said, that is simply an approximation. It is the best I could do under the circumstances; that there is no way from the reports, as you are fully aware, of arriving at any knowledge as to the actual number of freight firemen. My idea there is not to put that up as an accurate designation of

freight firemen, but merely as an indication of the tendency. I believe I called attention to that in my direct testimony.

Mr. Lee: Then does the fact that you distribute the number of firemen between passenger and freight make the assumption necessary that freight firemen must make the same number of miles as passenger firemen, per man?

Mr. Lauck: I beg your pardon. I didn't get that.

Mr. Lee: You distributed the number of firemen between passenger and freight on basis of train mileage?

Mr. Lauck: Yes, sir.

Mr. Lee: Now, dividing them in that way, mustn't it be necessary for you to assume that freight firemen must make the same number of miles per fireman as passenger firemen?

Mr. Lauck: No, sir, I wouldn't think so.

Mr. Lee: You wouldn't think so?

Mr. Lauck: The statistics show that the number of miles per freight fireman is decreasing.

Mr. Lee: What statistics?

Mr. Lauck: The statistics here.

Mr. Lee: You mean these you have made up?

Mr. Lauck: Yes; my derivative statistics.

Mr. Lee: What I am getting at is, in getting at your number of freight firemen, by dividing the total number of firemen by the revenue train mileage, you have said that the number of firemen in freight service, and the number of firemen in passenger service are proportional to the number of train miles in each service?

Mr. Lauck: Yes, sir.

Mr. Lee: Doesn't that assume then, that a freight fireman must make the same number of miles as a passenger fireman?

Mr. Lauck: That may be so. I cannot see it right now.

Mr. Lee: Can't you see that assumption?

Mr. Lauck: No, sir. It may be my stupidity—

Mr. Lee: What I am trying to say is—it seems to me a plain mathematical calculation—you assume that the number of men is proportioned to the number of miles?

Mr. Lauck: Yes.

Mr. Lee: You do?

Mr. Lauck: I assume that the number of men in each class of service is approximately the number of miles used in each class of service.

Mr. Lee: Doesn't it follow then, that the mileage made by a man in passenger service must be the same as a man in freight service, on your assumption, on a division of that sort?

Mr. Lauck: I can't see that. That may be true. If that assumption is made, it is not true, of course.

Mr. Lee: Doesn't that follow your division on that basis?

Mr. Lauck: If it does, why, of course it is not in accordance with the actual facts of operation, I should think; but the point that I wish to make clear in this division is, that I do not claim that it is accurate; it is simply an expression of relative tendencies. Of course, what we ought to have there, and I realize that we ought to have, is the actual number of freight firemen, and the actual number of passenger firemen; and I think in these ratios, if they were made accurate—that is, if the tendency were more in accordance with the actual number—you would have a larger number of freight firemen than is shown in these ratios. I will frankly acknowledge that.

Mr. Lee: As I remember, you got a percentage of something like 52 per cent. of freight firemen, and 48 per cent. passenger firemen?

Mr. Lauck: Yes; my examination, so far as I could make it, and in other cases where the apportionment has been made of freight expense to total operating expense, indicated to me that the ratio attributed to freight in this connection is smaller than it should be, but I had no way of arriving at any more accurate ratio, under the limitations.

Mr. Lee: Would you be surprised if I should tell you that there are three times as many freight firemen as there are passenger firemen?

Mr. Lauck: I would be perfectly willing for you to submit your number of freight firemen.

Mr. Lee: We will do that.

Mr. Lauck: I do not think that that affects the fundamental fact.

Mr. Lee: Only where you use it for one particular year; it does not perhaps affect it in your ratios.

Mr. Lauck: No, sir, dependency would still be the same, and it is merely—

Mr. Lee: Providing you use the same number of men in dividing your cost of firemen and your revenue?

Mr. Lauck: Yes.

Mr. Lee: The ratio of increase would be the same if you used the same number of men in 1902, to divide your revenue and divide your cost of firemen, and used a different number of men, but for 1912 used the same dividing your cost of firemen and your revenue; that is, your ratio would probably show all right.

Mr. Lauck: Yes, simply the tendency.

Mr. Lee: Yes.

Mr. Lauck: For instance just in that connection I notice in the Lake Shore, I think the ratio of freight expenses to total operating expenses ran about 66 or 67 according to a case before the Interstate Commerce Commission, while I think I show about 50, the relative proportion of freight and passenger firemen.

Mr. Lee: I think 52 and 48 were your figures, Mr. Lauck, 52 for freight and 48 for passenger.

Mr. Lauck: I would like to say Mr. Lee, if it is proper for me to speak back in this way—

Mr. Lee: Why, until it becomes unpleasant.

Mr. Lauck:—that all I am to show there is the tendency, and if any more are correct I am perfectly willing to put that on an absolutely correct basis. If such figures are available, I think that the tendency that I wish to establish would still remain.

Mr. Lee: That is the ratio would—

Mr. Lauck: No, that the increased work of firemen or the increased productivity.

Mr. Lee: Does this amount of coal consumed per fireman that you show here include coal consumed in non-revenue service?

Mr. Lauck: Yes, sir, I should think it would.

The Chairman: Let me ask you, Mr. Carter, right here at this point a question, because this question Mr. Lee has just asked the witness has frequently occurred in my mind. Are you basing your claim for increased wages upon this revenue basis?

Mr. Carter: In reply to that question I will say that it is immaterial to the fireman for whom he is working. He will find just as hard work in firing an engine pulling a heavy ballast train as he would in pulling a merchandise train of the same weight.

The Chairman: Or in pulling a fully loaded train of coal which the railroad is going to consume itself.

Mr. Carter: It is immaterial to the fireman who owns the property, whether the railroads are hauling it for themselves or hauling it for others; and I do not understand it was the purpose of the witness in the preparation of this matter to even investigate that matter. His purpose was simply to prepare something on the reports made to the Interstate Commerce Commission. Now, if the railroads make these reports showing the amount of coal shovelled in company service and the amount in the service of the public and so on, then he should have made these; but if the railroads do not show these things in the report, I do not see how he could be expected to show them.

The Chairman: But all of the witness's tables, with the little reading that I have been able to give them up to the present time, come down to that point of revenue, and why the firemen should have an increased pay because the revenue of the railroad has been increasing.

Mr. Carter: In reply to that perhaps it would have been better had I in the beginning made a formal opening statement as to our purposes, but my experience at past arbitrations has led me to believe that what a man threatens to do in the beginning he doesn't always carry out; and I thought in place of telling the Commission what we were going to do, we would allow it to develop itself. Now, we have approached this hearing, this arbitration proceeding, from two distinct points of vantage, as we may term it. It was my purpose to conduct the investigation, presentation of evidence, from a purely practical standpoint, but in every instance during these negotiations and all similar negotiations, with this organization or this class of employees and every other class of employees, to admit that the railroads would like to give the men more money, but they are financially unable to do so. Now, in anticipation that the railroads would take the same position here as they have on every similar previous occasion, as they have in every meeting between the officials and employees of individual roads, I requested Mr. Lauck to prepare this voluminous statement as to finances and so forth. I did not tell him what to do. I told him to use his own judgment and go ahead. Now, if the railroads here do not contend that they are

not able to pay this increase, then the evidence that this witness has presented as to the ability of the railroads to pay, based upon increased revenues, increased ton miles, and so forth, then it would have been useless; but unfortunately I believe we take the affirmative, the railroad employees must always take the affirmative in an arbitration of this matter. Unfortunately in the presentation of direct testimony we must guess what the other side is going to do. If we are good guessers why we generally meet their evidence in advance. Now, I am guessing that in this arbitration proceeding, as in all past arbitration proceedings, as in all individual proceedings or negotiations, they are going to say that they are just on the verge of bankruptcy. Now it is our purpose in employing this witness to ascertain if they were. Now, if, after the presentation of this testimony the railroads come out and say, why we have got the money, but you are not entitled to an increase in wages, then our efforts in this direction will have been useless. Now, we must anticipate they are going to do here what they have done elsewhere, and it was for the purpose of meeting this assumption on the part of the railroads that they cannot pay this increase that this mass of financial statistics was prepared.

As I said before I say again, I never told Mr. Lauck what to prepare. I never intimated to him that I wanted it to be cooked statistics on our side. I told him to go ahead and find out what there was there. He has gone ahead since the 1st of last May, and as he says, basing his statistics on what he found there, some of them are anything but helpful to our cause. They have been prepared without prejudice, without any purpose of presenting a false or unfair statement. We could hire a doctor, or we could hire a statistician and say to him "Here, you go down there and eliminate everything that is unfavorable to us, and present only that which is favorable;" and I am frank to say, I believe this Commission would find out very quickly whether he was trying to use his profession to bolster up a cause in a partisan spirit or whether he was giving the Commission his honest opinion of all the matter he found. That is why I have introduced all these financial statistics. If, as I say, the railroads are going to acknowledge that they have the money to pay these firemen the wages they ask without financial injury to the companies, then all that work has been useless.

Mr. Lee: If the Board please, in answer to Mr. Carter's statement, I am starting with this witness on the assumption that he is honest. I believe he is. I am not attempting in any way to discredit the honesty of this witness, not for a minute, although we do say that he has drawn some improper conclusions, conclusions that are not borne out by the facts, nor would they be drawn if this witness had the knowledge of what those facts were and what they mean. We are not impugning the honesty of this witness.

Mr. Carter: I beg pardon—

Mr. Lee: I say again that I am starting on the assumption that this witness is honest.

The Chairman: But incorrect.

Mr. Lee: Yes, incorrect in his conclusions—honestly so perhaps. I am not impugning the honesty of this witness at all.

Mr. Carter: My reply was suggested by Mr. Lee's question; and while I cannot quote it, I think you asked me if we based our demands on your financial ability, or something of that kind.

The Chairman: Upon the revenue result.

Mr. Carter: I explained why we had introduced all this matter concerning the revenues of the railroads, simply in anticipation that they were going to present similar matter to show that they could not pay the increase, because they have always done so in the past.

Mr. Lee: Perhaps I can answer your question a little better. As I understand it the firemen are not here asking to be paid on those trains only that earn revenue for the railroads. I think I am correct in that.

Mr. Carter: While the firemen are as loyal, I guess, as any employees on earth, we have not approached that degree of loyalty where we are willing to do the railroad's work for nothing. We believe that the fireman who pulls a heavy train of railroad material should be paid the same as the fireman who pulls a heavy train of merchandise.

The Chairman: And you believe that if the fireman now pulls a heavier train, and does more work in doing it, than he formerly did, he is entitled to better pay for doing that, whether the railroad makes any more money out of the traffic or not.

Mr. Carter: Yes, but we want to go further, and show that when the railroad officials agree with us that we are right, and

then deny their financial ability to meet our request, we want to show that they have the financial ability.

The Chairman: You do not mean by that that if you prove the first proposition as stated, and then the railroads show that they are not making money out of it, you will wait until they do make the money, to get your increase?

Mr. Carter: Our purpose is to prove, first of all, that the firemen are entitled to the increase. They are entitled to what they are requesting. That is our first effort, and I think we progressed tolerably well on that during the days we were placing the witnesses on the stand. Now as I said before, I want to say again, we anticipate that the railroads are going to attempt to convince the Board of Arbitration that, regardless of what the firemen have done, regardless of what the firemen are entitled to, the railroads have not the financial ability to accede to their request. Now we have a two-fold purpose, first to prove that the firemen are entitled to what they are requesting, and second to prove that the railroads are able to pay it.

The Chairman: Well, this is a concerted arbitration, you know, and 54 railroads are involved in it. If it was an arbitration between the Brotherhood and one railroad, it would be a very simple thing; but being a concerted arbitration, in which, for illustration, we might say that half the roads are making money, and half of them losing money, you are asking for the same advance in pay for the firemen on all these railroads, some of which might be in financial condition to pay even more than you ask, and some of them might be in a financial condition where it is a difficult thing for them even to pay the present wage; and yet you expect that the award, if it results in an increase, should apply to all roads.

Mr. Carter: As I stated before, this evidence is simply direct evidence introduced in rebuttal of that which we think is going to be introduced. If we had had the privilege and the time to have withheld this witness until after the other side had introduced their direct evidence, and if at no time they had introduced any evidence that they were not in a financial position to pay this advance, the probability is we would never have introduced this witness at all.

As I say the employees in a matter of this sort, are placed at a marked disadvantage, I might say at an unfair disadvantage;

not that the railroads are the cause of the unfairness or injustice, but custom. For instance, in the presence of a stenographic report we spent nearly a month telling all our plans, why we wanted money. We gave the railroads complete possession of all of our argument, practically, that we could introduce here, leaving out some, of course, that did not come up during the discussion. Now, not only that, we go into this proceeding and we have to present our testimony first. Now, they come and present their testimony with that advantage. I am not complaining that the railroads have assumed that advantage. Custom has given that. I say it is an advantage, and we must introduce in direct testimony really what we anticipate will be rebuttal testimony, evidence in rebuttal. Now, our only purpose in introducing this financial testimony, or rather, the testimony as to the ability of the railroads to pay, is because we believe they will do here as they have done on every similar occasion in the past, say they are not financially able to pay.

Now, with regard to the distinction between the financial ability of railroads, I do not believe that that distinction is respected in any calling on earth. I know of small struggling factories, I know of factories that perhaps have gone in the hands of receivers; I know of other factories in the same line that are immensely wealthy; and at no time have I ever heard that the wage of the employee depended upon the ability of the employer to pay. If there were two buildings going up in the same black, one constructed by this powerful construction company here, that figuratively speaking, are rolling in wealth, and the other constructed by a contractor who was struggling with his creditors, I would still say that the same structural ironworker, the same bricklayer, the same carpenter, the same painter, or same classes of those employees should pay the same wages on each of those buildings without rgard to the financial ability of the corporation or individual who has the contract for their erection.

Again, if we are to distinguish between the financial ability of railroads to pay firemen, then we should, by the same rule of reason, require the manufactures of railroad supplies to furnish their supplies cheaper to these impoverished railroads. We should go further, and the Interstate Commerce Commission should give them the privilege of charging, at least on their local traffic, a higher rate, and so forth. At no time have we ever

contended that the relative wealth of a corporation should have anything to do with the fixing of the fireman's pay; but we do say that when a corporation, railroad or other, habitually pleads poverty as the best reason for not advancing wages, it is up to us to try to show that their plea is without foundation.

Mr. Lee: Just to reply briefly, and not to prolong this discussion particularly, we understand that the firemen in this case are the plaintiffs; they want a change in conditions, and not the railroads. The plaintiff, as we understand, always presents his case before the defendant. I do not see that there is anything unfair or unjust in the plaintiff saying what he wants to do, and his reasons for doing it before the defendant attempts to show why he should not do it. On this question I cannot altogether agree with my friend over here, that whether a road, or a business, or a factory, or a person can afford to pay, that they, without any reason, should pay exactly the same wages. For instance, to take a homely expression, the servants girls are of varying classes and of varying rates, according to the ability of the family in which they are employed to pay wages. One family may pay $7 a week, and another family may pay $2.00 a week. They get the kind they want, they get the kind they can afford to pay.

It is directly opposed to economic principles to say because one family cannot afford to pay what the other family pays, that they should all pay $7.00. The reason for that is the different classes of service required. That is the answer I think. It is purely a question of supply and demand; the question of what you should pay is a question of supply and demand, when you get down to the bottom of it. There are artificial reasons why other prices are paid and other compensations are given, but at the bottom of all questions of compensation, of all questions of barter, the question of supply and demand should govern when no artificial means enter into it.

The Chairman: You may go on, Mr. Lauck.

Mr. Lauck: In that connection, Mr. Lee, I think it is clear from my direct testimony so far, that I have not entered into the question of the railroad's ability to pay except on a productivity basis, as applied to the actual production of transportation. I have consciously left that out and constantly reiterated that the capital factor has been left out.

Mr. Lee: That isn't in here.

Mr. Lauck: Only in so far as applied to conducting transportation. The productivity of labor engaged in that and the return to the road. My theory of remuneration of labor is different from the supply and demand theory; it is the productivity theory I have applied there, without taking into account the capital at all.

Mr. Lee: You asked me a question about whether this included different kinds of service—coal consumed. It includes the total for all kinds of service—page 113.

Mr. Carter: I think we have omitted, gentlemen of the Commission, to number the pages of those basic tables. We fully intended to do it.

Mr. Lauck: I was referring to the report of the Interstate Commerce Commission.

Mr. Carter: We have failed so far to number the pages of the basic tables. We are going to do it as soon as we can get to it, and we will try to do it so you will have it in the morning.

Mr. Lee: It will be some time before I get to that. Do I understand then, Mr. Lauck, that this coal which you show at the bottom of the table includes all coal consumed in actual revenue service?

Mr. Lauck: Yes, sir; all branches of service, freight, passenger, mixed, special, switching, non-revenue. I think a much better indication there is the coal consumed per locomotive mile, to my mind. The total could not be presented because it is given to the Commission in averages, and I could not add the averages. You will recall that I showed the figure of coal consumed per locomotive mile for each road, and it seems to me that is more accurate.

Mr. Lee: Than coal consumed per fireman?

Mr. Lauck: Yes, sir.

Mr. Lee: There seems to be a little inconsistency—in one place you use the revenue train miles and in this case you use the total train miles—total coal consumed in all services.

Mr. Lauck: It would not be exactly comparable.

Mr. Lee: And this coal consumed per fireman is the coal consumed in passenger and freight?

Mr. Lauck: The total for all classes of service, as given on

page 13,—freight, passenger, mixed, special switching and non-revenue.

Mr. Lee: You took the total number of firemen and divided it into this?

Mr. Lauck: Yes, sir.

The Chairman: Does it include yard service?

Mr. Lee: Everything.

Mr. Lauck: Everything—all branches of the service.

The Chairman: There is no way of computing the locomotive miles in yard service, is there?

Mr. Lee: There is an arbitrary way, I think, fixed by the Commission, at 6 miles an hour, as I remember it.

Mr. Lauck: I don't know about that.

Mr. Lee: I think there is.

The Chairman: How did you get the locomotive miles?

Mr. Lauck: I simply took the figure which the railroads report to the Interstate Commerce Commission, the average pounds consumed per mile.

Mr. Lee: That is for the individual road?

Mr. Lauck: That is for the individual road.

The Chairman: If the individual road had not included yard service in that, there would be a larger amount of coal consumed per locomotive mile than you figure?

Mr. Lauck: It would seem so, yes, sir. The reason I did not use that for the total was I could not add together the averages—it is reported in averages. To my mind that is a better indication than the coal consumed per fireman, of the tendency I was attempting to bring forward of increased work.

Mr. Lee: That could have been obtained from the reports to the Interstate Commerce Commission by taking the full report of the roads and adding them up; the total amount of coal consumed divided by the total mileage in freight or passenger service, or anything of that sort.

Mr. Lauck: That could be done.

Mr. Lee: Of course the result that is obtained on the right hand side of the page, page 113, is the average pounds consumed per mile?

Mr. Lauck: Yes.

Mr. Lee: But that is obtained by the figures across the table?

Mr. Lauck: Exactly. I did not feel that it would justify me in the limitations that I had to add together all of these different items to get an average for all the different roads. That is the only reason I did not.

Mr. Lee: The coal consumed and the miles run is reported separately for the various classes of service, freight, passenger, switching, non-revenue, etc.

Mr. Lauck: I do not recall, but I suppose you know about that.

Mr. Lee: Page 113?

Mr. Lauck: It is provided for there, yes, sir.

Mr. Lee: My impression is that they do.

Mr. Lauck: I have no doubt it is; I do not recall.

Mr. Lee: Then where these various classes of revenue train miles, non-revenue train miles, and coal consumed in revenue service, and coal consumed in all service, including non-revenue service, may conflict, they are really not comparable, are they?

Mr. Lauck: No, sir; those elements are not comparable, but the idea is simply to exhibit a tendency. I do not claim they are accurate.

Mr. Lee: Well, if there were very material differences, the tendency might be the other way, mightn't it?

Mr. Lauck: Well, I cannot think of a situation where the situation would be the other way on the basis of what I have found. That is, if you can establish the differences, why—

Mr. Lee: This tractive power proposition, you say the tractive power of all locomotives has increased 120%?

Mr. Lauck: Yes.

Mr. Lee: That is of freight, passenger and switching, all locomotives?

Mr. Lauck: Single expansion, yes, sir; that is taking the total tractive power and getting the per cent. of increase, of course.

Mr. Lee: You say here on page 3 in the reading matter, left hand side, that the railroad companies have increased the tractive power of their locomotives 120.69%, and the average weight of their freight train load 135% or 35.13%—

Mr. Lauck: Tons.

Mr. Lee: What is that?

Mr. Lauck: 135 Tons.

Mr. Lee: 135 tons or 35.13%. By these methods the railroads collectively were able to transport a large expansion in traffic amounting to an increase in ton mileage of 62.9% by an increase of only 19% in freight train miles and of only 26% in the number of freight train firemen employed. Do you mean to infer from that that by the increase in this tractive power they have been enabled to increase the freight train load 35%?

Mr. Lauck: I mean to infer from that, the fact, that by increasing the freight train load they are moving a larger volume of traffic with fewer freight train miles.

Mr. Lee: No, the inference from this statement, you say "By these methods"; now the only method you have spoken of is the increased tractive power of the locomotive?

Mr. Lauck: Oh, I do not know whether I get your objection or not, but if it is that there have been additional outlays of capital or the changing of the roadbed and structure and the installation of better equipment, I would fully agree that that had been an important factor.

Mr. Lee: Yes, but reading your statement here on this left hand page "By these methods" I read it to mean by this increase in tractive power they have been able to increase the train load, solely?

Mr. Lauck: No, not solely, no, sir. My idea there is to show—I do not mean to imply that that was solely due to an increase in tractive power, but there might have been a great improvement in the railroad or in the roadbed or the equipment or factors of that kind, but the main fact that I wished to bring out, that they were moving more tonnage with fewer freight train miles. However that may be done makes no difference, it seems to me, according to the idea that I am putting forward here.

Mr. Lee: Well, it makes a very material difference as to how that is done, Mr. Lauck?

Mr. Lauck: Of course if you put more capital into the road it makes a material difference to you in a financial way.

Mr. Lee: Surely, then we get back to what this tractive power represents.

Mr. Lauck: I would like to get away from the tractive power because I am not mechanically—

Mr. Lee: Well, your conclusions are based largely on this tractive power, and any person reading your statement there as

I did, or I think anybody would, the impression that I obtained from that statement was by the increase in the tractive power of the locomotives of the railroads of 120% they were enabled to increase their train load by 35%.

Mr. Lauck: Well, I did not wish to convey that impression Mr. Lee.

Mr. Lee: That is the impression I got from reading that statement.

Mr. Lauck: The impression I wish to convey is and to my mind was the fact that the tractive power had increased, enabled the handling of a larger freight train load; but I would add to that that the use of this tractive power might be conditioned upon an entire reconstruction of the road or an entire change in the form of equipment or improvements in the road and so on.

Mr. Lee: Then as I understand you, Mr. Lauck, you do not intend to mean at all that solely on account of the increase in tractive power, this train load has increased.

Mr. Lauck: Not if I understand you correctly, no, sir, I do not mean that.

Mr. Lee: Here is the point I am getting at—

Mr. Lauck: If you will state the point—

Mr. Lee: I will state it to you: There are a number of factors entering into this increase in trainloads. For instance, the reduction of grades has a very great tendency to increase the trainload without adding one unit of horse power to the locomotive. A reduction in grade will often double the trainload without a particle of change in that locomotive, and without an ounce more coal on the average being burned. And I want to say to you that there are instances—I would not like from my knowledge to say that they were typical, but there are instances I know of—where the trainload has been increased 30 per cent. merely by a change in the size of the cars. That is, by using larger cars the train load has been increased. As I remember the figures, they were something like this: Originally, with a smaller car, they were hauling something like 1600 tons behind a locomotive; and then with that same locomotive, burning no more coal, but merely increasing the size of the cars, they were enabled to haul over the same division 2100 tons behind that same locomotive. Now these are very serious factors entering into this trainload proposition.

The Chairman: The nearer the load to the locomotive, the heavier load it can pull.

Mr. Lee: And the fewer number of journals, and the fewer number of wheels that have to be turned. Your statement is correct, sir, as to the closer the locomotive, but there are many factors in that. Being closer to the locomotive means that there are fewer wheels to turn around.

Mr. Atterbury: Do I understand you, Mr. Lee, that you think a car hauls heavier at the end of the train than it does at the front of the train?

Mr. Lee: Oh, no, sir; but all these factors enter into the shortened train.

The Chairman: I have had my stable man tell me that as between two carriages the reason one of them pulled lighter than the other was that the wheels were nearer together.

Mr. Lee: That is not exactly my point.

Mr. Carter: Perhaps it is on the same theory.

Mr. Lee: That is not exactly my point. We will discuss this matter perhaps a little more at length when we get a witness on the stand who understands all the ramifications of it, but I am merely stating the result in a general way. I think the witness that I will put on the stand will be able to state the result accurately, from his own knowledge.

The Chairman: Would you admit that the construction of a tunnel on a run of a hundred miles, if there was a mountain five hundred feet high that the railroad formerly had to go over, would enable the railroad to increase the freight train load? If they constructed a tunnel through that mountain, the same tractive power would do more work on that division than formerly, would it not?

Mr. Lauck: Yes; but I will tell you that the significant facts to me are the increased train load and with that the increased work of the firemen. That fact is significant to me, that the railroad is getting more ton miles per train mile along with that, and there is a greater burden of work upon the firemen. I did not take into consideration how much capital outlay there had been, like the building of that tunnel. That might cost millions of dollars, as in the case of the tunnel at Harper's Ferry instead of going around as they used to do. The idea I had in mind was that the revenue per train load had greatly increased, that

the work of the firemen had increased, and that the firemen had not participated properly in this increased revenue.

The Chairman: This last illustration of the tunnel might indicate that the revenue result might be increased with less work for the firemen.

Mr. Lauck: Practically all I would have any knowledge to base my statement on, would be the coal consumed. I would not dare go further and say how it was in actual experience, because I do not know. My point is that the work of the firemen will have to stand or fall on the statistics of the coal consumed.

The Chairman: Irrespective of these improvements, the increase of the size of cars, and the improvements in curves and bridges, and overhead crossings in towns, and everything of that sort, you find nevertheless the fact to be that the fireman is handling thirty odd per cent. more coal?

Mr. Lauck: Yes.

The Chairman: Per train mile?

Mr. Lauck: Per locomotive mile.

The Chairman: Per locomotive mile?

Mr. Lee: Per fireman, that is.

Mr. Lauck: I am speaking of individual roads now. I do not think much of this other theory. And I realize also that there may have been a vast expenditure of capital required to develop this train load, and I have not taken into consideration what proportion of the revenue arising from that train load should go to capital. I have simply shown the disparity of firemen's pay as compared with total revenue gain; in other words I have not taken up, if the railroad has made a large investment of capital, that its financial inability is due to the actual investment of that capital, on which return should come out of the revenue. I have not considered that, because I did not want to raise that phase of the matter.

Mr. Lee: But take for instance the case I cited a few moments ago, if in this increased total train load it was due entirely to the cutting down of a grade and making it a lower grade line, and thereby it increased the train load without any additional work to the fireman, would the fireman be entitled to an increase on account of that increased train load, when it was all brought about by an investment in money which he had nothing to do with?

Mr. Lauck: Your assumption or your statement is that the fireman did not do any more work?

Mr. Lee: Yes.

Mr. Lauck: No, sir, I should think the managerial ability or the capital, according to my theory, applying it as a productivity theory, should get the reward, if the fireman did not do any more work.

Mr. Lee: That is the point.

Mr. Lauck: But my contention of course is that the main burden has fallen upon the fireman as a general proposition.

Mr. Lee: Have you investigated the work performed by any other class of railroad labor?

Mr. Lauck: What do you mean?

Mr. Lee: Railroad labor.

Mr. Lauck: Do you mean engineers, conductors and brakemen?

Mr. Lee: Yes.

Mr. Lauck: No, I have not made any investigation of that.

Mr. Lee: Is it not conceivable that you might find other statistics than coal consumed, in the Interstate Commerce Reports, that would lead you perhaps to believe honestly that the brakeman is performing more work and therefore is entitled to a big bunch of money, and the conductors?

Mr. Lauck: It is rather embarrassing to me to have to answer these questions. I have not—

Mr. Lee: I say this is purely a hypothetical proposition, an assumption. You have not investigated these conditions?

Mr. Carter: Gentlemen of the Commission, we do not want our witnesses to testify here in such a manner that the railroads can use their testimony in defeating an increase in wages in any other class of employees—

Mr. Lee: We deny any such motive. I do not think the statement is fair, or the assumption is fair.

Mr. Carter: What would the answer be?

Mr. Lee: This witness has said that the firemen and the firemen alone, as I take it, have borne the brunt of this thing. Now I say to him, is it not conceivable, if he made an investigation of the other classes of labor, that he would find perhaps they have borne some part of the brunt of this increased train load? I think it is a perfectly fair question, without any insinuations

on the other classes of labor. We would not stoop so low as to use this witness's testimony in any other case. I do not think the imputation is fair, sir.

The Chairman: If the witness says he has not investigated that line at all, I do not see that he is competent to answer the question.

Mr. Lee: I am putting merely a hypothetical question to him, whether or not it is not conceivable that he might find in the statistics of the Interstate Commerce Commission some facts that would lead him to believe that the work of the brakemen or the conductors or the engineers was partly responsible also.

Mr. Lauck: I might say—

The Chairman: One minute. I asked the witness a question something like that myself yesterday, and regretted that I had done it, because I saw the attitude it placed the witness in, especially as I looked around and saw the executive officers of all the other Brotherhoods present in the hearing; and of course there was a large array of railroad men present. If we can get along without asking the witness a question of that sort, I think you can accomplish your purpose just as well without it, Mr. Lee. I do not propose to control you in the questions you ask, of course.

Mr. Lee: Yes, and I have a very high regard for the feelings of the witness, and there is no desire on my part in any way to place him in a false or embarrassing position.

Mr. Lauck: If I may interrupt you there, my hesitancy in answering the question does not grow out of any feeling that my answer might be displeasing to other branches of labor, for I do not care what it means. But my hesitancy grows out of the fact that I might make an answer that might not be borne out by the facts, for I really do not know what they have done.

Mr. Lee: Yes?

Mr. Lauck: That is the point. If I had investigated and thought that they did not do the same as the firemen, I would say so; it would not make any difference to me.

Mr. Lee: How then do you come to the conclusion that the fireman has borne the brunt of this increase?

Mr. Lauck: Because that is the way it seems to me. You might claim that was a conclusion based upon a partial examination of the facts.

Mr. Lee: Sort of ex parte—

Mr. Lauck: I am perfectly willing to say, so far as I have gone, I think the fireman has borne the brunt of it, if that will answer your question.

Mr. Lee: Not altogether. It would seem to me that you have come to that conclusion by only an investigation of the firemen's proposition. Now, not desiring in any way to embarrass this witness—

Mr. Lauck: It won't embarrass me if I know the facts.

Mr. Lee: (Continuing)—it would seem that his statement is that he has only investigated the work of the firemen; he has not investigated the work of the track laborer, the machinist or the telegraph operator. How does he know but what they have borne their share of this increased train load?

Mr. Lauck: It would have been almost impossible to have examined the productive efficiency of a railroad organization from the managerial staff down.

Mr. Lee: I agree with you, but what seems rather inconsistent is that solely from an investigation of the firemen's work you make the statement that the fireman has borne the brunt of this work.

Mr. Lauck: That seemed clear to me for the reason that the real work in getting this heavier train load over the road, the arduousness of the labor—there may be other elements of labor required that are not of the same character—as I said yesterday, that the managerial side or the great improvements which have been made in equipment, straightening out the lines and factors of that kind, you might call them managerial ability—I think they should largely participate. Coming, then, to the actual transportation labor I do not know what the conditions of employment of the trainmen and conductors and engineers have been, by any exhaustive investigation, but it seems to me clear from these statistics, that in this heavier train load the burden or the arduousness of handling the train load, if you consider that element, has sort of impinged on the fireman, through his increased shoveling of coal.

Mr. Lee: I don't want to pursue this matter too far to the tiring of the Board; and the only thing I was trying to get at that I haven't got in my mind satisfactorily, is that this witness says the fireman has borne the brunt of this work and is there-

fore entitled to more than anybody else. Now, I was merely trying to get at through what process of reasoning he had arrived at that conclusion. I get into my head that he has arrived at that conclusion through the fact that this fireman has shoveled more coal than he did formerly, while perhaps these other fellows have not shoveled coal but they have other duties that are not connected with the shoveling of the coal; their physical duties may not have been increased to the extent that the fireman's have or they may have been increased, but I cannot find out—I cannot get it into my head why the witness says that the duties of the fireman have increased greater than any other class of employees. That is the impression that he has gained by an investigation solely of the firemen's work.

Mr. Carter: Can you define the meaning of the word "axiom?"

Mr. Lauck: Beg your pardon.

Mr. Carter: Can you define the meaning of the word "axiom"—it is a self-evident proposition, is it not?

(No response.)

Mr. Lee: This self-evident proposition my friend speaks of might be evident to one man and not to another, and unless they are self-evident to all alike they are not axioms, I take it. That is beside the question and I won't pursue this line of thought any further.

Mr. Lauck: It would seem to me, Mr. Lee, that the managerial or operating managerial department and the firemen were the burden bearers of the thing. That is just reasoning from the facts as regards the firemen and the remarkable improvement in getting the trains over the road. The other facts I have not investigated.

Mr. Lee: Is it not conceivable that if you had investigated the other labor factors your mind might be changed—that is conceivable?

Mr. Lauck: If the facts were there, I should, yes. I don't know anything about that, though.

Mr. Lee: You have been brought to this conclusion by the investigation of one line of facts?

Mr. Lauck: By the firemen's.

Mr. Lee: By the firemen's line of facts. Now, it is conceiv-

able, that if you investigated another line of facts, that you might come to some other conclusion?

Mr. Lauck: That is conceivable. I know nothing of it. I simply have an impression now about it; but the facts might change it and they might not change it.

The Chairman: It might be satisfactory to Mr. Lee, and let us get along to another subject, if you would tell him in your opinion, you thought all these other men were entitled to some increase?

Mr. Carter: We will accept that.

Mr. Lee: I think I have got the admission I was finally after, Judge, from the witness; that it is conceivable if he were to investigate some other line he thought he might find some one else was entitled to it.

The Chairman: And yet, that he might think that the fireman was entitled to a little more, sir?

Mr. Lee: He might, sir.

Mr. Lauck: That is the impression I wish to give, that the fireman has borne the brunt—

Mr. Lee: I mean that he has gotten this impression by an investigation of one line of thought. Now, if he investigated another line of thought, he might get a different impression. That is, his impression is gained from investigating only a portion of the question.

The Chairman: Yes, you want him to admit that if he did investigate the case of the other employees, he might find that they ought to be entitled to something.

Mr. Lee: He might find, and he so said, very properly.

Mr. Lauck: Yes, sir, I will acknowledge that.

Mr. Lee: Then these reductions in grades and elimination of curves and improvement in roadbed, would all contribute to the increased train load, increased revenue train load?

Mr. Lauck: As far as my limited knowledge goes, I think that is self evident, yes, sir.

Mr. Lee: And the equalization of the load movement, if you happened to develop a new line of traffic coming back over the road where the empty trains were moving formerly, and you could bring those empty trains back under load, that fact would increase the revenue train load?

Mr. Lauck: Well, that is another question, isn't it?

Mr. Lee: Yes.

Mr. Lauck: That is a question of assembling your freight and your having a return traffic.

Mr. Lee: Having a return traffic, and bringing your trains back loaded instead of empty.

Mr. Lauck: It has no relation to the work. You see the only element I care about is the increased train load and the coal consumption.

Mr. Lee: Yes, but what I am getting at is, this increased train load is not all due to the increase in tractive power of the locomotive?

Mr. Lauck: Oh, well, go ahead; that is all right with me. I mean I am willing to acknowledge that.

Mr. Lee: These other factors have nothing to do with the tractive power of the locomotive, the reductions in grades, elimination of curves, improvement of roadbed, and equalization of loaded traffic, those have nothing to do with the tractive power of the locomotive?

Mr. Lauck: As far as my limited mechanical—I do not think you would get me into a technical difficulty—

Mr. Lee: Not at all.

Mr. Lauck: (Continuing) On the tractive power of the locomotive, and under those conditions I would say that it had nothing to do with it.

Mr. Lee: But you said to me that you had been brought to this frame of mind by the increase in train load and increased amount of coal shoveled. I am trying to show you that the increase in train load has been largely due, not to the increased tractive power of the locomotive, but to these other things.

Mr. Lauck: Oh, well, I am willing to accept that The train load is the matter that I pin my faith on.

Mr. Lee: The train load?

Mr. Lauck: Yes, sir.

Mr. Lee: That is just exactly what I am talking about. The train load is not altogether due to the tractive power of the locomotives; it is due to all these other things. The train load is due to the reduction in grades, the elimination of curves and improvement in roadbed, the equalization of loaded traffic, larger cars; all those things contribute to the train load that haven't got an iota to do with the tractive power of the locomotive, and if

that is the fact, which we propose to prove, I think you will agree with me that the tractive power is not the governing feature in this matter.

Mr. Carter: Will you show in your proof what proportion of mileage of all the mileage represented, the grade has been reduced?

Mr. Lee: I do not know whether we will or not.

Mr. Carter: I would like you to do so.

Mr. Lee: We will give it to you as near as we can.

(A recess of ten minutes was taken.)

Mr. Lee: Mr. Lauck, you agree, do you not, that the tractive power is not the only factor, and that the increase in tractive power is only one of the factors that enter into this increased trainload?

Mr. Lauck: You mean that the increase in the tractive power is only one of the means of getting a heavier train over the road.

Mr. Lee: Yes.

Mr. Lauck: And that improvements in the road, or the elimination of grades, or things of that sort, may be other factors?

Mr. Lee: Or the increase in the size of cars.

Mr. Lauck: I thoroughly agree to that, Mr. Lee, as far as my knowledge goes, except that I do not know what you mean by the "size of the car."

Mr. Lee: For instance if originally you had a car that would haul 20 tons, and you increased the size of the car so that it would haul 50 tons, with the same engine you would haul the same amount of tonnage in the larger cars easier than you would in the smaller cars.

Mr. Lauck: That may be true, but I would rather you would establish that by a mechanical man; I do not know.

Mr. Lee: If we can establish that fact, it would be a factor in the increase in the train load.

Mr. Lauck: Yes; if you can establish that on competent authority, that would be evidence to me that it was a fact.

Mr. Lee: And that this increase in tractive power is only one of the elements that have increased the trainload, and is not the only element.

Mr. Lauck: I would agree with that, yes.

Mr. Lee: That being the fact then, Mr. Lauck, do you as-

sign all the increased profit due to the increase in trainload, to the freight fireman, or is it fair to do so.

Mr. Lauck: If I get your question correctly, it is, do I assign all the profit in the increase of the freight trainload to the fireman.

Mr. Lee: Due to the increase.

Mr. Lauck: Oh, no. I never had any such idea. I think the capital ought to be reimbursed, and any other factor that has contributed to it. I can readily see that it requires a very heavy capitalistic outlay to make this possible. I freely admit that. I only want to give the firemen a part of it.

Mr. Lee: Is the output of a man governed in any way by the tools that are provided for him?

Mr. Lauck: Oh, largely, under modern methods of manufacturing and mining.

Mr. Lee: Of course, a railroad manufactures ton miles and passenger miles.

Mr. Lauck: Yes.

Mr. Lee: That is what it is in the manufacturing business for.

Mr. Lauck: Yes. I think I could give an analogy, if you will allow me to refer to my favorite, the southern cotton mill.

Mr. Lee: Go ahead, sir.

Mr. Lauck: You find in the southern cotton mill, or in any cotton mill for that matter, that a man is paid according to the number of looms he tends. Of course, that is in accordance to his relation to the output. That is, the more looms he tends, or the more spindles he tends, the more hanks of cotton will come out from the spinner, or the more yards of cloth will come out from the weaver. My idea is, that in this increased output of the railroads in ton miles, or increased productivity for locomotive miles, the productivity of the fireman has been increased by the installation of better machinery, better equipment, better road-bed, the elimination of curves, and so on. But in bringing this about, it is similar to increasing the number of looms that are tended by a weaver; that the fireman, in order to produce more ton miles, has had to handle more coal; I do not know what the accurate per cent. is, but the statistics indicate about 25 to 30 per cent. Therefore, he should participate

to the extent of his increased work only, or approximately, in this increased output. That is all I would claim for the firemen, something approximating that.

Mr. Lee: That is, taking your loom again, if a man tends ten looms at the start, and he is enabled perhaps by selective effort to tend fifteen looms,—

Mr. Lauck: That is the idea exactly.

Mr. Lee: That is he does 50 per cent. more work?

Mr. Lauck: Yes.

Mr. Lee: And therefore his wage should be increased by 50%?

Mr. Lauck: That is, if his work increased. Of course it is conceivable that you might install a machine without requiring any additional work of the operator or person working the machine; that is, you might substitute an automatic loom for a loom—of course, the weaver's work depends on how many threads he can tie up in a certain time; you might substitute an automatic loom that would greatly increase your output without adding to his work, I will freely grant that. But my impression from studying the statistics of railroads is that you have increased the fireman's output, but have increased his work also, and therefore he should receive more pay.

Mr. Lee: In what way have we increased his work, just from your knowledge of statistics?

Mr. Lauck: By the handling of coal and the arduousness of the work.

Mr. Lee: That is, by your table here, he has shovelled in the neighborhood of 33 per cent. more coal?

Mr. Lauck: Yes.

Mr. Lee: And should receive 33 per cent. more pay therefor?

Mr. Lauck: All these statistics indicate a tendency; that is, so far as the statistics go, that would be a conclusion, but as to the exact amount I am unable to say.

Mr. Carter: His hours of service being lengthened, might have something to do with it.

Mr. Lauck: Yes, sir; anything growing out of this increased efficiency of productivity, that would impinge upon the fireman in addition to what he did in 1902, say in 1912, I should think he should be recompensed for. If capital had alone been the factor in it, give it to capital; but my impression is that capital alone has

not been the factor. Capital has been a very important factor in producing increased equipment, such as bigger cars, heavier rails, and better and heavier locomotives, all requiring increased outlay, and adding to your property outlay or capital commitment in the property; but in using them, it seems to me—I do not like to use a more or less vulgar phrase—but the fireman has been the goat, it seems to me, so far as the labor force is concerned. That is the idea.

Mr. Carter: We will accept the definition.

Mr. Lee: That is from the investigations you have made so far?

Mr. Lauck: Yes, sir.

Mr. Lee: With that qualification?

Mr. Lauck: Yes, that qualification always standing.

The Chairman: Putting it then upon that basis alone, and leaving the increment to capital out of the question now entirely; if the facts show that while the fireman handles 32 per cent. more coal than he did in 1902 and that that handling of coal represents an increase of 32 per cent. in his work, if the wage increases which have been allowed the fireman since 1902 amount to 32 per cent., do you think there is a stand-off?

Mr. Lauck: If that can be shown approximately?

The Chairman: Yes.

Mr. Lauck: I find that the relation of the cost of the fireman—we must consider this in the relation of the cost of the fireman to the railroad, in that he has increased his work to the railroad—and I find that the proportion of the fireman's cost to labor cost is about the same now as it was in 1902; even less on a great many railroads.

Mr. Lee: That is the total firemen now, you mean?

Mr. Lauck: Yes, considering that—if we consider what the fireman is doing for the railroad, or rather what the railroads have done to increase their own efficiency, which has impinged upon the firemen, say in the coal handled to the extent of thirty per cent., then we must consider what the railroads pay to the firemen; I do not mean to each fireman, but what they give out as a whole to firemen. And I find that the proportion of the outlay for firemen to the amount they pay all their labor, is, if I remember the statistics correctly, less now than it was in 1902; that is, the proportion of operating revenues absorbed by the fire-

men, the proportion of operating expenses to the railroads for firemen.

The Chairman: You do find that to be a fact?

Mr. Lauck: Why, the totals of course for all roads are not so accurate as each road would be separately, but referring to page 18 in this exhibit Judge Chambers, you find—

The Chairman: This same exhibit?

Mr. Lauck: Yes, sir. You will notice there on page 18, it is the third section, ratio of cost of locomotive firemen to total operating revenues. In 1902, it was 2.04%; that is firemen in 1902 absorbed 2.04% of the revenue; in 1911—I haven't the figure for 1912, the totals, but it was 2.31, an increase of .26 of 1% or expressing it on the basis of 1902, the ratio would be about 10%.

Mr. Lee: That is the operating revenue you are comparing it with?

Mr. Lauck: Yes, that much revenue absorbed.

Mr. Carter: How about all labor; you started out to compare it with all labor?

Mr. Lauck: Well, the ratio of cost of firemen to all labor; that is, the ratio of all amounts paid firemen to total outlay for labor in 1902 was 4.96%; in 1912 it was 4.94%.

Mr. Carter: Where is that?

Mr. Lauck: That is on page 17 right here (indicating). In other words the fireman is getting less in proportion to other labor now than he got in 1902.

The Chairman: Now, the fireman has increased from 2.04 to 2.31?

Mr. Lauck: Yes, sir; that is of revenue, he takes that much more revenue now.

The Chairman: And now the other, on all labor?

Mr. Lauck: On all labor it is right here (indicating) 4.94 and 4.96.

Mr. Atterbury: Mr. Lauck, then as I understand it in answer to Judge Chambers' question that if the firemen had received an increase greater than the amount of the coal that they burned, that because of the fact that their proportion of the total labor cost was less than in 1902, they should get an increase?

Mr. Lauck: The first part of the question, even if a fire-

man had received, I have no evidence for that. My answer to that was—you are speaking about a fireman now are you not?

Mr. Atterbury: No, I think Judge Chambers asked you that if a fireman had received an increase in proportion to the increase in the amount of coal consumed per fireman, then I thought you replied that even if that was so they still should receive an increase because their present wage in proportion to the total labor cost was less than it was in 1902.

Mr. Lauck: No, sir; I did not say if they had received it; I mean I did not acknowledge that they had received it, you understand. My answer to that question was that we are considering this from the standpoint entirely of costs to the railroads for their firemen and what the fireman turns out and what work the fireman does, and my study of the statistics had revealed that the firemen were not participating in the revenue gains now as they had done in 1902.

Mr. Atterbury: But I thought a number of these statistics as it was developed in accordance with your own figures showed, for instance on the Erie Road, I think, that the fireman had received an increased wage of 38% and the coal consumed increased 32%. Was that right?

Mr. Lauck: Oh, you are referring to a fireman now, are you?

Mr. Atterbury: Yes.

Mr. Lauck: Why that is not fundamental to my contention. That was simply exhibiting the relative increases and outlay per fireman on the basis of the statistics we have to the railroads, and the relative revenue per fireman. I do not expect that the cost to the railroad per fireman has increased 38%.

Mr. Atterbury: I thought your figures showed that.

Mr. Lauck: They do show it, but the object was not to demonstrate that, but to show the railroads' increase in expense.

Mr. Atterbury: It may not have been your object to show it, but those are facts which Judge Chambers has figured out. Then, as I understood the question, I thought you felt that notwithstanding that increase in wages, because of the fact that their proportion of the total wage cost was less, that they still should participate in the increase.

Mr. Lauck: My idea there would be that the "per fireman" has no significance at all. That is, unless you could work out what proportion of that revenue was "per fireman" increase in

revenue. I did not analyze those statistics as I have these. If you had a "per fireman" increase in cost of $250, on basis of $600, it would be 40 per cent. If you had a revenue gain over all revenue per fireman that simply illustrated the relative increase in revenue on the per fireman basis, ton mile basis, and train mile basis, and so on, and if you would then analyze the revenue as I have done here, you would have the relative proportion of revenue which this was in 1902 and 1912. My contention is not based on that. I think the statistics relative to the "per fireman" are so unsatisfactory that we should not base anything on them. You will notice that in my remarks about my diagram I have said that they exhibit tendencies. I do not say they are accurate. The average number of firemen employed is not the figure used but just the total number reported on any one day. My fundamental contention is that we will consider the cost to the railroads for firemen and with that compare the increased work of firemen, if their statistics are true, as to increased work, and increased revenues resulting from that work, and that the firemen should receive a participation in the increased revenues, if his work has increased. You will find that if the relation of fireman cost, as I have stated, is just about the same, there would be about ten per cent. increase on the basis of ratio to operating revenue, while the revenue produced has been many times that.

The Chairman: Mr. Lee, if you will excuse us for interrupting, you can now go on.

Mr. Lee: This discussion has brought the question a little out of line. You state there on page 17—referring to your table there—that the total cost per fireman and total labor cost of operation has declined.

Mr. Lauck: The proportion, yes, sir.

Mr. Lee: Is that significant of anything?

Mr. Lauck: It is significant so far as a ratio is significant. Is your operating ratio significant?

Mr. Lee: Does this ratio mean anything so far as this controversy is concerned?

Mr. Lauck: It is fundamental, it seems to me, to the controversy unless you want to put it on a revenue train mile basis or a locomotive mile basis.

Mr. Lee: Here for instance you say the total cost per fireman and total labor cost of operation has declined.

Mr. Lauck: Exactly.

Mr. Lee: For instance, now, you had $100 worth of firemen and $1000 worth of all labor. Your total cost of firemen is 10 per cent.

Mr. Lauck: Exactly.

Mr. Lee: Suppose for instance your firemen stayed at $100, and you were required, by some outside agency, for instance, to build larger stations, or introduce stations at points where you did not have them, or other work of that sort, that required the number of laborers in other parts of the work to increase, so that you would run your total labor cost up to $2,000 instead of $1,000, the result would be that your ratio of total cost of firemen to total labor cost, would be reduced from ten to five. Would that be significant of anything, particularly so far as the fireman's work is concerned?

Mr. Lauck: Well, as I said, that has a significance in so far as all ratios are significant. Your operating ratio may be affected by the passing of traffic, may it not?

Mr. Lee: Oh, yes.

Mr. Lauck: Your operating ratio may be higher this year because traffic is low, and it may be low next year because traffic has increased?

Mr. Lee: Certainly.

Mr. Lauck: I should think in such an unreasonable—if I may say—case—

Mr. Lee: Yes, it was an exaggerated case.

Mr. Lauck: In such an exaggerated case as you have mentioned, it would be very culpable on the part of a railroad to go into any such increased cost. I can see this, Mr. Lee, for the sake of argument—suppose you had a highly skilled class of labor, they might come along and make you pay a great deal more—

Mr. Lee: Don't look at him, look at me.

Mr. Lauck: I am looking at you. And therefore your ratio of firemen cost to total labor cost would decline, would it not?

Mr. Lee: Yes.

Mr. Lauck: But that would not lessen my contention that the firemen should receive higher pay, for the reason that the firemen being a productive element ,and their work being increased, they should receive more.

Mr. Lee: Yes. But what I am getting at is; what signifi-

cance should be drawn from the fact that the total cost of firemen as compared to total cost of labor has declined? What does that mean, if anything?

Mr. Lauck: That means to me that the outlay for all the firemen to a railroad at present as compared with the outlay for all labor, has very slightly declined.

Mr. Lee: Yes.

Mr. Lauck: Now, on the other hand, we find that the work of the firemen has increased. I, therefore, say that even if the other labor has been properly advanced, or even if other labor costs have been incurred, in view of the fact that the fireman is doing more work, which is also producing more revenue, he should be permitted to participate in this revenue, or be placed on the same footing as he was before his work was increased.

Mr. Lee: Now, for instance, the size of engines has been increased, and that has very materially increased the number of shop men?

Mr. Lauck: Yes.

Mr. Lee: That is a labor cost that has gone up on the railroad?

Mr. Lauck: Where do you carry that? Do you carry it in your maintenance?

Mr. Lee: Maintenance of equipment. It all goes into labor cost of operation.

Mr. Lauck: According to the analysis of statistics, your labor cost of maintenance has been the prevailing increase in labor cost?

Mr. Lee: That is the way you look at it.

Mr. Lauck: The way they are analyzed here.

Mr. Lee: Yes, the way they are analyzed here. Now, we will go back and proceed along the other lines. On page 4 you say, "The increase in productive efficiency of firemen and other labor engaged in conducting transportation at once becomes evident, a comparison of the total advance in expenditures for firemen and other labor with the total revenues received by the railroads that are parties to the present proceedings for their services?"

Mr. Lauck: On what page is that?

Mr. Lee: On page 4, No. 6, the third section, sixth paragraph. Does the productive efficiency of firemen and other labor increase

directly with the increase in total revenues received by the railroad?

Mr. Lauck: Will you state that again?

Mr. Lee: Does the so called productive efficiency of firemen and other labor, increase directly with the increase in total revenues received by the railroad?

Mr. Lauck: Oh, no, that is not the meaning of that. My idea stated very briefly is this, that firemen and other transportation labor, working in conjunction with this better equipment which you have installed, in the way of engines, and the better roadbed, and better facilities of every kind, have been productive of more revenue. That is the idea there.

Mr. Lee: Then you do not intend to convey the thought that the productive efficiency of firemen and other labor increases directly with the increase in total revenue?

Mr. Lauck: I do not mean even to intimate anything of that kind. I mean that the productive efficiency—the exact term is hard to get. I do not like to be using terms that seem to be theoretical or academic, but the idea I have is that the productive efficiency of firemen and other labor has increased because you have given them better machinery and better equipment, better means of working. That is, your capital, equipment, and managerial ability have placed the improved machines, for manufacturing ton miles, at the disposal of the men who are working with them. The firemen, working with these improved machines, produce, at a proportionately less cost as compared with revenue, a greater return. Then, of course, I would add to that my other fundamental idea that the fireman does more work, and therefore he should participate to a greater degree in the revenues; but I do not mean to say that the fireman or any other labor is the cause of this revenue solely, or independently, or primarily.

Mr. Lee: I am merely bringing these points out, if the Board please, because the reading of this matter is perhaps a little ambiguous, and the impression that it might create on the mind from what the witness has said I do not think is the impression that he intended to convey.

Mr. Lauck: I am very glad for you to bring it out, because I think in presenting a whole lot of statistics of this kind that it may seem not clear or that I may not have made myself clear, and I would rather make myself clear.

Mr. Lee: That is the point I am bringing out. The reading of this matter is not in accordance with our idea of the case and from what I developed from the witness, the impression that might be created by this reading matter is not entirely the idea he desires to convey. I think I am correct. If the idea can be gained from the reading of this paragraph that the productive efficiency of firemen and other labor increases directly with the increase in total revenues, you do not mean that?

Mr. Lauck: No, sir.

Mr. Lee: That was the impression I gained—

Mr. Lauck: I do not think I stated that.

Mr. Lee: How is that?

Mr. Lauck: Did I state it anywhere?

Mr. Lee: I do not say you stated it, but that is the impression I gained from the reading of this thing.

Mr. Lauck: Well, that is erroneous from my standpoint.

Mr. Lee: Yes, that is all I wanted to bring out.

Mr. Lauck: If you wish clearly the statement of what my attitude was, I have a pencil memorandum here that I could state it from, but that of course is at your pleasure.

Mr. Lee: Yes, we will get that later, perhaps. And should his salary be increased in the same proportion as to increase in total revenues?

Mr. Lauck: Should the fireman's salary be increased—

Mr. Lee: Or any laborer's salary?

Mr. Lauck: Oh, no. We had that point up the other day and we came to the conclusion—it was discussed by the different members of the Board and I think by the counsel, and I admitted that if you simply took total revenues, there was no provision for capital.

Mr. Lee: When we get to that theory—we have not got to that theory yet.

Mr. Lauck: It is the same thing.

Mr. Lee: It is all the same thing?

Mr. Lauck: Oh, no.

Mr. Lee: About of equal value, all your theory?

Mr. Lauck: You seem to me to be exceedingly theoretical this morning.

Mr. Lee: Not at all. I am trying to get at what you mean by these things.

Mr. Lauck: All right, sir.

Mr. Lee: And I am trying to get at whether the impression I received in reading over this matter is the same as yours?

Mr. Lauck: Yes.

Mr. Lee: And I find in some instances it is not, and I am very glad to find it out.

Mr. Lauck: I am very glad to have you bring it out.

The Chairman: Let us suppose, Mr. Lauck, that this increase in revenues, admitting that there is a substantial increase in revenues, has been brought about entirely through the improved management, through the advance in inventions, through the improvement of the physical character of the road, the improved type of locomotives and all those things, without any increase in the work of the fireman; would you think that the fireman was entitled to an increase in wage?

Mr. Lauck: Just basing it on our present theory and not considering any other factor at all?

The Chairman: Yes, that all the improvement in revenue had been brought about by improvements in the management and in the physical condition of the road.

Mr. Lauck: No, sir; if the fireman did not have to do any more work, on this idea that I am presenting, I do not think he should have any more pay.

The Chairman: Then you would admit that all the increased revenue should go to the capital?

Mr. Lauck: Yes, sir.

The Chairman: To the owners of the property?

Mr. Lauck: Yes, sir. Now I am contending—

The Chairman: Then we come right back to my other question to you sometime ago, did you base the entire justice of the fireman's demand for increased wages upon his increased work?

Mr. Lauck: Upon his increased work and the increased revenue to the railroad resulting from that work. In other words the railroads have become more efficient in terms of revenue as compared with terms of cost, and part of the burden of that has fallen upon the fireman in increased work. My contention, therefore, is that the fireman should have an increase in remuneration corresponding to the added duties imposed upon him by these improvements, which have been largely the result of managerial ability or improving the physical property.

The Chairman: Then he is entitled to some increase on both propositions, based upon his increased work which has entered into the increase of revenues, and based upon the prosperous conditions of the company resulting from that?

Mr. Lauck: Yes, the prosperous operating conditions. That is, of course, I do not go into the financial management of the company, but my idea in presenting the revenue train mile and locomotive mile was to show that the cost of fireman had increased very slightly to the company, as compared with the revenue gains which they had derived, and an increase to firemen would absorb very little of this increased revenue gain, and still leave to my mind an amount amply sufficient to require, or to remunerate, all capital or additional capital, at least, which had been necessary to bring about this ability to handle an increased train load over the road. Of course when we get into financial management of the companies as we were speaking of the New Haven yesterday, it is a different thing. That is, the operating efficiency may be superb, and the financial management may dissipate the results of the operating efficiency.

Mr. Lee: You would not say, would you, Mr. Lauck, that the firemen or other class of labor should participate in that portion of the increased revenue to which they had not contributed by their efforts.

Mr. Lauck: Oh, no, if there had been no additional work required of firemen, or no other factor changing the status of firemen, and there had been a revenue gain due to managerial ability, capital invested, I would not say the fireman would deserve anything.

Mr. Carter: You base that statement, I understand, simply on the matters that you have considered?

Mr. Lauck: Oh, yes, I am not considering cost of living, or anything; we are just considering the operation of the railroad.

Mr. Lee: Oh, yes, I understand we are considering largely a theoretical proposition.

Mr. Lauck: Well, it is a question of costs and profits from costs, if that is theoretical.

Mr. Carter: I understand you to mean that if in the goodness of their hearts, the railroads take from the firemen their little "dinky" engines and give them expensive huge engines by

which they can pull twice as much tonnage, and perhaps double the profits of the train unit, that the firemen should at least have some recognition?

Mr. Lauck: I think the fireman should participate according to the increased duties imposed upon him there, yes, sir.

Mr. Carter: His productive efficiency?

Mr. Lauck: Yes, sir.

Mr. Lee: But he should not participate in any increased revenues to which he has not contributed by his effort?

Mr. Lauck: Of course this theory of productive efficiency, or if you wish to call it a theory, the idea, it is nothing new with me, it is simply relating labor to the output and the cost. If, as Judge Chambers just said, the laborer had no part in it, why he should not receive any gain.

Mr. Carter: Page 5 you compare the increase in cost of firemen, the increase in transportation revenue, and the increase in operating revenue. Increase in transportation revenue.

Mr. Lauck: That, Mr. Lee, I do not want to create any wrong impression with that.

Mr. Lee: Is that the thing you called attention to the other day?

Mr. Lauck: Yes, sir, and I took very particular care in going through the exhibits where I only speak of transportation costs not to say anything about that, because I did not want to seem to indicate that I considered those all of the costs.

Mr. Lee: What is this, increase in transportation revenue?

Mr. Lauck: You remember we were speaking of that the other day.

Mr. Lee: No, we were speaking about transportation expenses the other day, but here you have got transportation revenue and operating revenue together.

Mr. Lauck: For all practical purposes I should say they were identical.

Mr. Lee: But I will tell you what you are getting at there; one is increase in transportation revenue, I think that means the net operating revenue; and the other is the total operating revenue. One is the operating revenue, and the other the net operating revenue, perhaps.

Mr. Lauck: No, this is it, the transportation revenue and the operating revenue are practically the same. The transporta-

tion revenue is the revenue which peculiarly comes from transportation and nothing else; that is, it is the amount you receive for your freight traffic and passenger traffic. Then they add a little bit to that from parcels rooms and maintaining restaurants, I suppose.

Mr. Lee: That is revenue from operations other than transportation?

Mr. Lauck: Yes, sir.

Mr. Carter: Did you ascertain how much they secure from the parcel rooms?

Mr. Lauck: No, sir.

Mr. Carter: I have contributed quite liberally; I would like to know.

Mr. Lee: Total revenue from transportation?

Mr. Lauck: Yes, sir.

Mr. Lee: That is the one you call transportation revenue, and then total revenue from operations is what you call the operating revenue?

Mr. Lauck: Yes, sir, I simply put it in there without any idea, except I thought somebody might bring up the question that you are considering revenue other than that arising from conducting your road, which is the fundamental proposition.

Mr. Lee: Yes, and that revenue from operations other than transportation might or might not be—

Mr. Lauck: There are expenses incident to other operations they might be greater and you find operating revenue less than the transportation revenue.

Mr. Lee: This is just comparing the cost of firemen with the total revenue from operation.

Mr. Lauck: It has no significance, I think, in our present contention at all, to be perfectly frank, except to show that although there has been an increase in cost of firemen, there has been a revenue gain merely in terms of dollars and cents, but the really vital thing is when you get to the locomotive mile or train mile, and show the relation between costs of moving the train and the revenue received from moving the train.

Mr. Lee: Then in the third table on that same page, you compare the increase in total transportation expenses with the increase in transportation revenue. We understand that those expenses do not take into account maintenance expenses at all.

Mr. Lauck: No, sir. I explained about that also if you will remember.

Mr. Lee: Yes.

Mr. Lauck: Of course that is only about 40 per cent. of the total expenses or fifty per cent., something like that.

Mr. Lee: It does not take in the total operating expenses?

Mr. Lauck: No, sir.

Mr. Lee: What is the object of showing that there?

Mr. Lauck: Just as in the case of the preceding, the object is to show the relative increases in actual expense of conducting transportation, and the total gain in revenue. There is no intent to mean that that was all the expense. As a matter of fact, I regret that I inserted this part of this section 3, because I think it has done more to bewilder than to bring out the intent I had, which was of very small value itself. I meant simply to show that there had been increased cost, but that there had been increased revenues offsetting the cost in terms of dollars and cents.

Mr. Lee: Yes. You mean in other words, that the roads as a whole have not been operating at a deficit.

Mr. Lauck: You could take it in that way, yes.

Mr. Lee: Fortunately it is a fact.

Mr. Lee: You say it is a fact.

Mr. Lee: I say fortunately it is a fact that the operating revenues have been greater than the operating expenses so far.

Mr. Lauck: I claim that is due to the managerial ability of the railroads—

Mr. Lee: Very largely, we think.

Mr. Lauck: Working in conjunction with the firemen and the better equipment.

Mr. Lee: Yes. At the top of page 6, total average annual expense per fireman. We understand you have taken the total wages paid firemen and divided them by the number of firemen on June 30th?

Mr. Lauck: Exactly.

Mr. Lee: Now there has been a good deal of discussion about these things at various times—

The Chairman: Pardon me. That is a proposition that they have been contending over.

Mr. Lee: I think perhaps we are going to get Mr. Carter out

of a hole. Assuming, Mr. Lauck, that in 1902 the figures that you used to arrive at this annual compensation, that is, the number of firemen that you used in arriving at this annual expense for firemen were a certain number, and using the same number of men in dividing your total average annual revenue by the firemen, and assuming that you did the same in 1912 with the figures arrived at for the average number of firemen at that time, your comparisons ought not to be far off. That is, it is proper to use the figures in that way for a ratio?

Mr. Lauck: Yes.

Mr. Lee: And that is the way as I understand that you have used those figures, merely as a ratio?

Mr. Lauck: Simply indicating, as if I had said the cost per ton mile and the revenue per ton mile.

Mr. Lee: And assuming that perhaps the figures which my friend, Mr. Carter, seems to have so much trouble about, might show that the firemen in 1912 received $4.50 a day, which we know they do not, or $10.50 a day, that would have no bearing on that matter as far as your ratio is concerned?

Mr. Lauck: If I get your point correctly, your contention is that if there is any error in the figures, it has been constant, and the tendency would be the same.

Mr. Lee: Yes. It would not affect your ratio from 1902 to 1912.

Mr. Lauck: That is, if the Pennsylvania Railroad had used the exact method in 1902 in arriving at this computation that it did in 1912—

Mr. Lee: Without material change.

Mr. Lauck: Whatever elements of error there were, would be common to both computations?

Mr. Lee: Yes, go ahead.

Mr. Carter: If different methods are used from year to year, what would be the result?

Mr. Lauck: Of course they would be erroneous.

Mr. Carter: They would be entirely incomparable?

Mr. Lauck: Entirely incomparable.

Mr. Carter: Then by simply a reduction of the number of employees reported to the Interstate Commerce Commission it could be shown by the so-called records of the Interstate Commerce Commission that the average earnings of railroad em-

ployees had greatly increased, when in fact they had not. Is not that true?

Mr. Lauck: Yes, if the number should be decreased, the earnings per man would be increased.

Mr. Carter: It would depend entirely upon the attitude or rather the rule observed in making these reports.

Mr. Atterbury: Do I understand that the witness knows that these figures have been correctly reported?

Mr. Carter: No, he said "if they were."

Mr. Lee: No, he is taking the figures from the payrolls as of June 30th, as I understand it.

Mr. Carter: The point I want to bring out is this—perhaps we have been mistaken in being so liberal in our attitude and perhaps we will gain by our frankness—is that any statistics based upon the reports of the railroads to the Interstate Commerce Commission, as to the number of firemen, are erroneous, because of the fact that the reports of the railroads are erroneous. That has been the point that I have brought out every time this question has come up. I understand that the Engineers' Arbitration Board, for some reason best known to themselves, based their award to the engineers on the reports of the railroads to the Interstate Commerce Commission as to the number of employees in service and their total compensation and the division of the latter by the former would give what we are pleased to term the average daily compensation or average compensation. Now, the engineers have greatly suffered, in my mind, by their Arbitration Board stumbling upon a pitfall—I will not say a trap, but it was there and they stepped into it up to their necks, and we do not propose to step into it here.

Mr. Lee: I do not know whether that is really pertinent to the question or not, whether or not the Engineers' Arbitration Board stepped into a pitfall; but I want to say to you, sir, that we are not digging any pitfalls for this Board, whether the Engineers' Arbitration Board did or not.

Mr. Atterbury: Where is the supporting data for these figures? That is the thing that will tell the story, it seems to me.

Mr. Lee: I think my friend over here is barking up the wrong tree.

Mr. Lauck: The supporting data for these figures will not tell anything more than these figures indicate.

Mr. Atterbury: Would you mind telling me, please, exactly where you got them—take some specific case?

Mr. Lauck: Taking the Pennsylvania Railroad, June 30th, 1902, they had so many firemen reported.

Mr. Atterbury: That is shown where?

Mr. Lauck: Page 91.

Mr. Atterbury: What does that show?

Mr. Lauck: Number on June 30th.

Mr. Atterbury: Number of what?

Mr. Lauck: All classes of employees.

Mr. Atterbury: Does that show the number of firemen on the rolls, on June 30th?

Mr. Lauck: The year reported for, yes, sir.

Mr. Atterbury: Then does the same thing show for 1907?

Mr. Lauck: Identically.

Mr. Atterbury: And then that total number of firemen on the rolls for the month of June we will say is the divisor?

Mr. Lauck: Exactly.

Mr. Atterbury: Now, what do you divide it into?

Mr. Lauck: The total compensation of firemen by the Pennsylvania Railroad—the total amount paid to firemen by the Pennsylvania Railroad.

Mr. Atterbury: For what year?

Mr. Lauck: For the two years.

Mr. Atterbury: This is for the current year of 1912 and the current year of 1902?

Mr. Lauck: Exactly.

Mr. Atterbury: Then these figures purport to be the result of dividing the total number of firemen on the rolls from June 30th into the total amount of money paid firemen in a year—is that what that purports to be?

Mr. Lauck: That is it, exactly.

Mr. Carter: The point I wanted to bring out, gentlemen, is that these "purports" are disastrously inaccurate. If we are to accept them for our side—

Mr. Atterbury: What I wondered was, where the inaccuracy in the total number of firemen on the roll on June 30th in each year comes in—where is the inaccuracy? Do you think that they have been falsely reported?

Mr. Carter: I mean to say that I do not believe that the method adopted—without placing the responsibility of it—

Mr. Atterbury: I am not asking about the method adopted. I am just confining myself now to the number of firemen on the roll at the end of June 30th. That is, or ought to be, a correct statement.

Mr. Carter: But they don't show the number of firemen on the roll.

Mr. Atterbury: That is what I understood him to say.

Mr. Lee: Read this here—

Mr. Carter: I understand that some years ago somebody—it wasn't us—pursuaded Mr. Henry C. Adams—it wasn't us—that the method adopted by the Interstate Commerce Commission truthfully set forth the number of employees in service. I am saying now that possibly it was approximately an accurate method because at that time the engines belonged to the firemen.

Mr. Atterbury: Yes, but, Mr. Carter, you do not get my point.

Mr. Carter: I am going to get to your point right now. At that time the engines were said to belong to the firemen; that is, the fireman was supposed to go as far as the engine did, and when the fireman laid up, the engine laid up. And I am going to surmise that at that time they thought that engine mileage and fireman's mileage were practically synonymous, and they thought it would not be unfair to any employee, or a fireman, we are speaking of, to say that the number of firemen that made a day on June 1st was truly representative of the number of firemen employed, not taking into consideration perhaps 50 firemen who were getting their rest. At that time, I will say the firemen worked nearly every day, but if you will take June 30th, 1912, I believe nearly half the firemen were in bed and not on their engines, and did not make a day; they were trying to recuperate from what they had done the day before.

Mr. Atterbury: Does not this count the number of firemen in bed and on the sick list and everything?

Mr. Carter: I understand not.

Mr. Lee: Read the instructions in the report.

Mr. Carter: I want to say to you that the reports of the railroads are grossly inaccurate.

Mr. Atterbury: No, but let us confine this thing. Here is a statement, and I would like to get the real facts about it. As I understand the witness, he says that this is the result of dividing the number of firemen on the rolls as of June 30th.

Mr. Carter: Well, he made a mistake. He did not know how many firemen were on the rolls. He only divided the number of firemen reported to the Interstate Commerce Commission. He does not know what was on the rolls.

Mr. Atterbury: Then he gets back to whether or not the number of firemen on the rolls on June 30th was correctly reported to the Interstate Commerce Commission.

Mr. Carter: I will say to you that if all the firemen on the payrolls—not on June 30th, because it is unfair; many men do not draw pay for June 30th, that drew pay for June 29th; they did not get their names on the payroll for that day. In the olden times, with little engines, a man practically worked every day of the month, some. Now, he does not, and when you take a specific day and find how many appeared on the payroll for that day, you do not include all of them. I say if you will take the payroll for a month, if you like, and divide the total firemen, all the firemen who earn money in that month, by the number of all the firemen who earn money in that month, you will get an accurate statement. But to go back, to show you the difference between that method and the methods adopted by the railroads in conformity to what they believe is the wish of the Interstate Commerce Commission, we find that the average daily compensation of firemen reported to the railroads for June 30th, was $3.37 per day, and we find that a statement specially prepared for the information of this Commission—

Mr. Atterbury: But Mr. Carter, that is where I am not clear. That statement does not enter into this at all, does it?

Mr. Carter: I do not think that was the intention—

Mr. Atterbury: No, no, but I mean the figures that you are working on had absolutely nothing to do with this particular table.

Mr. Carter: Mr. Lauck, may be I am wrong, but have you not taken into consideration in all these calclulations, the number of firemen reported by the railroads?

Mr. Lauck: Oh, absolutely, yes, sir.

Mr. Carter: Suppose the railroads did not report but two-thirds of them one year, and 40 per cent. of them another year, and 67 per cent. of them another year, then what would you say? That is what I mean has been done, and now I will show you

why it has been done. The number of firemen reported to the Interstate Commerce Commission, as I understand the matter, is the number of full time workers during that time—

Mr. Atterbury: That has not entered into this at all, Mr. Carter, as I understand the witness. It is the total number of men on the rolls, not the number that were paid full time.

Mr. Carter: Do you know anything about the number of men on the rolls?

Mr. Lauck: This purports to be a report by the railroads—

Mr. Carter: Do you know anything about the number of employees on the Pennsylvania Railroad?

Mr. Lauck: I know what the Pennsylvania Railroad reports to the Interstate Commerce Commission.

Mr. Carter: Suppose the Pennsylvania Railroad reported in June that they had 4300 men, and now they say here that they have 5706, what would you think of that?

The Chairman: What was your question?

Mr. Carter: If the railroads in the month of June, under the peculiar methods adopted by the Interstate Commerce Commission as interpreted and applied by the railroads, reported they only had forty-three hundred and some odd firemen, and now they say if we will include all the firemen, that they had, we will say 5706, would there not be a great discrepancy between the number on the payrolls and the number reported to the Interstate Commerce Commission?

Mr. Lee: I think perhaps my friend is hardly doing justice to the Pennsylvania Railroad on that, nor is he, in his discretion, doing justice to his witness. For the information of the Board I would say, on pages 90 and 91, in column "Number on June 30th"—these are the instructions from the Interstate Commerce Commission— "State the number of employees in each class as determined from the payrolls at the end of the year for which this report is made." Now, it would seem to me from my hearing of the discussion of my confrere, that he is getting worked up over the total number of days worked. The Interstate Commerce Commission do not report compensation to firemen per fireman; they report average daily compensation, and this number of June 30th, as I understand it, has nothing whatever to do with this average daily compensation.

That average daily compensation is obtained by taking the

yearly compensation, and dividing it by the total number of days worked. Now, if the total number of days worked wherein the various railroads differ in reporting to the Commission, by permission from the Commission on account of the various conditions on those roads, but the number of men on the payrolls as of the month of June, or of June 30th, is an actual transcript of the number of men actually on the roads at that time.

Mr. Atterbury: Do you understand or am I to understand that from that statement the number of men on the roads simply means adding up your payrolls for the month of June, and every man that is counted as a fireman that draws a penny or $100, is counted as a fireman—

Mr. Lee: Or he may draw nothing on some of the roads.

Mr. Atterbury: Wait now—whether he was discharged during the month, whether he was hired during the month, if he was on the relief and drew nothing, if he was off on accident and got nothing except his accident benefit, he still would be counted as a fireman.

Mr. Lee: If he showed on the payrolls, he is a fireman.

Mr. Atterbury: If his name was on the payroll?

Mr. Lee: That is it.

Mr. Atterbury: Whether he was discharged or hired during the month, or what happened to him?

Mr. Lee: Exactly so.

Mr. Atterbury: And it is that figure that has been used as the divisor in this statement?

Mr. Lee: By this witness, I understand so.

Mr. Lauck: That is correct, sir.

Mr. Atterbury: That is correct?

Mr. Lee: And has nothing whatever to do with the column, the total number of days worked?

Mr. Lauck: Nothing at all.

Mr. Lee: My attention is called to that statement, that I do not know where he got that 4,300, something like 1,000 men difference. Am I correct in that from your figures? You mentioned some figures of the Pennsylvania.

Mr. Carter: I will say we have a report here of the number of men reported as being employed by these companies.

Mr. Lee: I do not know whether the figures are right, but it is perfectly conceivable that the number has changed, sir, be-

cause the short statement you have on there is of December 31, and the statement that he reads is of June 30; but as far as the comparison of the figures of the witness is concerned, it does not seem to me that that fact is material. These names do fluctuate up and down, but this witness I understand has taken the same number to divide his cost of firemen.

Mr. Atterbury: May I see that statement, Mr. Carter?

Mr. Carter: This one here is only the average daily compensation.

Mr. Lee: That hasn't anything to do with what we are talking about.

Mr. Carter: I have a statement here showing the number—I haven't it here—but as I remember it, it was 4300 and something.

Mr. Lauck: 4368.

Mr. Atterbury: What was?

Mr. Carter: The number of employees on the Pennsylvania the last day of June?

Mr. Atterbury: On the Pennsylvania?

Mr. Carter: Yes, sir.

Mr. Atterbury: That was 4000 and what?

Mr. Lauck: You will find the basic table 4300—

Mr. Lee: Did that include the West Jersey & Sea Shore, the P. B. & W. and the Northern Central?

Mr. Lauck: That included the Pennsylvania Railroad Company.

Mr. Lee: That is the reason. They gave you for the lines east of Pittsburg, and when you make these invidious comparisons I really feel that the man that makes them should know what he is talking about.

Mr. Carter: Let me explain why I think I know what I am talking about. Two or three years ago we had an arbitration on the Denver & Rio Grande Railroad; and just as my friend on the other side here is talking about compensation of employees and number of employees and so forth, so did the representative of the Denver & Rio Grande Railroad. And immediately, we took the same position there that we did here, and in order to adjust the difference of opinion they called for the pay rolls, and when the pay rolls were audited this is what was ascertained: They took the earnings of the highly paid, full time workers, ignoring

the men who did not work full time and so forth, and divided it into the compensation paid and arbitrarily said that the number that is the resultant amount was the number of firemen in service. When they compared this with the pay rolls, they found that they had been reporting to the Interstate Commerce Commission, as I remember it, about 25% less men than they had, and it was so agreed upon at that time.

Mr. Lee: I do not see what that has to do with this case particularly, unless it is charged that we are making a false report to the Commission of the number of the men on the payrolls on June 30. Otherwise I do not think the contention is worth anything.

Mr. Carter: I mean to say that under the peculiar methods outlined by the Interstate Commerce Commission, as peculiarly interpreted by different railroads, we have not anything like a statement that truly represents existing conditions. For instance, it might be settled immediately if the Board had time to call for all the payrolls of the roads here, and call for the amount of compensation paid. Then we would be getting down to statistics that mean something.

Mr. Lee: We are not talking about compensation at all.

Mr. Carter: We would be willing to have you bring in your payrolls, and let us count them.

Mr. Lee: We are not talking about compensation at all. We are talking about the number of men on the rolls, the names on the rolls, and as I understand it, it is his contention that the number of men on the payrolls of June 30th should be counted. We are not talking about this weird subject that he is talking about. We are talking about actual names "State the number of employees in each class as determined from the payrolls," as of June 30. Now, what I think he is talking about is the total number of days worked. That is obtained perhaps in different ways on different roads. There is latitude in that, but there is no latitude in this first column. It says "Number of men on the payrolls on June 30," and that is what we contend has been reported.

Mr. Carter: In reply to that I will say that on the only road that permitted us to get a peep at their payrolls in their entirety, the Denver & Rio Grande, when we peeped, we found

about 25% more men on the payrolls than they reported to the Interstate Commerce Commission for the same month.

Mr. Lauck: If I may make a statement explanatory of this table—

The Chairman: Yes.

Mr. Lauck: I cannot understand why such stress is laid on this table.

Mr. Lee: I cannot either.

Mr. Lauck: My fear is that this table may be taken to indicate an increase in remuneration to firemen, per fireman in 1912 as compared to 1902. I should like to say that if it is intended it to be used in that way, and it seems to me it will be using it in a way that is wholly erroneous and unjustifiable; because assuming that Mr. Lee is right, and that the railroads report accurately, as I have no reason to doubt they do, to the Interstate Commerce Commission, it seems to me that any such contention would be absolutely worthless, and would be perverting the intent of this statistical argument which I have brought up here. I have used it in no such sense; but as a statistical proposition any such comparison is absolutely valueless, for the reason that suppose after the break down of 1907 you were not working your line, and you had only 20% of the men on the payroll that you had five years previously on June 30th, it would show a vast increase in remuneration per fireman, under the conditions imposed by the Interstate Commerce Commission.

Mr. Lee: It would be so, too, would it not? If you had fewer firemen and larger compensation, each particular fireman would get more money, would he not?

Mr. Lauck: If the same compensation remained, that is the same total compensation, of course the proportion per man would be greater.

Mr. Lee: That is what I mean. If there was more to divide, and fewer men to divide it among, of course each man must get more.

Mr. Lauck: The point I have in mind is this: It seems to me it would be a calamity to consider anything like this question. It would be like the average daily compensation.

Mr. Lee: No, I do not think so. You put these things in here, and we will have to use them for what they are worth.

Mr. Lauck: For what they will show.

Mr. Lee: We are going to use them for that very purpose.

Mr. Lauck: If they are used for that purpose, there was no intent in my mind to use them for that purpose, because I have based my contention on the cost in terms of firemen, per mile, locomotive mile, train mile or any other unit; ton mile if you want to put it on the ton mile. I could not do that, because I could not distribute the operating expenses.

Mr. Atterbury: Do I understand, although the method would seem to be a proper one, the date on which the number of firemen has been taken is an improper one, in your mind?

Mr. Lauck: No. To my mind, Mr. Atterbury, this is the situation—I have no reason to doubt but what the railroads have fully complied with the requirements of the Interstate Commerce Commission, but to pick out any specific day or any specific month—and I understand you to mean by June 30th, not that specific day, but the men on the payrolls for June—now, the rate, figuring on that, would be—even then, that would not be satisfactory—would be the average number of firemen employed during the year,—that would be more accurate. This may include almost anything.

Mr. Atterbury: It seems to me it is exceedingly important for the Commission to get some information on this very point. How would you get a figure that would truly represent the condition in 1902, and truly represent the condition in 1912?

Mr. Lauck: As to earnings?

Mr. Atterbury: Yes.

Mr. Lauck: The only way—

Mr. Atterbury: The average yearly earning per fireman—how would you arrive at that figure?

Mr. Lauck: Of course any yearly earning would be unsatisfactory, because you would have to take into consideration all kinds of factors like sickness and suspension of employment, or anything of that kind.

Mr. Atterbury: Wouldn't those factors probably be relatively the same for the year?

Mr. Lauck: Well, if you picked two normal years, yes, sir, it would be relatively the same. Of course, in comparing years indiscriminately, you are apt to compare a normal year with an abnormal year. I think the only basis of comparison, on a yearly basis—I don't think any kind of average annual

compensation would amount to much, if you took the average number of firemen employed; but it seems to me the only way to base any comparative payments by the railroad to its firemen now, as compared with the past, is to base it—if you want to get it on a per fireman basis—on the rate for a certain service or an hourly earning, if you want to put it on an earning basis, or, if you want to relate it to the railroad itself, to the cost to the railroad, in terms of firemen, for moving a ton mile or a train mile, I think these are absolutely worthless for that purpose.

Mr. Lee: The only proper comparison would be what you pay a fireman per train mile or locomotive mile, or something of that sort.

Mr. Lauck: No, I made a qualification there, that if the railroad wants to know what the firemen cost them, in terms of manufacturing transportation, then let them ascertain the cost of firemen per ton mile. I had no means of ascertaining that, but I think you will find about a ten per cent. increase in cost of firemen per ton mile, or put it on a train or locomotive mile basis, as I have. Then, if you want to know what a fireman is earning, put it upon some basis that you can arrive at some accurate calculation, and it will be found more satisfactory to put it on an hourly basis, or a rate for service, and not use such figures as this which are absolutely worthless, to my mind.

Mr. Lee: What are they in here for?

Mr. Lauck: They are simply in there to indicate a tendency.

Mr. Lee: How can they even indicate a tendency?

Mr. Lauck: They were put in there for what they were worth.

Mr. Lee: If they are not worth anything, what is the use of putting them there?

Mr: Lauck: If they are going to be used for the purpose which it would seem to me they are going to be used for by you, I would say they are worthless.

Mr. Lee: I will tell you frankly I am going to use them for that purpose.

Mr. Lauck: I think they are absolutely worthless for that.

Mr. Lee: I cannot agree with you entirely. These figures are put in here to show certain things; they are put in here supposedly to show a tendency. Now, if they are worthless fig-

ures, they do not show that tendency, and so far as this witness or his counsel contending that those figures are worthless, then the whole thing fails.

Mr. Lauck: The authorities on economics do not say so—

Mr. Lee: They do not consider them worthless? They do consider them worthless for certain purposes?

Mr. Lauck: I consider them worthless for the purpose you indicate you are going to use them.

Mr. Lee: I propose to use those figures as indicating a tendency, the same as you proposed to use them.

Mr. Lauck: Not in that sense, no, sir.

Mr. Lee: You proposed to use them so as to indicate a certain tendency; I propose to use them for indicating another tendency. If those figures are worth anything to indicate your tendency, they may be worth something to indicate my tendency.

Mr. Lauck: I think it is perverting the use of the figures.

Mr. Carter: And we propose to show that any statistics based upon railroad reports had best be sifted very carefully before this Commission reaches a conclusion.

Mr. Lee: Do we understand from that remark—

The Chairman: All of these tables and deductions which Mr. Lauck has drawn here, are derived from the same source that those figures are, aren't they? The reports of railroads to the Interstate Commerce Commission?

Mr. Lauck: Judge Chambers, if it is not presumptuous in me to answer that question, I do not think that that follows at all. There are certain conditions surrounding the collection of statistics and the use of statistics which render them of value or of no value. Now, it is generally acknowledged that— I do not doubt, in my own mind, that those statistics are reported in accordance with the request of the Interstate Commerce Commission and that all railroads wish to make as good a showing as possible—that is what I would do if I were reporting them—but owing to the attempt to ascertain yearly earnings over a period of 12 months, when you have to consider all the factors that enter into that, every factor of employment, sickness or disability of any kind, or anything affecting the employee's family; and then, on the other side, all the factors affecting the railroad, and then, in addition to that, take one specific day out of the year and consider that as typical of the number of firemen em-

ployed—or one specific month, to be more accurate—I should think you would find—any one who has anything to do with statistics, would say that such statistics are entirely unsatisfactory; that is, that statistics as to the average daily earnings are entirely unsatisfactory. The Interstate Commerce Commission in its reports, states that figures of that kind are practically worthless.

Mr. Lee: That is, average daily compensation.

Mr. Lauck: Yes, sir, it is practically the same proposition.

Mr. Lee: We haven't been talking about that at all.

Mr. Lauck: I say it is the same method. I believe if you put anyone on the stand here that has anything to do with these statistics, they will say that those statistics should not be considered, and are worthless from the standpoint you indicate that you are going to use them.

The Chairman: If it can be shown that in the month of June, 1902, the railroads were in a high state of prosperity and employed an unusually large number of men, while in June, 1912, the reverse was the condition, these figures that you have used to base your comparison upon, would not be of much value here to us?

Mr. Lauck: No.

The Chairman: But assuming that just the reverse was the condition, that in 1902 the railroads were not in a state of presperous operation, but in 1912 they were, the difference would have been larger?

Mr. Lauck: Yes, sir.

The Chairman: Even than is shown here now.

Mr. Lauck: Yes, sir, a great deal.

The Chairman: Therefore, when you put these statistics here before us, assuming that the reports to the Interstate Commerce Commission were correct, you have probably reported what is the average condition.

Mr. Lauck: Well, I would not say so, no, sir. I think that there are so many factors entering into those statistics and we have statistics which are so much better—now, if it is wished to ascertain, I put these statistics in here as merely indicating the relative cost in terms of firemen, and the revenue gain, simply using that as a standard. I might have taken the number of station houses or any other standard.

Mr. Atterbury: What other statistics in there is valuable?

Mr. Lauck: I should think that the statistics upon which I base my contention, are the revenue train miles and the locomotive mile statistics.

Mr. Atterbury: That is per fireman?

Mr. Lauck: No, sir, that is for firemen. That is the only per fireman statistics I have used, and I do not think they are worth anything. If you will notice in my revenue train miles I have said cost of firemen. That is the cost to the railroad in terms of firemen per locomotive mile. Now, if the Board should wish to have a more accurate designation of what the increase in cost per fireman has been to the railroads, which is one of the fundamental things of course, let them divide those statistics by the number of firemen actually employed, or per ton mile, and work it out on that basis.

Mr. Atterbury: Where would you get that figure, the number of firemen?

Mr. Lauck: I had not any good figure. The best figure under those conditions would be an average number employed during the year, but we even have not that.

The Chairman: If those figures are worthless, it is very unfortunate they have gotten in here.

Mr. Lauck: I think it is. I had no idea they would be used in the sense it seems they are going to be used.

Mr. Lee: They show a tendency to increase, do they not?

Mr. Lauck: I do not think so, no.

Mr. Lee: What do they show, what is the tendency they show?

Mr. Lauck: I don't think they show anything.

Mr. Lee: What are they in here for?

Mr. Lauck: Well, I think—

Mr. Lee: What is the written part of this thing in here for, where you call attention to the fact that they only increased $252, while the revenue has increased $7000 per fireman? That does not mean anything, does it?

Mr. Lauck: It means exactly what I said it means in my direct testimony. It indicates a tendency which was of small value. I think if you will consult the record you will find I was very guarded in that. I think the use of those statistics would be simply taking a technical advantage of me.

Mr. Lee: Not at all. I do not want to take a technical advantage of anybody. But you say these things have no bearing, and if they are in here and are worthless—

Mr. Lauck: I absolutely discredit them and say they are worth nothing.

Mr. Lee: Why are they in here then?

Mr. Lauck: If I had it to do over again I would take them out.

Mr. Lee: Why are they in here? Why do you draw conclusions from them if they are worth nothing?

Mr. Lauck: I do not draw conclusions from them.

Mr. Lee: You say here the outlay per fireman, or in other words the total average earnings of firemen on the railroads engaged in this proceeding, as can be seen from the above table advanced only $252 during the period from 1902, as compared with the gain in total operating revenue per fireman of $7000. Now what does it mean?

Mr. Phillips: Mr. Lauck, if I might ask a question,—assuming that the figures and the method of gathering them was absolutely correct, it would show a general increase of 40% in round numbers for the period covered?

Mr. Lauck: Yes, sir.

Mr. Phillips: Just off hand now?

Mr. Lauck: I do not like to enter into a discussion of that because I think—

Mr. Phillips: I do not want to enter into a discussion.

Mr. Lauck: I mean that it is distasteful to me to use these figures for any such purpose as that, as it seems to me simply a technical manipulation of the statistics.

Mr. Phillips: I am sure all the members of the Board want to be clear on these figures; I do at least. Now, assuming that that is a 40% increase in pay per fireman, if his hours have been increased from 10 to 14 in that same period, it would not be an actual increase in his rate, would it?

Mr. Lauck: Oh, no.

Mr. Phillips: And if he has been given an engine that pulls 2,800 tons instead of 2,000 tons, that would be just the same 40%, so there would be no change in the rates whatever, assuming that these figures are correct?

Mr. Lauck: No, if I get your point correctly.

Mr. Phillips: That is all I wanted.

Mr. Lauck: I certainly think it would be a calamity to use those figures in that way.

Mr. Lee: Mr. Lauck, if you put figures in here and draw certain deductions from them, or inferences, why isn't it proper to use those figures another way?

Mr. Lauck: Why it is proper if you want to do it. That is just my judgment about the thing; I did not put them in for that purpose.

Mr. Lee: This is put in here, "The outlay per fireman, or in other words the total average earnings of firemen on the railroads engaged in these proceedings as can be seen from the above table advanced only $252 during the period." That is they advanced 39%. "Whereas, during the same period the gain in total operating revenues per fireman was $7,413," and I add, only 23%.

The Chairman: You put it in for the purpose of showing that the gain to the firemen on these roads during this period represented only 3% of the gain in net revenue?

Mr. Lauck: That is all, sir; yes, sir, that the gain to the firemen was a very small proportion of the revenue gain per fireman and nothing more than—

The Chairman: You did not put it in here for the purpose of showing that the fireman was getting 40% more pay?

Mr. Lauck: No, indeed. I think that it would be criminal almost, to do that.

Mr. Atterbury: Well, Mr. Lauck is that because you feel that the number of firemen may be incorrect; that is, that the divisor is not a proper one?

Mr. Lauck: No, sir; that is not because I feel that the railroads have not been perfectly honorable in reporting these statistics; I have no reason to doubt that; but I think that any such statistics are worthless for the reason that there are so many factors entering into an average wage and there are so many things that may affect it and there are so many things that may affect the number and so on that I should think it would be unfortunate to use such a comparison.

Mr. Atterbury: The divisor is one of them, isn't it?

Mr. Lauck: The divisor is one, yes, sir.

Mr. Atterbury: That is inaccurate.

Mr. Lauck: I think that that may vary from a number, particularly like your operating ratio, it may vary on account of traffic or like that; this may vary for the same reason or other things.

Mr. Atterbury: Then, is the Commission to assume that every statistic in here in which the number of firemen becomes a factor is inaccurate?

Mr. Lauck: If the Commission should wish to consider this accurate and to show a 30% or 40% increase in outlay per fireman, in order to show that all other statistics per fireman are accurate, I would by all means say all statistics on a per fireman basis are inaccurate because I should think it would be very unfortunate to use those statistics.

Mr. Lee: I just want to say to the Board that we think this increase is about right.

Mr. Lauck: Well, of course, if you can show that it is accurate, that is another proposition, but this has nothing to do with my statistics.

Mr. Lee: It merely confirms figures that we have from another source.

Mr. Lauck: Well, I do not have those figures, and the point in my argument is not based on the fireman. It is based on the firemen, or the cost of firemen to the railroads.

Mr. Lee: Of firemen?

Mr. Lauck: Yes, without reference to the number, but the money outlay for firemen compared with the returns from firemen to the railroads. I do not see where there can be any accuracy about those statistics.

The Chairman: The Board will now adjourn until two o'clock.

(Whereupon at 12:30 P. M. a recess was taken until 2 o'clock P. M.)

After Recess, 2:00 P. M.

W. J. LAUCK, resumed:

Mr. Lee: Mr. Lauck, we were getting a little ahead of our story. Going back to page 5, you say there "The large advances

in transportation revenue over and above increased outlays for firemen and for conducting transportation are apparent from a glance at the foregoing figures, and require no comment. It is evident that the revenue gain on these railroads has been sufficient not only to include all added costs, but to yield a surplus above increased expenditures for firemen and for other items." I just want to refer to that a moment. I think we referred to it this morning.

Mr. Lauck: Yes.

Mr. Lee: I do not want to put any words into your mouth, but I think you said what you wanted to bring out was that the revenues are greater than the expenses?

Mr. Lauck: Yes, and I would say that there is nothing in the table to justify that statement. It is anticipating the succeeding figures.

Mr. Lee: It does not refer to anything that has gone before.

Mr. Lauck: Nothing to demonstrate it has gone before, no, sir. It is a direct statement, without justification in the preceding statistics.

Mr. Lee: I was wondering why it was in there. I did not follow the conclusion.

Mr. Lauck: No, sir, there is no argument preceding it for that.

Mr. Lee: That is the paragraph under the third table on page 5. Your conclusion is that there is nothing preceding this, in this statement, that would justify that conclusion.

Mr. Lauck: No, sir.

Mr. Lee: Turning over the page, regardless of whether or not these figures are correct—and I gathered that you did not place much confidence in them—

Mr. Lauck: My attitude toward those figures is that owing to the unsatisfactory basis of distribution of expenses, and the number of firemen, they are not accurate, but they exhibit a tendency, that is all. That is, they exhibit the small proportion of increased cost for firemen as compared to the revenue gain to the railroad, the same as the preceding section.

Mr. Lee: Taking this table for the purpose for which you intended to use it, will you please make that statement again, as to what tendency this shows?

Mr. Lauck: The tendency to my mind exhibited by this

table—and it is merely a tendency; the claim is not made that the distribution would accurately represent operating conditions —but being limited by the inadequate method of distribution that I had between freight and passenger traffic, the tendency that exhibits to my mind is the small increase in cost for firemen as compared to the revenue gain.

Mr. Lee: You mean $252 as against $7,418, at the top of the page?

Mr. Lauck: Oh, you are talking about the top of the page?

Mr. Lee: Yes.

Mr. Lauck: I beg your pardon. I thought you were speaking of page 7, Section 8.

Mr. Lee: No, I am still at the top of the page. It is the same thing, only one is freight and the other passenger.

Mr. Lauck: They exhibit to my mind only the tendency of the small increase in cost per fireman as compared with the revenue per fireman.

Mr. Lee: Are those two things comparable in the way you have compared them?

Mr. Lauck: The cost and the revenue?

Mr. Lee: Yes.

Mr. Lauck: I should think so, yes.

Mr. Lee: Suppose that $252 instead of being $252 was $1,000, that figure below then would be $7,418 instead of $7,156?

Mr. Lauck: Yes.

Mr. Lee: What does that mean?

Mr. Lauck: That would mean that the cost per fireman was considerably more of an item, that it absorbed more of operating revenue than was indicated there.

Mr. Lee: Is this $252 and this $7,418 on the same basis?

Mr. Lauck: I do not know whether I exactly get your point there.

Mr. Lee: Anything that seems to be comparable should be referred to the same thing, should it not?

Mr. Lauck: We are referring to a fireman now, are we not?

Mr. Lee: Yes.

Mr. Lauck: Considering all classes of firemen?

Mr. Lee: Yes. Now, do you deduce from that particular

table—and I do not want to put anything in your mouth, and I do not want to infer; I want to try to get at what this table represents. What do you deduce from that particular table?

Mr. Lauck: As I said this morning, these tables are not specially significant to me. Their intent was to represent the small part of revenue gain which had been absorbed by increased cost of the firemen, as shown by these statistics.

Mr. Lee: Yes, and that might or might not be too much or too little.

Mr. Lauck: The cost?

Mr. Lee: Yes, the cost per fireman and the revenue gain per fireman.

Mr. Lauck: When I made the remarks about the distribution, why, of course, it did not apply to this table; that applied to Section 8, where we are distributing operating expenses. The inadequacy of that table is based upon the criticism this morning of the number of firemen.

Mr. Lee: What I am trying to get at is you say that the firemen have only received $252 increase, where the total average annual revenue per fireman has increased $7418. Is that in any way a measure of whether or not the firemen have gotten their share?

Mr. Lauck: No, that only brings forth the comparison of the fact that although there has been an increase per cost per fireman, there has also been a large revenue gain per fireman, without argument or any statement as to whether the firemen produced this revenue gain. If that answers your question—

Mr. Lee: I think it does, but I cannot see the significance of the thing for this reason; you have subtracted the increase per fireman from the increase in revenue, and have left out all the other factors that went to increase that revenue. Perhaps there is an increase in those?

Mr. Lauck: I do not mean to imply that the fireman, after his cost is subtracted—that there is no other cost to subtract from that revenue. It is conceivable that there might be costs which would absorb all revenue.

Mr. Lee: As a matter of fact, this table doesn't mean a thing, does it?

Mr. Lauck: Yes, sir; it means just what it implies, that the cost of firemen has increased and, measured on the same basis, revenue has increased. That is all it means.

Mr. Lee: That the cost of firemen has increased and revenue has also increased?

Mr. Lauck: That is all it means. Without any reference to—

Mr. Lee: We will admit that.

Mr. Lauck: I will admit that, yes, sir.

Mr. Lee: Are the percentages significant at all?

Mr. Lauck: They are significant to my mind to this extent. The argument that I have been putting forward has been—in other words my method has simply been to apply a system of cost of firemen to railroad operation. Cost of firemen has increased and revenues have increased. This table indicates that the per cent. of total increase of revenue per firemen has been comparatively very slight; 3 per cent. I think.

Mr. Lee: It shows that the average annual expense per fireman is 39 per cent., and the average annual revenue per fireman is 23 per cent.

Mr. Lauck: You mean comparing it.

Mr. Lee: Yes, from 1902 to 1912.

Mr. Lauck: I am treating them in terms of dollars and cents, the increased cost as compared with the revenue gain.

The Chairman: I cannot see that this table is introduced for any other purpose except to show, which might be taken adversely to the interests of the fireman, that his pay had been increased 39 per cent.; yet, in order to get that increase of the fireman, he had to participate in the net results to the extent of only 3 per cent. of those results.

Mr. Lauck: That is the point exactly.

Mr. Lee: His increase is 3 per cent. of the increase.

Mr. Lauck: Yes.

The Chairman: Yes. While on the face of it each fireman appears to be getting 39 per cent. more than he did in 1902, that is 39 per cent. increase in pay to him, he only absorbs 3 per cent. of the net revenue results, and the witness thinks that is too small a proportion of the net revenue increase for the firemen to receive.

Mr. Lauck: That is the point.

Mr. Lee: For the firemen, as a body.

Mr. Phillips: Is that 3 per cent. or 3/100ths of one per cent.

Mr. Lee: I guess it is about 3 per cent.

The Chairman: 3 per cent. Whether it makes for the individual fireman or not, as Mr. Carter said this morning—I believe he said he had not even seen these figures but they published them just as they found them, whether they appeared on the face adverse to the firemen or not.

Mr. Lee: Yes, sir.

The Chairman: Well, it does appear on its face without any other explanation, that in these 11 years the firemen on these 44 railroads, in the average, are getting 39 per cent. more pay than they did in 1902.

Mr. Lee: Yes, sir.

The Chairman: If that was the only table that the Board had submitted to it, and it was admitted that the data from which that table was published was correct, in other words that the reports of the railroads to the Interstate Commerce Commission exhibited the truth as to the number of firemen and their pay, why it would be rather a "hit from the shoulder." There is no doubt about that. But the witness who has prepared for us a most scientific exposition of this whole subject says that notwithstanding the appearance on its face, he put it in there for no other purpose than to show that it only absorbed 3 per cent. of the net revenue results.

Mr. Lee: Then I may be wrong in the inference that I draw from some of the reading matter here. I want to say again that I do not want to put anything into the mouth of the witness that he does not want to say, nor do I want to draw any improper inferences from what he has in this pamphlet. But there are certain things in this pamphlet that have made certain impressions upon me, and if those impressions are wrong, I want them corrected; and I may be wrong in drawing the inferences I have. For that reason, and that reason alone, am I questioning the witness. I want to find out whether he agrees with the inferences that I draw from his statement.

The Chairman: There must be something wrong, Mr. Lee, with this statement. I mean inferentially wrong.

Mr. Lee: Why, sir?

The Chairman: Because since 1902, the fireman has not received by arbitration or by negotiation, or by voluntary action of his employer, any such increase as this.

Mr. Lee: I cannot agree with you, sir.

The Chairman: I thought you stated this morning that in 1902 or 1903, or back there somewhere, he got ten cents flat.

Mr. Lee: Yes, ten per cent. I was speaking of one railroad, and another ten per cent., and another six per cent., and more adjustments after that. That was on one road.

The Chairman: I beg your pardon, I thought you meant ten cents flat.

Mr. Lee: This 39 per cent.—

The Chairman: I thought by flat you meant ten cents.

Mr. Lee: No, ten per cent., and that is ten per cent. over the wages they were receiving at that time, all employees.

The Chairman: Then there was ten per cent., and then ten per cent. on that?

Mr. Lee: Yes, and then six per cent. on that.

The Chairman: Which meant about 11 per cent. for the second advance?

Mr. Lee: Yes, sir.

The Chairman: And then six per cent. on that, which meant about seven per cent.?

Mr. Lee: Yes, sir, so that all figures up to about 28 per cent. Then in addition to that there were certain adjustments made.

Mr. Lauck: Did he get that on a day basis, or a 100-mile basis or on what basis?

Mr. Lee: That is actual adjustments on the figures.

Mr. Lauck: On the amount you paid the firemen?

Mr. Lee: Yes.

Mr. Lauck: You mean you gave him 10 per cent. of the wage roll?

Mr. Lee: Ten per cent. of his rate.

Mr. Lauck: Then it would not affect this at all, because ten per cent. of his rate would be ten per cent. of his 100-mile rate, would it not? Now, this man here may make considerably more mileage, or something like that. This is an earnings proposition, and is not based on rates at all. It would not affect this.

Mr. Lee: But it may be only a coincidence, but it is the fact that these increases have been given, and this 39 per cent. is very close to it.

Mr. Lauck: How do you account for the fact, if I may ask you a question—

Mr. Lee: Go ahead, and I will try to answer it, although I am not on the stand.

Mr. Lauck: That the cost per locomotive mile in firemen does not show such an increase of cost per train mile?

Mr. Lee: I have not investigated that. I will try to answer that question to-morrow, if I can. The train mile does show a very great increase, although I question whether the train mile is a proper measure of the locomotive fireman's wages.

The Chairman: Then I infer from what you say, and the suggestion that came from over this way about adjustments, that the fireman in 1912, operating exactly the same class and size of engine, that he operated in 1902, would earn about this advance.

Mr. Lee: I would not like to say exactly as to that, without going into the matter in detail, but I do know that if a man to-day was operating the same engine over the same mileage that he was in 1902, that he would get somewhere over 27 per cent. on the road we were speaking of, in addition to what he was getting in 1902. There were certain adjustments; I have not the figures in my head about those adjustments, that also increased the wages.

The Chairman: Then the difference between 27.08 per cent. and 39 per cent. which this shows, might very easily be made up in the overtime, and the larger earnings?

Mr. Lee: Yes, sir; that is speaking about the wages earned by the men for the year. There might be a great many factors enter into it.

The Chairman: Then the difference between these flat advances in the 11 years, and the adjustments, whatever that means, and this 39 per cent., would be represented by some increased labor that the fireman has performed to that extent?

Mr. Lee: It might or might not. We propose to show by our witnesses just what this amounted to and what it is. I personally am not familiar with the practices on the 54 roads. I am just speaking of this one road about which we were talking, that the increase—

The Chairman: One of my colleagues has the idea, not yet reduced to an opinion, that this whole difference here of 38 or 39

per cent. may be made up of overtime, and of the difference in the size of the locomotive, which carries with it a fixed difference in wage price over the smaller engines of 11 years ago.

Mr. Lee: We have hopes of converting him before we get through, sir. But what I mean is there have been increases in pay on account of the larger locomotives and there have been increases in pay on the smaller locomotives doing the same service. On this one road, I speak of, to my knowledge, there have been 27 or 28 per cent. and more. Just what those additional adjustments were, I am not familiar with at the present time, but on this road we were speaking of, the man hauling the same train and firing the same engine in 1902 and in 1912, has received something over 27 or 28 per cent. increase in his wages, something over that. Just what that amount is, I am not prepared just at this moment to state, but I do say that I do not think this 39 per cent. is far wrong in compensation to firemen, that is, the wages paid. It may be different service, it may be additional service, he may be required to make more miles, he may shovel more coal; but I do say that this 39 per cent. shown here is not far wrong from the actual percentage. I am making statements, sir, that we expect to prove when we come to put in our case.

The Chairman: You think the payrolls would bear that out, do you?

Mr. Lee: I think so, sir.

The Chairman: The time sheets?

Mr. Lee: The time slips, yes, sir.

Mr. Lauck: I find on a locomotive mile basis the cost of firemen to railroads in the last five years has only increased 11%.

Mr. Lee: That is on this number of firemen, the same number of firemen?

Mr. Lauck: The number of firemen hasn't a thing to do with it.

Mr. Lee: Oh, this is on a locomotive mile basis?

Mr. Lauck: Yes, sir.

Mr. Lee: You think then the compensation to firemen on a locomotive mile basis is more proper than any other basis?

Mr. Lauck: Well, I think it is more proper than the basis you are discussing; I think that is absolutely worthless.

Mr. Lee: This thing here?

Mr. Lauck: That you are discussing, yes, sir, as I said this

morning, because it is perfectly possible under that table for a man to receive no higher rate of wages and get 39% increase in earnings.

Mr. Lee: Then would you say that this Section 7 ought to be stricken out?

Mr. Lauck: If you are going to use it in that way, I would most heartily favor striking it out, yes, sir.

Mr. Lee: I do not care how it is used; if it is all wrong it ought not to be used at all.

Mr. Lauck: This is my point. Suppose a man in 1902 was receiving $2.00 a hundred miles; in 1912 he might still be receiving $2.00 a hundred miles and his average annual earnings might be 39% greater if he worked 39% more. Isn't that possible, without any increase in the pay at all?

The Chairman: How is that?

Mr. Lauck: I say this figure that we are considering as to the average earnings per fireman in 1912 and 1902 bearing no relation to the actual service performed, it is perfectly possible for a man to receive the same rate of wages in 1912 as he received in 1902 and still show an increase in average annual earnings of 39% because he might do 39% more work.

Mr. Atterbury: The reverse is equally true, isn't it?

Mr. Lauck: Yes, the reverse would be equally true.

Mr. Atterbury: Equally true?

Mr. Lauck: My claim against those figures to be used in that way is it would simply be a pitfall of error to fall into if we use them. I think the actual thing to consider, if we are going to consider what advance the fireman has got from the railroad standpoint, is what he has cost the railroad.

Mr. Lee: The total cost of all firemen, you mean?

Mr. Lauck: Without regard to numbers. Take it on a revenue train mile basis, or a ton mile basis or a freight locomotive mile basis, and you find that the cost of firemen say, taking all locomotives into consideration, has only increased 11% in the last five years.

Mr. Lee: You think it is a fairer comparison to take it on a train mile basis or a locomotive mile basis?

Mr. Lauck: I should think that the locomotive mile basis more closely approximates the actual rate of pay to the fireman because you might have two locomotives on a revenue train mile

and thereby increase the cost of firemen per revenue train mile. Taking a locomotive mile we find that the cost of firemen has advanced from 3.22 cents to 3.70 cents or only .48 of one cent, or 11%: and my idea in presenting these previous statistics as well as this more elaborate analysis was to show that this .48 of one cent which was paid to firemen in 1912, as compared with 1908, was accompanied by a revenue gain to the railroad owing to the increased freight locomotive load that reimbursed the railroad for all its expenses and still left 6.61 cents for capital or other requirements per locomotive mile, or about 12 or 13 times in net revenue above what you paid the firemen.

Mr. Atterbury: Do you lay any particular stress, Mr. Lauck, on the fact that the firemen have only gotten 3% of the increase?

Mr. Lauck: No, sir; I simply threw that in there as an illustration of the fact that although the cost of firemen had advanced, that the advance in cost was small as compared with revenue gains. I had rather based the case on a locomotive mile, or revenue train mile, or some unit of cost than to take all costs—

Mr. Atterbury: Recognizing that if the 39% increase is not right, then this is not right?

Mr. Lauck: Yes, sir. I do not think our per fireman statistics accurately show anything.

Mr. Lee: I did not catch that, Mr. Lauck?

Mr. Lauck: I say I do not think that any per fireman statistics accurately show anything.

Mr. Lee: What is it in here for?

Mr. Lauck: That is the best I could do.

Mr. Lee: Even if inaccurate?

The Chairman: I think you know what they are there for, Mr. Lee.

Mr. Lauck: I should think so.

Mr. Lee: Sir?

The Chairman: I think you know what they are there for.

Mr. Lee: It is to prove the case for the firemen.

The Chairman: No, just like I have gathered, to show a tendency.

Mr. Lauck: That is all, sir.

Mr. Lee: But inaccurate figures may show a wrong tendency?

The Chairman: Oh, yes, it may do that, but they are put in there to show a tendency, that is all, and as I understand the witness now, as I have understood him formerly, that they are not put there because they are accurate. You do not vouch for their accuracy?

Mr. Lauck: No, sir; not at all, and I have taken particular pains to state even in the distribution of freight and passenger traffic, and so on, it was an approximation, the ratio, the number of firemen, because we have no accurate statistics. And in my analyses of costs I do not use the number at all. I use the cost for firemen, so we cannot have any dispute about that.

Mr. Lee: I hope not.

Mr. Phillips: You stated, Mr. Lauck, that you believed the locomotive mile would be the most fair basis to figure this from?

Mr. Lauck: I think so, undoubtedly.

Mr. Phillips: And your table shows an increase of 11% I understand, per locomotive mile?

Mr. Lauck: Exactly, yes, sir; that is only in the past five years.

Mr. Phillips: That is five years?

Mr. Lauck: Yes, sir.

The Chairman: Does that mean, figuring it on a locomotive mile, that the fireman is getting 11% increase over 1902?

Mr. Lauck: No, sir, 1908. The Interstate Commerce Commission only required locomotive miles first in 1908.

The Chairman: Then if you had been able from those statistics to go back to 1902 and make a calculation on a locomotive mile basis, it might show this same thing?

Mr. Lauck: It might, yes, sir, but I do not know anything about that, sir.

Mr. Phillips: Yes, you do not know, but it might? What I wanted to get at then, that the locomotive mile would give no consideration to the increased size of the locomotive or the additional hours required to make the miles?

Mr. Lauck: No, the cost might be increased by a greater period of time traversing the mile. But understand, I am considering this proposition from the standpoint of the railroad; I am considering it applying a system of cost account, you might say, or cost finding to the operation of the railroad to ascertain what it costs them, in terms of all firemen, to operate a loco-

motive mile. Then I go into all costs, and then I compare the revenue, and then I deduce whether, legitimately or properly or improperly, that owing to the increased freight train load, thereby increasing the revenue per freight train load, that there has been a gain in revenue over and above all increases for all factors, leaving a net revenue which would permit of additional payments to firemen and still leave a surplus that seems to me sufficient to requite the capital if the road is a properly managed road.

The Chairman: Then this 11 per cent. increase of firemen on the basis of the locomotive mile calculation is since 1908?

Mr. Lauck: Yes. I have no locomotive mile statistics prior to that.

Mr. Lee: I do not think the Commission required them before that.

Mr. Lauck: No, sir, I do not think so. I could not find any.

Mr. Atterbury: Could they not be obtained from the annual reports of the railroads?

Mr. Lauck: No, sir, I think that is so intermixed with mixed miles and special miles and so on that any attempt to work it out would arouse friction either on one side or the other. The Commission itself specially required a change in classification in 1908, due to that difficulty.

Mr. Lee: Their requests were more properly made at that time, as I remember it.

Mr. Lauck: I know the change was made. I would say that if there are any accurate statistics as to apportionment of expenses between freight and passenger traffic, the freight train mile would be a good index. That would be so if we had some accurate apportionment; but I have no accurate apportionment.

Mr. Lee: Do you mean that the freight train mile would be an accurate estimate, or an accurate unit upon which to compare the wage of firemen?

Mr. Lauck: It would be a good idea to get at the relative cost, and the relative gain. That is what I mean, that it would be a good basis.

Mr. Lee: This tendency you spoke of—but I will not pursue that any further. There is not much to be gained by it. The witness I think admits that it merely shows a tendency?

Mr. Lauck: Yes.

Mr. Lee: And this other shows a tendency—the 39 per cent. increase per fireman and the 36 per cent. in revenue?

Mr. Lauck: We have so much better statistics to show the same tendency that I exhibit there, that I would prefer to eliminate that.

Mr. Lee: In this table at the middle of page 7 which you spoke about just now, is this cost of freight firemen shown separately? If you do not remember, I will find out.

Mr. Lauck: The question is whether, in the middle of page 7, it is shown separately?

Mr. Lee: Yes.

Mr. Lauck: Oh, no, that is the distribution on the basis of revenue locomotive miles and total locomotive miles.

Mr. Lee: How did you get at the cost of firemen? That is what I am trying to get. It does not show in the reports, does it?

Mr. Lauck: No, I made a rough distribution according to revenue locomotive mileage, the idea being to show just what I had attempted in the preceding section 8, and in all three of these others, realizing that they are merely approximations.

Mr. Lee: And if that distribution was incorrect, and if there were more locomotive firemen, that is if there was a greater proportion—

Mr. Lauck: A greater proportion of locomotive miles, rather.

Mr. Lee: If there was a greater proportion in freight service than in passenger service, this conclusion you reach here, this percentage you speak of, 11 per cent., would not be correct, would it?

Mr. Lauck: 11 per cent.—where is that?

Mr. Lee: I thought you said 11 per cent.

Mr. Lauck: No, I was speaking over on page 15, per locomotive mile, not referring to freight or passenger, but combining all classes of locomotive miles and eliminating all disputed points.

Mr. Lee: Coming back again, the Interstate Commerce report reads "Enginemen," and that includes engineers and firemen.

Mr. Lauck: You will find that the page entitled "Employees and salaries" shows a distribution made between different classes of employees as to labor cost.

Mr. Lee: In this Interstate Commerce report?

Mr. Lauck: Yes, and it gives the cost of firemen there to

the railroads, the cost of general officers, and the cost of all classes of employees, and then it distributes that cost between all the departments.

Mr. Lee: That is the same figure that we were talking about a while ago.

Mr. Lauck: Yes.

Mr. Lee: That did not amount to anything.

Mr. Lauck: That is what you reported as the cost of your firemen.

Mr. Lee: Yes, but—

Mr. Lauck: I did not say that figure did not amount to anything. I said the computation based upon dividing that figure by the number of firemen employed on June 30th, was to my mind of very little value.

The Chairman: The trouble is with the divisor?

Mr. Lauck: Yes, sir.

Mr. Lee: As I understand it, you take the freight locomotive mileage and the passenger locomotive mileage and distribute the wages in accordance with those.

Mr. Lauck: Yes, sir. I think, Mr. Lee,—I will be glad to frankly state where that distribution is made, the proportion of expense attributable to freight would be higher than would be indicated by that method of distribution, and consequently the cost of firemen would be higher in freight locomotive miles or freight train miles; and making both distributions, you get the relative tendency one way or the other. We find by consulting what records we could of the railroads that had actually made distributions, that their ratio was somewhat higher for freight than I have allowed.

Mr. Carter: Isn't it a matter of remark, if not criticism, of all investigators and writers upon this subject that there is nothing in the reports of the railroads filed with the Interstate Commerce Commission, that makes it possible to segregate passenger and freight business.

Mr. Lauck: You cannot do it accurately. There are quite a number of methods, but none of them is satisfactory.

Mr. Carter: It is a matter of common knowledge.

Mr. Atterbury: There is no difficulty about freight and passenger firemen, Mr. Carter, because that is a direct charge.

Mr. Carter: What I mean to say is—I am not on the stand,

but I thought I would like to ask Mr. Lauch—it is a fact that railroads themselves—that the investigations conducted by different persons, have compelled them to adopt some arbitrary method.

Mr. Atterbury: Of some things, like station agents' salaries, where he does both classes of work, freight and passenger, but that isn't so with the freight and passenger firemen.

Mr. Lauck: The cost, you mean. Of course you charge freight firemen cost to freight service, and vice versa, but when you come to the number, you cannot tell from the reports what number should go to each service.

Mr. Lee: Do you remember what your ratio was in that?

Mr. Lauck: It is in the basic tables. About fifty some per cent., for freight.

Mr. Lee: I mean on this locomotive miles basis.

Mr. Lauck: Page. 7.

Mr. Lee: Yes. "The number of firemen has been determined by an apportionment of the total number on the basis of the ratio of the number of freight revenue locomotive miles to the total number of locomotive miles."

Mr. Lauck: Look in section 5 of the Basic Tables. "Freight locomotive miles to total locomotive miles, 1912, 40.94 per cent." That is this table here. Evidently it should be higher to be accurate. That is simply an approximate distribution to show the tendency. I did not base any conclusions on that table. It is relative cost as compared with relative revenue gain.

Mr. Lee: This revenue train mile table at the bottom of the page—revenue freight trains—why is that table in there?

Mr. Lauck: It is in for the same purpose as all the tables in Sections 7 and 8 are in.

Mr. Lee: To show this same tendency.

Mr. Lauck: Yes, the small increase in cost of firemen as compared with the revenue gain.

Mr. Lee: That is in spite of the fact that by this table the cost of firemen shows an increase of 45 per cent., and a revenue gain, increase of 34 per cent. Those are the percentages worked out, but not set down.

Mr. Lauck: Yes; but they don't mean anything to me.

Mr. Lee: Yes, but they mean a good deal to me.

Mr. Carter: Mr. Lauck, I understand when you use that

expression, that it doesn't mean anything to you, you mean that firemen to-day may be working 14 hours a day against perhaps a nine-hour day formerly,—he may be shoveling twice as much coal.

Mr. Lauck: There may be two firemen on that train. It would indicate there was an average of more than one fireman on the train.

Mr. Carter: The point is this; there may be a pusher behind, is that true?

Mr. Lauck: Yes. I don't know the extent of double heading, or anything of that kind. It is either that, or some extra time charged against the train miles.

Mr. Carter: Didn't you say something about what the Monongahela Road showed as to the cost per fireman on a train mile—didn't you say something about four or five or six cents over there?

Mr. Lauck: I don't recall that. I think that was the West Side Belt.

Mr. Carter: The point I want to bring out is that if you take the railroads' statements themselves, we can show, on a switching road, where there is practically only one class of service, that for some reason best known to themselves, they show that the firemen cost them per mile about twice or three times what they pay them. I don't know why they do it. There may be a middle man in there collecting toll. It may be that the railroads pay it, but somebody charges a commission for distributing it; but on this same road we can show that these firemen do not actually receive much more than one-third and not one-half of what they are paying the firemen per train mile.

Mr. Lee: I hardly think that statement is worth replying to.

Mr. Carter: The point is this; they may have two engines on one train. I don't know that. For instance, they say that their expense of firemen per mile is six cents, while we only get three. That would indicate that there are two firemen on a train.

Mr. Lee: Revenue train miles—what do you mean by this comparsion??

Mr. Carter: I am saying that if you would take the railroad's own word for it, it would indicate that somebody was either taking the money that the companies pay for the firemen—that the firemen don't get it—I don't mean to say that is true. How much does the Monongahela Road pay for train mileage—the Monongahela is a transfer road?

Mr. Lauck: The West Side Belt you are talking about, I think.

Mr. Carter: Was it the West Side Belt? I beg your pardon. You told me about it the other day. I had Pittsburg all right. What does the West Side Belt say the firemen cost them per train mile?

Mr. Lauck: Six and a half cents.

Mr. Carter: How much?

Mr. Lauck: 6.57 cents.

Mr. Carter: The West Side Belt says the firemen cost it 6½ cents per train mile. That does not mean the fireman is getting 6½ cents, surely they would not assume such a fact. I do not believe the middleman is getting it. I think an investigation would show that perhaps there is a peculiar method of accounting.

Mr. Lee: That peculiar method of accounting is prescribed by the Interstate Commerce Commission, that my friend speaks about.

Mr. Carter: It is none the less peculiar because the Interstate Commerce Commission may have prescribed it.

Mr. Lee: Unless you know the peculiar conditions surrounding that road, if the Board please, I do not see how anybody can attempt to criticize their figures in any way.

Mr. Carter: I am not criticizing them, I beg pardon.

Mr. Lee: What do you call it?

Mr. Carter: I am telling you the cost per train mile to the West Side Belt does not indicate in any manner the amount that the fireman is getting. That is what I mean.

Mr. Lee: I do not know why my friend is taxing us with these statistics—

Mr. Carter: If they will make a deal, if they will give the firemen on the West Side Belt three-quarters of what they say they are paying them we will call it square. How much do they say they are giving them?

Mr. Lauck: 6.57 cents.

Mr. Carter: And the fireman is not getting but 2.75 cents.

Mr. Lee: Is that a switching road?

Mr. Carter: Transfer road.

Mr. Lee: How is the mileage of that transfer road made up, if you know? Is it not on the arbitrary basis of six miles an hour?

Mr. Lauck: I do not know, sir.

Mr. Lee: Do you know, Mr. Carter?

Mr. Carter: No, but it only brings out more forcibly, that when we come to analyze these things, we do not know how they do it.

Mr. Carter: I do not see why you should criticise it if you do not know how it is done.

Mr. Carter: The point is this, if we had taken the railroad figures of what it is costing them per train mile, the West Side Belt, according to their figures, would show that the firemen are costing them 6.57 cents per mile. Now, the fireman is not getting even 3 cents; if I remember right, he is getting less than 2.75 cents per mile. Don't you see what I am saying, that these reports to the Interstate Commerce Commission are—well, I cannot characterize them, they are beyond the apprehension of anybody except the Almighty.

Mr. Lee: I cannot at all agree with my friend on the other side.

Mr. Carter: Then I would like somebody to explain—of course, I cannot put a witness on, but I hope before these hearings are closed somebody will put a witness on the stand to show how the West Side Belt reports to the Interstate Commerce Commission that firemen are costing them 6.57 cents per mile.

Mr. Lee: We will be very glad to do that if we can get anybody here.

Mr. Carter: It will be an exquisite pleasure to us.

Mr. Lee: We will be very glad to. Now, to get back to our knitting, page 8, Mr. Lauck, just before the 9th paragraph there, you say, "The large return arising from the increased productive efficiency of firemen and other transportation factors is, therefore, evident and requires no explanatory comment." Is that your tendency?

Mr. Lauck: That is the tendency; yes, sir.

Mr. Lee: The words themselves do not mean anything, but just show a tendency.

Mr. Lauck: They show a tendency of the small increase in cost of firemen as compared with the revenue again.

Mr. Lee: It might be proper and might not be proper.

Mr. Lauck: It is approximately correct, I think.

Mr. Lee: What I mean is they might or might not be en-

titled to more money. The things that have gone previous to this do not show anything.

Mr. Lauck: We have not analyzed it yet; no, sir.

Mr. Lee: This would hardly be the proper place to make that statement then?

Mr. Lauck: Well, I think that the statement might be misconstrued, but —

Mr. Lee: You have not shown, nor do I understand you to say, that the seven thousand and odd dollars due each of these firemen is shown here.

Mr. Lauck: No, if I was so inclined, I could safely escape with the other transportation factors. I might put the change in curves and equipment, and so forth, under, the transportation factor, and I would be glad to do it if you wish.

Mr. Lee: "The large return arising from the increased productive efficiency of firemen and other transportation factors is, therefore, evident, and requires no explanatory comment." You might say the large return arising from the increased efficiency on account of reduction of grades, increased size of cars, equalization of loaded movement, large engines, more efficient engineers, more efficient conductors, and all those things enter into it.

Mr. Lauck: And heavier rails.

Mr. Lee: Yes.

Mr. Lauck: All those things entered into it, I will grant all that.

Mr. Lee: Now the table next following. You have the same trouble with those figures as before.

Mr. Lauck: No trouble at all with these, no.

Mr. Lee: These are all right, are they?

Mr. Lauck: These are all accurate, there is no distribution here between freight and passenger.

Mr. Lee: This table then shows that the expenses of firemen per revenue train mile, in 1912, were .0564, and in 1902, .0389.

Mr. Lauck: That is correct.

Mr. Lee: An increase of 45 per cent.

Mr. Lauck: That is right.

Mr. Lee: Total cost of operation increased 34 per cent.

Mr. Lauck: Yes, sir.

Mr. Lee: Revenues increased 29 per cent?

Mr. Lauck: Yes.

Mr. Lee: That is correct, is it not?

Mr. Lauck: That is correct.

Mr. Lee: These figures are all right then?

Mr. Lauck: Yes, sir.

Mr. Lee: These show better than the others. Here is 45 per cent. increase in firemen as against 39 per cent.

Mr. Lauck: 45 per cent. increase in firemen. You said fireman before.

Mr. Lee: Well, this is firemen.

Mr. Lauck: Yes, this is the increased cost of firemen to the railroad company for a gain many times the increase in cost, over and above all increased expenses.

Mr. Lee: The revenues only increased 29%.

Mr. Lauck: The revenues increased—

Mr. Lee: Rright at the bottom of that same page, that same table No. 8.

Mr. Lauck: The revenues increase 56 cents,

Mr. Lee: On that same page, page 8?

Mr. Lauck: You are comparing 1912 with 1902?

Mr. Lee: Yes.

Mr. Lauck: Operating revenues increased from $1.90 in 1902 to $2.46 in 1912, or 56 cents. I have not the percentage worked out.

Mr. Lee: I have worked it out, and it is 29%?

Mr. Lauck: The cost of firemen has increased 1¾ cents.

Mr. Lee: Yes, that is 45%.

Mr. Lauck: Yes.

Mr. Carter: Would that indicate that they might have twice as many firemen now as they had in 1902?

Mr. Lauck: In terms of a fireman, it might indicate anything. I am not considering it in terms of a fireman.

Mr. Lee: Just a class?

Mr. Lauck: Yes, in cost to the railroad. The increase in cost to the railroad has been only 1¾ cents, or 45% increase in terms of firemen.

Mr. Atterbury: Does that mean that if every other employe in the service had been increased on the same basis the operating revenues would have shown a loss of 19%?

Mr. Lauck: That if the cost of other classes of employees had increased in the same proportion—

Mr. Atterbury: In the same proportion as the firemen, on the train mile basis?

Mr. Lauck: I never worked that out, Mr. Atterbury.

Mr. Atterbury: Is it logical?

Mr. Lauck: If they had, yes, I think it would absorb the revenue.

Mr. Atterbury: It would wipe it out?

Mr. Lauck: Yes. I have found though in our analyses—

The Chairman: How do you get at that, Mr. Atterbury?

Mr. Atterbury: This increased cost of firemen is 49% and this increase in revenue is 30%. In other words, if every other employe had had an increase of 45%, this 30% increase in operating revenue would be turned into approximately a 19% loss?

Mr. Lee: That is, if all the other classes of employees had gotten the same increase as the firemen?

Mr. Lauck: Yes, but if you assume that, you assume that you have 45% increase in your labor force sitting idle along the right of way, doing nothing. They must be doing something, or producing something.

Mr. Lee: I should hope so. We have some that do not produce.

Mr. Lauck: If you have any that do not produce, they are a dead weight on the revenue.

Mr. Atterbury: That would not be so if there had been a straight increase in wages, would it?

Mr. Lauck: 45% increase in wages all the way through, without any increase in work performed, that would simply absorb the revenue.

Mr. Carter: Mr. Lauck, presuming that in these ten years the traffic had increased so as to necessitate the employment of double the number of firemen, and yet the railroads were handling that same traffic with the same number of station agents, would the analogy be a proper one? For instance, the increase in expense of firemen might have doubled, and there might have been no actual increase in the rate of pay to the firemen, because of the increase in the number of firemen, on account of the immensity of the traffic during the year 1912?

Mr. Lauck: Yes.

Mr. Carter: But the station agent generally can see two trains go by as well as one. I am talking about through trains. And I imagine that the telegraphers would have two trains to report instead of one?

Mr. Lauck: The real point is, that although the cost of firemen has increased, the output per fireman and the productive efficiency of firemen has increased, working in conjunction with better curves, better equipment, etc., and that the revenue gain has entirely offset the increased cost?

Mr. Lee: In other words, as you said before, the railroads have taken in more than they have spent out in operating expenses?

Mr. Lauck: Yes.

Mr. Lee: We would be in a pretty serious state if we did not.

Mr. Lauck: Yes.

Mr. Carter: The point I wanted to bring out, Mr. Lauck, possibly we could select some steel company now operating, that if you would take their total wage account it will exceed their wage account in 1902 by 100%, yet an investigation would show that they had actually reduced the rates of wages and increased the wages of employees, is not that true?

Mr. Lauck: Why, it might show that, yes.

Mr. Carter: That is what I mean; it is the number of men employed and not the rate that is significant in this matter.

Mr. Lauck: The thing that is significant here is not the number of men, or not the rate, or anything of that kind. The thing that is significant is that the railroad is moving more traffic at proportionately less cost in firemen as shown by the increased revenue gain over and above operating costs. That is, if the railroad had not increased its efficiency of operation, and had had these labor costs, it would be running at a loss, but by increasing the freight train load or increasing the passenger miles per train mile, there has been a greater revenue developed, and the revenue has been proportionately much greater than the cost, and has yielded a return, and my claim for the fireman is that he has borne the brunt, to use this favorite expression, of the improvement, and he should have an increase in the revenue.

Mr. Lee: Yes, this does show, though, that the firemen are

getting a 45 per cent. increase in revenue between 1902 and 1912 per revenue train mile, whereas the total revenues only increased 29 per cent. per revenue train mile.

Mr. Lauck: It shows the firemen as a whole are being paid that.

Mr. Lee: Yes; that is what I mean; if I said a fireman, I did not mean it.

Mr. Lauck: Yes; if you want to get the increase per fireman, of course you would divide that by the number of firemen.

Mr. Lee: Yes, but that you say we cannot do, because the figures are not correct?

Mr. Lauck: No, you could not do that.

Mr. Lee: That is your standpoint?

Mr. Lauck: Yes, sir.

Mr. Lee: The freight train miles, as I remember, increased 19 per cent. is that right the first page?

Mr. Lauck: 19.36, yes, sir.

Mr. Lee: Total train miles increased 13 per cent?

Mr. Lauck: That is right; I will take your word for it.

Mr. Lee: But the expenses per fireman increased 45 per cent. Now, am I right in making that comparison? Tell me if I am not. I do not want to make any unfair comparisons.

Mr. Lauck: I think that is about as unfair as anything could possibly be.

Mr. Lee: If it is, then just correct me.

Mr. Lauck: Why, the whole sum and substance of the thing in operating a railroad is, that you have moved more tonnage with less freight train miles, and thereby reduced expense, and by doing that you increased your operating revenues.

Mr. Lee: I see the point; one is freight train miles.

Mr. Lauck: Yes, sir.

Mr. Lee: And this is expense per freight train mile?

Mr. Lauck: That is it, per revenue train mile.

Mr. Lee: Per revenue train mile, yes. And that would rather look as though the fireman got a pretty fair share, wouldn't it, of the increase per revenue train mile, if he got 45 per cent. and the revenue has increased only 29%.

Mr. Lauck: Well, I look at that differently, you know, than what you do. I look at it that the revenue has increased 56 cents; the fireman got 1¾ cents, and the fireman bore the brunt. Give

the fireman say 20% of what he is getting now, suppose you increase your revenue train mile cost 20%, it would be 20% of 1¾ cents, and it would be a very small proportion of the net gain. You carry it on through your gross and net income, you can see it would affect the finances very little.

The Chairman: Where is your table that shows the 1¾ cents increase to firemen?

Mr. Lauck: Top of page 10, 1¾ cents, accompanied by 13 cents in net revenue, or 56 cents in gross. 20% increase of that cost there would be only 1.13 cents. It would leave you a net gain of 11.87 cents, and applying that to your gross and net income, you can see it would not affect the capital requirements at all.

Mr. Lee: Why, Mr. Lauck, if we had nobody else to consider, or no material, or nothing else to consider but the firemen--

Mr. Lauck: Well, I am not considering anybody else.

Mr. Lee: (Continuing) We might consider a 20% increase; even, but you must realize that if we give 20% to one class of employees, the others are going to get something. Of course, from your standpoint you can only see the firemen, because they are the only ones you have investigated. I realize your position; it is all right.

Mr. Lauck: Of course, you have more experience about that than I have.

Mr. Lee: I think so.

Mr. Lauck: But my claim is that you could give the firemen an increase without increasing your operating costs to any important degree whatsoever, you see. You know more about what the other effects of that would be; I do not know anything.

Mr. Lee: Yes, there are collateral effects to pretty nearly everything you do.

Mr. Carter: Before you leave that, I want to learn something of your school of economy. If firemen were receiving so much per 100 scoops of coal they shovel, and the railroads had furnished them with a scoop that would transport 15 pounds at a lift, and then they used their capital to buy a scoop that would transport 25 pounds at a lift, then I understand, according to your school of economy, that the fireman ought to share some profit of that increase of coal that he transported, is that right? He would be based simply on 100 scoops, but he would be transporting in a

hundred scoops of coal some 33 1/3 or 40% more than he did before.

Mr. Lauck: That is it exactly.

The Chairman: In other words, you think that the firemen should scoop something else besides coal?

Mr. Carter: That is the idea.

Mr. Lee: In other words, Mr. Lauck, the firemen receive an increased return per revenue train mile on the investment of themselves of 45 per cent?

Mh. Lauck: Looking at it from the standpoint of the fireman per revenue train mile, there was a 45 per cent increase in cost to the railroad in terms of firemen?

Mr. Lee: Well, they got the money for it, the firemen.

Mr. Lauck: Yes; as a class, they got the money. Of course, that does not take into consideration, and I am not discussing what they did for that money, and so on. You will have to take that up through actual experience with the men, or with your own men. I am simply stating that—

Mr. Lee: Whereas the revenues that were to be divided among the various items, including the investors, increased only 29 per cent.

Mr. Lauck: On a comparative basis.

Mr. Lee: On a comparative basis.

Mr. Lauck: You see I compare up and down the lines; you compare across.

Mr. Lee: Certainly.

Mr. Lauck: And my comparison would be that on a revenue basis that the revenue gain was about 45 times the increased cost in firemen.

Mr. Lee: Sure, certainly.

The Chairman: Is it any advantage to you to compare it up and down, and Mr. Lee to compare it crosswise?

Mr. Lauck: Yes, sir.

Mr. Lee: Certainly, sir. He is talking of cents and I am talking in percentages. If he will compare it up and down by percentages, I will talk with him.

Mr. Lauck: Up and down?

Mr. Lee: Yes.

Mr. Lauck: Well, the percentage of 1.75 cents is what of 56 cents?

Mr. Lee: Figure that out. When you start to compare up and down by percentages, you have got to compare 1912 up and down and then 1902 up and down—what percentage the total cost of firemen bears to the revenue, in 1912?

Mr. Lauck: The comparison I would like to make first, if you will permit me—

Mr. Lee: Go ahead.

Mr. Lauck: My comparison is—analyzing the cost—you have an increase in cost of firemen of 1.75 cents, which you say are based on 1902 experience, is 45% increase for the railroad. I find that the gross increase in revenue is 56 cents, which, roughly speaking, is about 40 times the increase in cost of firemen.

Mr. Lee: What does that convey to your mind?

Mr. Lauck: That conveys to my mind the fact that through this increased efficiency of your transportation machine, arising from reductions of curves, better equipment, and the brunt of the work, as far as transportation is concerned, being imposed upon the fireman that he has not participated properly in that 56 cents gain; that he ought to have an additional participation.

Mr. Lee: Although, as I understand, you haven't analyzed the work—what other work entered into that 56 cents?

Mr. Lauck: No, sir; I have not.

Mr. Lee: Only from your standpoint you think that the 1.75 cents is too small a portion of the 56 cents?

Mr. Lauck: I think so. I think that is as clear as anything could be, to me.

Mr. Lee: To you?

Mr. Lauck: Yes.

Mr. Lee: Not knowing anything about the other classes.

Mr. Lauck: Yes, sir.

Mr. Lee: But it still remains a fact that per revenue train mile the fireman has received a 45% increase out of a total increase of 29% in revenue?

Mr. Lauck: The firemen have, yes, sir.

The Chairman: This locomotive revenue basis then figures out a higher percentage?

Mr. Lee: This is a train mile basis we are talking about.

The Chairman: That figures out a higher percentage of gain to the firemen than the table we have had so much trouble over?

Mr. Lee: In that connection I think it is only fair to the witness to say that this is a little different basis—this takes the firemen as a whole—the whole body of the firemen. The other basis takes the individual fireman.

Mr. Atterbury: This is simply dividing the train miles into the total amount paid firemen for that year, is that right?

Mr. Lauck: Yes, sir.

The Chairman: Is this the basis upon which you said you thought it would be fairer to make the competition?

Mr. Lauck: Yes, sir; either this or the locomotive miles. There is no distribution of operating expense. These assertions about increased cost or giving the firemen 45% don't seem to me to be significant at all, from the firemen's standpoint. I am looking at this thing entirely from the railroads' standpoint in that connection. I am looking at the cost to the railroads. In other words, the railroad puts in 45% increase, in dollars and cents, into the train mile to move that train mile, and by putting more ton miles or passenger miles into the train load for each element of increase in its cost it would receive proportionately on the basis of the firemen, forty times the gain. It has no significance or bearing upon the outlay of the firemen. It is a question like a man manufacturing any article he introduced so much material into that and he estimates the returns—he estimates what the different elements cost and what is produced, and what he gets and what the elements get. So it does not seem to me there is any basis of claiming a 45% increase to firemen.

Mr. Carter: Gentlemen of the Commission, to show you what difference there may be between train mileage and locomotive mileage, I understand that on some parts of the Pennsylvania they use four engines to a train and on some divisions five engines to a train. Now, if you were only considering train mileage, on that specific train there would be five firemen working. You can see the difference between charging train mileage and locomotive mileage. On that train the locomotive mileage would be five times as much as the train mileage.

Mr. Lauck: No matter what the cost of a train mile is, in terms of firemen, the question here that I am considering is not that, but is produced by this investment in train miles. The point I have in making this comparison is, although the cost has slightly increased, the revenue gain has far exceeded the cost, and that

this revenue gain should be more greatly participated in by the firemen for the reason that they have had this extra work to do in connection with moving the trains.

The Chairman: But, if while the revenue gain to the railroad is 29 per cent., the figures show for the fireman a gain of 45 per cent., would you not think that was a high enough proportion?

Mr. Lauck: No, sir, that would not mean anything to me.

The Chairman: It would mean just this: If he had been getting $100 a month, and then was getting $145 a month, it would mean something to the fireman.

Mr. Lauck: There may be one, two, or more firemen on each one of those train miles, and this added cost may be divided between them. We are not considering any one fireman.

Mr. Atterbury: Is it not probable that the same conditions in connection with the additional fireman existed in 1902, as existed in 1912?

Mr. Lauck: It might, yes.

Mr. Atterbury: It is very apt to be so?

Mr. Lauck: I do not know. You know more about that. I do not know how that was. I think if a railroad can put $1.75 into firemen and can get $56 per train mile in return, and the fireman is doing more work, the fireman ought to receive an increase. That is my argument.

Mr. Lee: Are there any fifures here to show that the firemen in getting his $1.75 increase has not gotten all he is entitled to? Are there any figures preceding the table to show that he is not getting all that he is entitled to? He has gotten a 45 per cent. increase, and all the other factors—

Mr. Lauck: You say he, referring to a fireman. I am talking of firemen as a class.

Mr. Lee: I accept your correction. The firemen as a whole have gotten 45 per cent. increase. There may be more or less firemen, and the individual fireman may or may not be getting more. As I understand, you are arguing here to show a tendency. I do not know whether this is one of the tendency features or not.

Mr. Lauck: These are actual conditions.

Mr. Lee: These are actual figures?

Mr. Lauck: Yes.

Mr. Lee: You show here that the firemen as a whole have

gotten a 45 per cent. increase in wages per train mile, or in cost to the railroad per train mile, which is the same as wages, while all the other elements including the firemen also have had an increase of 55 or 56 cents, which is only 29 per cent. Now the witness says these are figures that he is prepared to rely on, and that is what those figures show.

Mr. Phillips: May I ask him a question right here?

Mr. Lee: Go ahead.

Mr. Phillips: I want to ask, regardless of the increased efficiency or greater productivity of the fireman, if he were moving the same tonnage, and it took 15 hours to do the same work that in 1902 he was doing in 10 hours,—if it took 15 hours in 1912 to do the same work that he did in ten hours in 1902, would not that show an increase of 50 per cent. in cost of firemen?

Mr. Lauck: Oh, yes.

Mr. Phillips: Without changing the rate at all.

Mr. Lauck: That would be charged against the train mile.

Mr. Phillips: That would be charged against the train mile. Now, if he used a much larger locomotive, and pulled twice the tonnage, and also put in more time, that would still go against the train mile?

Mr. Lauck: Exactly.

Mr. Phillips: That is, a larger locomotive or increased hours might show that increased cost, and still there would be no material increase to the fireman. It would show an increased cost per train mile?

Mr. Lauck: Yes.

Mr. Phillips: I asked a similar question with regard to another table this morning. The same conclusion would follow, would it not?

Mr. Lauck: Exactly.

Mr. Phillips: That it might show this increased cost for firemen, but as a whole on account of increased hours or larger locomotives, which necessarily carry a larger rate, while it might show an increased cost for firemen, there might be no change in the rate from 1902 to 1912.

Mr. Lauck: Oh, yes. Let me answer that question a little further. I remember that the first day I came here I heard a man testify for the B. & O. I believe it was Mr. Murphy. He testified that his trips required 14 to 16 hours to get over the

road. Well, of course, his 14 to 16 hours time would be charged against the train mileage of that train, and would show a larger outlay for firemen. But if the trainload had increased, as it has on the B. & O. in the last ten years, the revenue gain from that train would be many times the excess of the increased cost, and moreover he would not be receiving any more wages than he would be receiving at his regular rate. It does not indicate any increase to the firemen at all.

Mr. Carter: Pardon me for assuming the role of a doctor of figures.

Mr. Lee: Go ahead.

Mr. Carter: If a fireman makes 100 miles in ten hours at 25 cents an hour, he gets $2.50. If he makes that same 100 miles in a later year in 15 hours, at 25 cents an hour, he gets $3.75, and therefore through the kindness of the company in increasing the hours on the road 50 per cent., they have increased his wages 50 per cent. That is one school of accounting.

We will go further. Understand, he has to work at the same rate 50 per cent. more hours to get over the same old division, and he is earning $3.75 for getting over that 100 miles where formerly he earned $2.50, and as Mr. Lauck explained, while the company would be paying him 50 per cent. more money in getting over the division, he would be contributing 50 per cent. more of his time to get over the same division.

To go further in this mystery of figures—

The Chairman: Before you go on to the next mystery, while he would be working five hours overtime on that trip, he would not make as many trips, would he?

Mr. Carter: Not nearly, but the point is this, we are talking about locomotive miles or train miles. I am showing you that if the length of time in getting over a division of 100 miles is extended by changes in the policy of getting the trains over the road, they can actually pay him $3.75 for getting over that same 100 miles where formerly he only got $2.50, and on its face it would show that they had increased his wages 50 per cent. for getting over that division. I will say to you he would rather the company would keep their fifty per cent., and let him go over the road in ten hours at $2.50. 100 miles on an 80,000 pound locomotive on drivers, pulling 1,000 tons, and consuming ten tons of coal, at 22½ cents, would be $2.25. He would get $2.25 for firing

that 80,000 pound engine pulling 1,000 tons, and burning 10 tons. Now, in this late day of railroad progress and efficiency, the same man, if he was not promoted, might fire over that same 100-mile division on an ingine weighing 160,000 pounds on drivers, double the weight, and he might pull 2,000 tons, and consume 20 tons of coal, and he might get $2.75.

Now, the deductions are these. The increase in hours according to the first example, would be 50 per cent. The increase in tonnage, according to the other example, would be 100 per cent. The increase in coal consumption would be 100 per cent. The increase in wages would be 22 per cent. Now, if we are only to consider the factor that Mr. Lauck finds in the Interstate Commerce Commission reports, none of those things would be taken into consideration.

Mr. Atterbury: Then you disagree with the witness, that the train mile or locomotive mile is a fair comparison.

Mr. Carter: I mean to say that if it now takes, we will say for argument, 15 hours to make 100 miles where it formerly took ten hours, that the fireman has to work that much harder. When we carry out the percentage of his increase in wages, and we are not talking about earnings—I am afraid we are getting off the track. In our requests here, we have not asked anybody to increase our earnings. We have asked for an increase in the rate of pay. It is up to the man how much his earnings will be after his rate is fixed. I am showing you by this evolution, revolution if you like, in railway practice, that the fireman may to-day, so far as Mr. Lauck knows, and as far as he can ascertain from the Interstate Commerce Commission records, with only a flat increase of 22 per cent. in his rate, be pulling 100 per cent. more tonnage, or burning 100 per cent. more coal. Now, if it is the thought of anyone here that the fireman want to work overtime, I want to dispel that thought. What the fireman would like to do would be to work ten hours, and then quit and rest. It is not any privilege to the fireman to work 15 hours. In fact, he comes before you saying if he has got to continue to work 15 hours, he must have two men on the big engines. We have asked witnesses here if they cannot have the assistance of another fireman on these locomotives if they would have to go to Congress to get their hours reduced to ten hours, and they have said yes. We prefer that this arbitration would give the firemen the additional

help instead of a reduction in hours, for this reason: It would be a much greater hardship on the railroads to have to stop their men at the end of ten hours and establish intermediate terminals to meet that law, than it would be to give the firemen the assistance they desire.

Now, to go back, these statistics, as I understand, upon which Mr. Lauck bases his conclusions, have no regard for the size of the engine, or the size of the train, the number of engines on the train, or anything else.

Mr. Lee: It has not anything to do with the individual fireman either, has it, these particular ones?

Mr. Lauck: No, I think the statistics are very clear. They are very clear to me. The point is that the railroad now, in its operation, starts out from the terminal with a heavier train, say a train load of 62%, and it costs them for each mile traversed 1¾ cents in terms of firemen to do that, but, owing to the increased revenue it receives from the train, it makes a gain of 56 cents for each mile traversed, as compared with this 1¾ cents to the fireman.

Mr. Carter: I am afraid I have not made myself clear. This train going over the road in ten hours at 25 cents an hour, the fireman would get 2½ cents a mile, say. Now, if he went over the road in 15 hours, presuming he pursued the same speed, he would get 3½ cents a mile—

The Chairman: 3¾.

Mr. Carter: 3 3-4, and it might be made to appear in these statistics that his wages are actually increased. I will say the firemen will take his $2.50 in preference to the $3.75. That is the mileage basis I am talking about.

Mr. Lauck: There is no indication in these statistics that the wages have been increased.

Mr. Carter: No.

Mr. Lee: You are not talking about individual firemen in this statement?

Mr. Lauck: No, I am talking about the cost to the railroad, and the revenue gain.

Mr. Lee: That is the cost paid to all the firemen?

Mr. Lauck: Yes, and the revenue gains in productive efficiency.

Mr. Carter: Well, I must say again, Mr. Lauck, if all the rail-

roads are paying all the firemen 3¾ cents a mile now because they are 15 hours on the road where formerly they only paid them 2½ cents a mile for the same old mile, it would indicate that the cost to the railroads had increased 50% when the fact of the matter is the fireman would not get a fraction of 1% increase. I mean to say that the longer the hours he would consume in making the 100 miles increases his pay per mile, but not to his advantage, but to his disadvantage?

The Chairman: Well, it clears up the situation somewhat to me, if I am to understand now, that this, instead of being an increase to the fireman, is a cost to the railroad?

Mr. Lauck: Exactly.

Mr. Carter: That is it exactly.

Mr. Lee: Who got it, the firemen?

The Chairman: The firemen got it, it is not claimed that anybody else got it?

Mr. Lee: No, sir.

The Chairman: But there is a difference between the cost to the railroad and the profit to the fireman?

Mr. Lauck: Yes.

Mr. Lee: I can't see it.

The Chairman: Their argument is that while the fireman's pocket may hold more money at the end of the month—

Mr. Carter: The end of 100 miles say.

The Chairman: The end of 100 miles, yes; I believe that is a better illustration. While the fireman's pocket may hold more money at the end of 100 miles than the same fireman ten years ago would have earned, it is because it costs the railroad more to have that fireman during the length of time that is required for him to render the same service to the railroad.

Mr. Lauck: The same thing, Judge, is true of the locomotive.

The Chairman: Now, if it takes me 15 hours to make $7.50 when it used to take me only 10 hours to make $7.50, I am making no more money.

Mr. Lee: Yes, but you forget, Judge—

The Chairman: I am costing somebody else more than they formerly paid me.

Mr. Lee: Yes, sir.

The Chairman: But I am not making any more money in hours, and in exertion, than I did before.

Mr. Lee: Yes, but if your premises were correct your conclusion would be correct; but where we formerly paid $7.50 for ten hours, we are paying a great deal more for the 15 hours, but getting only the same amount of mileage.

Mr. Carter: How much tonnage?

Mr. Lee: The tonnage increased, granted.

Mr. Lauck: The tonnage increased 62% and the revenue 62 times whatever the rate was.

Mr. Lee: Yes, that is true. To 62%, not 62 times.

Mr. Lauck: No, 62%, yes, sir.

Mr. Lee: You see the proposition as you put it, I take it, Judge, is that we are paying $7.50 for 15 hours work running the same mileage that we formerly paid $15 for?

Mr. Carter: It is the fact.

The Chairman: That you formerly paid $5 for?

Mr. Lee: I understand you to say $7.50 for each run?

The Chairman: No, I just said 100 miles.

Mr. Lee: Well, we are paying say $5 for 100 miles in 10 hours formerly, and paying $7.50 for 100 miles in 15 hours. That was your case?

The Chairman: Yes.

Mr. Lee: Well, we are paying more per mile for that same amount, and the firemen is getting more per mile. This is on a mile basis now. The firemen true has put in five hours more for us and he got 50% more pay. But you understand that is on a revenue train mile basis that the witness is talking about and the number of hours he has put in—what I am getting at is, this table in itself does not show the increase in wages to individual firemen. It shows that the firemen as a class have gotten this increase per revenue train mile, and from that fact this witness draws conclusions that he has not got enough of an increase. Am I correct ?

Mr. Lauck: Undoubtedly, I do not think he has.

Mr. Lee: That is your conclusion?

Mr. Lauck: No, because the railroad got proportionately many times the revenue gain that the firemen got increase, in outlay.

Mr. Lee: I do not get your point there on different bases. The railroad got only 29% increase, while the firemen as a class got 45% increase?

Mr. Lauck: Well, Mr. Lee, it costs you more in terms of a locomotive to get this train over the road, doesn't it?

Mr. Lee: How do you mean?

Mr. Lauck: That is your maintenance and your original investment in the locomotive.

Mr. Lee: It all costs more, yes.

Mr. Lauck: Well, you do that because it pays you to do it?

Mr. Lee: Yes.

Mr. Laucsk: You pay the firemen because it pays you to do it?

Mr. Lee: Yes, certainly.

Mr. Lauck: Well, my claim is that the fireman has not gotten enough of the gain that you have acquired from his services.

Mr. Lee: I do not see how you reach your conclusion when he has gotten more than all of them put together.

Mr. Lauck: He got one and three quarter cents and the railroads six cents.

Mr. Lee: Yes, and he got 45 per cent, and the railroads only got 29 cents increase, an entirely different basis.

Mr. Lauck: I can't see it.

Mr. Lee: This 1¾ cents that the witness speaks of applies only to the firemen. This 55 cents has got to go to pay increases in all these other classes of labor and all the other increases in material and all the returns on investment put in the property.

Mr. Lauck: After all those are paid you still have 13 cents left?

Mr. Lee: I am getting down to that. I haven't gotten down to that yet. I will get to that after a bit.

Mr. Phillips: Would the fact that the fireman apparently received 45 per cent increase on a small amount and the railroads received 29 per cent increase on a larger amount account for the apparent fact that the railroads received 40 times as much as the firemen?

Mr. Lauck: That is the difference. One is on a percentage basis; 29 per cent of a large sum of revenue is much more than 100 per cent gain would be of the small additional cost of firemen. That if why I thought it better to express it in terms of cents.

Mr. Lee: You are comparing gain in cents from one basis with gain in cents from another basis that are not comparable, and the only way you can compare them is by percentages.

Mr. Carter: Do I understand you to say that if through the modern methods of railroading an extra car is added to a train for the fireman to furnish steam in transporting, the railroads get $40 for hauling that car, and the firemen would get $1.00, and the railroads would get $39.00?

Mr. Lauck: $56.

Mr. Carter: All the firemen collectively?

Mr. Lauck: It is simply a situation where the railroad has improved its operating efficiency in terms of both capital and labor. They have put in better equipment—and straightened the road.

Mr. Carter: Do you know how much road they have straightened. Do you think they have straightened one mile out of five hundred?

Mr. Lauck: I don't know. I am granting every consideration to the railroads and assuming that they have invested more per mile in equipment than in labor. They have got a larger gain from it.

Mr. Carter: Have you any idea how much the Lake Shore has saved in cutting down grades? That is the water level route.

Mr. Lauck: I don't know anything about that. I know the Lake Shore has taken 100 per cent. of its capital stock and put it back into the road, out of its earnings.

Mr. Lee: Not to prolong this too long, if the Board pleases, I just want to put some percentages in, and if they seem to you, Mr. Lauck, to be right, I presume you will admit them?

Mr. Lauck: I am perfectly willing to have you put in your percentages, but I don't accept them, of course.

Mr. Lee: All right. I will read them and if you do not care to check them, it is all right.

Mr. Lauck: I won't check them.

Mr. Lee: Total transportation, labor, increase 32 per cent. per revenue train mile.

Mr. Atterbury. How do you get that?

Mr. Lee: Increase from 1902 to 1912.

Mr. Atterbury. That is the increase from 71 cents to 90 cents, on Table 10.

Mr. Lee: I am reading from page 8—total transportation labor.

Mr. Lauck: If you will read on page 10 you can see the cents and per cents simultaneously.

Mr. Lee: I had just as lief read them on page 10. Total transportation labor—

Mr. Atterbury: Is that the increase from 71 cents to 90 cents?

Mr. Lauck: No, sir; that is all expenses—transportation. labor, 44 cents to 58 cents.

Mr. Lee: I am taking the total transportation labor, increase 30 per cent., at the top of the page—total labor, not transportation, per revenue train mile.

Mr. Atterbury: That is the increase from 44 cents to 58 cents.

Mr. Lee: Yes, sir.

Mr. Atterbury: That is what you base your percentage on?

Mr. Lee: Yes, sir—1902 to 1912, total expenses increased 26 per cent.

Mr. Atterbury: What was your total labor increase?

Mr. Lee: 30 per cent.

Mr. Atterbury: And your total expenses increased what?

Mr. Lee: 26 per cent. Total revenue increased 29 per cent.

Mr. Atterbury: Does that mean that your labor increased more than your materials and taxes?

Mr. Lee: It would seem so, yes, sir.

Mr. Atterbury: Your taxes do not come in here?

Mr. Lee: Not in this, no, sir. We haven't made any provision for taxes in this.

Mr. Atterbury: The taxes have got to come out of the revenue.

Mr. Lee: Out of the operating revenue. Now, on page 9 Mr. Lauck, as I understand it, the upper section of this table considers only the transportation expenses.

Mr. Lauck: Yes.

Mr. Lee: And does not include the other expenses?

Mr. Lauck: No; the lower one includes all expenses.

Mr. Lee: Now, in this upper table, as I understand it, you take the gain in total revenue and the increase in expenses of transportation, and subtract that from the total revenue.

Mr. Lauck: That is just simply comparing the transportation cost with what is practically the total revenue.

Mr. Lee: This really does not amount to anything.

Mr. Lauck: To get all expenses, it would be better to take both parts together.

Mr. Lee: They have all got to be paid.

Mr. Lauck: Certainly. I did that in my direct testimony. I did not mention the transportation revenue.

Mr. Lee: Yes. That is substracting the transportation expenses only from the revenue really does not mean anything in itself. It is just a comparison of the increases.

Mr. Lauck: Yes. I do not think—

Mr. Lee: That figure .0667 does not mean anything.

Mr. Lauck: I think the .85 is fairer from the standpoint of the railroads. That is at the bottom of the page.

Mr. Lee: That is from 1911 to 1912. Let us go over to 1902 to 1912, where we were before. The same thing applies to that first section of that table up above there.

Mr. Lauck: Yes.

Mr. Lee Now, you say there, "Substracting the increase in entire cost of conducting transportation from the advance in transportation revenue, it is seen that the railroads obtained a net gain of 36 cents per revenue train mile in 1912 as contrasted with 1902. In other words, for each increase of $1,000 in transportation outlay during the period under discussion, the railroads received $2,900 in gross transportation revenue per revenue train mile, or $1,900 in net revenue over and above all the increases in expenses." I think you did not exactly mean what it says there, did you? "Or $1,900 in net revenue over and above all increases in expenses."

Mr. Lauck: Is that at the bottom of page 10?

Mr. Lee: No, it is on page 10 at the right hand of the reading matter under the table, starting in "In other words," in the second line, and reading down to the first period.

Mr. Lauck: I see where you mean now.

Mr. Lee: You say there "Or $1,900 in net revenue over and above all increases in expenses."

Mr. Lauck: That should be "Transportation expenses."

Mr. Lee: You did not mean all expenses?

Mr. Lauck: I did not mean all the expenses, no.

Mr. Lee: It says "expenses," and I wanted to correct that.

Mr. Lauck: Yes.

Mr. Lee: And that expression "net revenue" is not the proper expression, is it, either?

Mr. Lauck. Not the ordinary technical designation of net revenue.

Mr. Lee: It does not mean what is usually called net revenue?

Mr. Lauck: No, not in railroad accounting I think the fairer comparison is the gross gain.

Mr. Lee: I think so. I did not want to leave a wrong impression there. I did not think you meant that. You said you preferred to compare the .0175 with the 13 cents and that you thought that was a fairer comparison.

Mr. Lauck: Yes, I do think so.

Mr. Lee: If we started to compare that, we would get into the same trouble as we did before, would we not?

Mr. Lauck: In what way, sir?

Mr. Lee: This revenue gain and firemen gain, this 45 per cent. increase in cost of firemen.

Mr. Lauck: You mean we would have the same discussion?

Mr. Lee: Yes, we would have the same discussion.

Mr. Lauck: Yes.

Mr. Lee: And we would have to work out somewhat similar percentages, that you would think would not amount to anything, and I would think were quite significant?

Mr. Lauck: Yes.

Mr. Lee: Should any portion of this 13 cents go to pay interest on money invested for improvements?

Mr. Lauck: Oh, yes, that 13 cents is the amount available for the capital requirements, as represented by the actual investment in the road.

Mr. Lee: It would be perfectly proper to pay it out of that 13 cents?

Mr. Lauck: Yes.

Mr. Lee: And that is where it would have to come from?

Mr. Lauck: That is where it would have to come from.

Mr. Lee: There is no place else to get it?

Mr. Lauck: That is, if we are just running the railroad now.

Mr. Lee: We are trying to run the railroad.

Mr Atterbury: Where would the other employees come from?

Mr. Lee: They come before we get to that; but if there were a large increase in operating expenses due to an increase in wages to all of our employees, you would not get that 13 cents, would you?

Mr. Lauck: No, if you increased your labor cost to such an extent that it would absorb the 13 cents, there would not be anything left for capital; but I am not claiming that a liberal increase to the firemen would have any such effect. A 20 per cent. increase, as I said a while ago, would on the basis of that 1¾ cents, be only 1.13 cents, and would leave you 11½ cents net remaining.

Mr. Phillips: That 13 cents represents a gain per revenue train mile of 13 cents?

Mr. Lauck: Exactly, yes.

Mr. Phillips: So whatever the figure was before, in the net revenue, there is this much gain added to it?

Mr. Lauck: Yes, sir. In other words, that the gross revenue was $1.90 in 1902 and $2.46 in 1912, but the increase was 43 cents in cost during the period, making 13 cents added to the net?

The Chairman: The 1¾ cents to the fireman is included in the 43 cents?

Mr. Lauck: Yes, sir. The gross revenue gain pays all added costs and leaves 13 cents over for capital.

The Chairman: Or for increased wages?

Mr. Lauck: For increased wages or for any purpose, yes, sir.

Mr. Lee: That is what your sentence means then, that the cost of firemen in 1912 was only 1.75 cents greater per revenue train mile than in 1902, as contrasted with the transportation revenue gain of 55 cents. That is why you used the word only?

Mr. Lauck: Yes.

Mr. Lee: Because you think it is so small?

Mr. Lauck: Yes, I think—

Mr. Lee: But that 1.75 cents is relative to all the other factors, is it not, or should be so?

Mr. Lauck: Oh, yes.

Mr. Lee: Yes.

Mr. Lauck: Taking into consideration what each factor does?

Mr. Lee: Yes, exactly, and you not knowing what the other factors do.

Mr. Lauck: No, I only knowing that the firemen do the brunt of it.

Mr. Lee: You only know that the fireman bears the brunt, and do not know who else bears the brunt?

Mr. Lauck: No.

Mr. Lee: All right. I think perhaps there is something you want to say also in the two tables on page 10, Mr. Lauck. In the upper table you have a net gain in revenue of 36 cents and in the lower table you have a net gain in revenue of 13 cents. Everything in that upper table applies to just the transportation?

Mr. Lauc: Yes, sir; Itthink I stated that, Mr. Lee, when I went over it in the record.

Mr. Lee: Yes, just to the transportation. I just wanted to get that cleared up so there would be no question about it.

Mr. Lauck: Yes, and net gain does not mean net gain in the technical sense of net profit to the railroad?

Mr. Lee: What I was a little fearful about was, you see the words net gain in revenue are used the same in both tables?

Mr. Lauck: Yes, it might be misleading.

Mr. Lee: Yes, it might be misleading and I wanted to clear it up.

Mr. Lauck: It means the net gain over transportation expenses.

Mr. Lee: It really does not mean net gain in the usual sense.

Mr. Lauck: No, I should have used probably surplus, or something like that, or excess.

Mr. Lee: You have used surplus a good deal. You had better keep that word out yet.

Mr. Carter: It is all velvet isn't it?

Mr. Lauck: Yes.

Mr. Lee: Are you sure of that?

Mr. Lauck: Well, it should be if it is not.

Mr. Lee: But you do not know that it is. On page 11, all that we have said about the table on page 10 goes along with the table on page 12?

Mr. Lauck: That is correct, yes.

Mr. Lee: Except they are just different periods?

Mr. Luck: That is all.

Mr. Lee: And the percentages probably would run along about the same?

Mr. Lauck: You mean—

Mr. Lee: Of course I am speaking of my percentages and not yours?

Mr. Lauck: Mine run a litter higher there, you see.

Mr. Lee: Yes, and mine would too probably in that case. Total cost of fireman per revenue train mile between 1907 and 1912, was 15.8% and revenue was 9%, both increases?

Mr. Lauck: I will tell you, Mr. Lee, it would be well to be sure you get those designations right in the record. I noticed you inadvertently said fireman then.

Mr. Lee: Fireman, did I?

Mr. Lauck: Yes, sir.

Mr. Lee: I am talking about firemen; I am talking about the group at the present time, although there is some doubt in my mind as to how the group affects the proposition.

Mr. Lauck: It is quite an important distinction.

Mr. Lee: Yes, and every time I do I should be very glad to have you correct me.

Mr. Lauck: I do not know how many times you have done it in the past. I just happened to think of it now.

Mr. Lee: Under this Section No. 9 all these remarks apply to firemen?

Mr. Lauck: Yes, sir.

Mr. Lee: When used in connection with the table?

Mr. Lauck: Yes, sir; the total outlay for firemen.

Mr. Lee: Of course, there has been a good deal of talk about the individual fireman, but it had no reference to this.

Mr. Lauck: No.

Mr. Lee: We might say the same—let's see, where were we, page 11?

Mr. Lauck: Page 14, section 10.

Mr. Lee: Page 12, wait a minute, you are going a little fast for me I think. Page 14, the labor cost of operation increased .0865, total cost of operation increased .0935. Those figures are correct.

Mr. Lauck: At the bottom of the page?

Mr. Lee: Yes.

Mr. Lauck: Per revenue locomotive mile.

Mr. Lee: Yes. Would that indicate that labor had received 8/9ths of the increase in the total cost of operation?

Mr. Lauck: That would indicate that labor had received out of a total increase in cost of operation of 9.35 cents approximately 8/9ths; yes, sir; 8.65 out of 9.35.

Mr. Lee: Are the costs of operation shown in this table per locomotive mile?

Mr. Lauck: Per revenue locomotice mile you are speaking of, isn't it?

Mr. Lee: Yes, per revenue locomotive mile.

Mr. Lauck: You see what are there, transportation expenses.

Mr. Lee: The maintenance of way and so forth are not in

Mr. Lauck: Oh, yes, labor cost of maintenance, and you will see above that the total labor of transportation is shown. The total labor of transportation, the increase in cost has only been 2.19 cents as compared with labor cost of maintenance of 4.31 cents.

Mr. Lee: Where is that?

Mr. Lauck: The table is in two sections, you see, the top and the bottom. They should be together.

Mr. Lee: Oh, you mean up here and down there?

Mr. Lauck: Yes, the transportation is above and the maintenance of way and equipment and other expenses are below. The same remarks would apply to this table as you made in regard to the revenue train mile tables.

Mr. Lee: About the middle of the page between the two tables, Mr. Lauck, where you quote all those large figures for each additional $1,000 invested in firemen, there was a gain in gross transportation in revenue of $31,000 and $23,500 in net transportation revenue.

Mr. Lauck: Yes, that transportation revenue of course is not according to the technical net revenue, that is understood.

Mr. Lee: Is that a term used by the Interstate Commerce Commission?

Mr. Lauck: No.

Mr. Lee: It is not?

Mr. Lauck: No, not designated net revenue. As I understand what you mean, you mean the difference between total revenue and total expenses.

Mr. Lee: Yes. You do not mean here then that this represents net operating revenue instead of net transportation?

Mr. Lauck: No, sir.

Mr. Lee: This is just a designation of your own?

Mr. Lauck: Yes, sir.

Mr. Lee: It hasn't anything to do with the Interstate Commerce classification at all?

Mr. Lauck: Nothing at all, no, sir.

Mr. Lee: And really don't mean what it says, net transportation revenue?

Mr. Lauck: Net revenue—

Mr. Lee: It means net gain in transportation over and above this other factor, doesn't it?

Mr. Lauck: Yes, net gain in revenue strictly from transportation over and above the expenses from strictly conducting transportation.

Mr. Lee: Yes. What you mean there as I understand it, it is the net gain in the total revenue of the railroad?

Mr. Lauck: Exactly, total transportation revenue.

Mr. Lee: From which you have subtracted only the transportation expenses and not the maintenance of way, traffic, general, and other things that have to be paid?

Mr. Lauck: Exactly, but I subtract those at the bottom of the page you will note.

Mr. Lee: Yes, I understand. The only thing is, I think, it is rather an unfortunate designation you have put in there.

Mr. Lauck: Yes. I think so too. If I had it to do over again, I would change it.

Mr. Lee: Total cost to revenue per revenue locomotive mile, in 1908, the firemen received 3.35 cents per locomotive mile, and in 1912 they received 3.84 cents per locomotive mile, an increase of .0049 cents, which is a percentage of 15 per cent.

Mr. Lauck: I haven't worked that out.

Mr. Lee: I have. That looks about right, doesn't it?

Mr. Lauck: That is about right. It would be about one-sixth, or about 15 per cent.

Mr. Lee: Total labor of transportation increased 6 per cent; total transportation expenses increased 7 per cent; revenue per revenue locomotive mile increased 10 per cent.

Mr. Lauck: I was just thinking, Mr. Lee, that these increases might be used against you by some other class of labor, if you are not careful.

Mr. Lee: That is all right. We are not fearful of them. We are not fearful of any facts. The facts are what we try to bring out. If the facts hurt us, we are willing to go by them.

Mr. Carter: I understand that this same question has arisen so often in the past, that these percentages of increase include all the firemen—

Mr. Lee: He said the firemen.

Mr. Lauck: Yes.

Mr. Carter: For instance, if the increase in traffic requires an additional number of firemen, this increase in the amount paid would not be to the same number of firemen.

Mr. Lee: It might or might not be.

Mr. Lauck: The same facts that we discussed in connection with revenue train miles with the reservation of the use of two locomotives—

Mr. Carter: The reason I brought this out is, that without bringing it out, it would appear that the same firemen were getting this increase.

Mr. Lee: You mean in 1908 and 1912?

Mr. Carter: Yes.

Mr. Lee: I don't know that our side has claimed that.

Mr. Lauck: I don't know exactly what you are claiming by your present course there. I don't think it has any relation to the increase in compensation to firemen.

Mr. Lee: To the individual fireman?

Mr. Lauck: Yes.

Mr. Lee: But it does apply to the firemen as a class?

Mr. Lauck: Only as related to the work performed by firemen.

Mr. Lee: As I understand it, you have taken the total cost of firemen to the railroads, and divided it by the total revenue locomotive miles?

Mr. Lauck: Exactly.

Mr. Lee: For each year, 1908 and 1912?

Mr. Lauck: Exactly.

Mr. Lee: And have obtained the costs for all firemen per locomotive mile?

Mr. Lauck: Exactly.

Mr. Lee: That is, as a class, as a whole—

Mr. Carter: No, I—neither of us is contending that the individual fireman got this increase.

Mr. Lauck: I am contending, if you speak of increases that way, it would be much fairer to speak of it in terms of what these firemen did; say the freight locomotive load. I am speaking of it in terms of cost to the railroad. I am perfectly willing to say the cost increased that much, but the locomotive load in-

creased that much, and the revenue increased that much. I should think it might create a misapprehension in somebody's mind in reading the record as to those percentages.

Mr. Lee: Very well, the cost or wages of firemen. That is your point—the cost or wages of the firemen to the railroad.

Mr. Lauck: Yes, sir.

Mr. Lee: Increased 15 per cent.?

Mr. Carter: And in regard to that increase, the example I brought out a while ago, the fireman is taking 50% more time to make a mile than he did before.

Mr. Lee: Oh, yes, it includes everything—or 50% less.

Mr. Atterbury: Has it been established that the fireman takes 50% more time?

Mr. Lee: No, sir; merely the statement of counsel not under oath. He means "if"—it is a big word, sometimes. I believe, sir, that—I won't finish that sentence.

Mr. Carter: Go ahead.

Mr. Lee: Oh, no.

Mr. Lauck: You might add there that the ton miles per freight locomotive mile increased: There are 46 more tons to the locomotive mile.

Mr. Lee: That is why we build larger locomotives and cut down the grades. That is where our efficiency is coming in.

Mr. Lauck: I think I thoroughly agree with you; but the brunt of it is on the firemen, as I said before.

Mr. Lee: You learned your lesson well, sir.

Mr. Lauck: The statistics are very convincing to me.

Mr. Atterbury: Do I understand now, that as a class, the firemen receive on a locomotive mile basis fifteen per cent. more?

Mr. Lee: Mr. Lauck corrected me on that. The expense of firemen to the railroad on a locomotive mile basis has increased 15 per cent. Am I correct on that?

Mr. Lauck: Yes, exactly. I wanted to add something to that.

Mr. Lee: Go ahead and add it.

Mr. Lauck: I simply said that cost ought to be expressed in relation to the increased work of firemen.

Mr. Lee: You mean shown on the front of the page?

Mr. Lauck: Yes, increase in freight locomotive loads.

Mr. Carter: Or in hours?

Mr. Lauck: Or in hours.

Mr. Lee: But that increase in the load has not been all attributable to the work of the firemen?

Mr. Lauck: Oh, no, sir.

Mr. Lee: That is my point. You get yours, and I get mine, and we are square.

Mr. Lauck: Your managerial ability and your capital committment have probably been the determining factor, but the fireman is shovelling more coal as a result.

Mr. Lee: Yes, that is all right.

Mr. Carter: That is, if the railroads had not bought a big locomotive for him to fire, he would not have had the privilege of firing it.

Mr. Lauck: And he would not have had the increased tonnage to haul.

Mr. Lee: Nor would he have had the increased efficiency.

Mr. Carter: If the fireman should be consulted, I wonder if he would like to go back to the good old days?

Mr. Lauk: I do not know.

Mr. Lee: Mr. Lauck, do you remember how much the train load has increased since 1908?

Mr. Lauck: The percentage?

Mr. Lee: No, the actual increase?

Mr. Lauck: 46 tons I think, if I remember the freight locomotive load.

Mr. Lee: 46 tons?

Mr. Lauck: Ton miles per freight locomotive mile.

Mr. Lee: 46 tons?

Mr. Lauck: Yes.

Mr. Carter: Per locomotive mile?

Mr. Lauck: Ton miles per locomotive mile.

Mr. Lee: That is the train load has increased 46 tons?

Mr. Lauck: Per locomotive load. For each locomotive there has been an addition of 46 tons according to the statistics.

Mr. Lee: Each locomotive is hauling 46 more tons than it did in 1908?

Mr. Lauck: Yes, and the revenue gain you can see is just about that. Tonnage per mile, it would be about 23 cents or something like that. You get about half a cent a ton per mile, do you not?

Mr. Lee: It varies.

Mr. Carter: You mean 46 tons per locomotive mile?

Mr. Lauck: Yes.

Mr. Carter: If it was hauled 100 miles, it would be 46 multiplied by 100, would it not?

Mr. Lauck: Yes.

Mr. Lee: You mean each engine has hauled 46 tons more?

Mr. Lauck: Yes, I mean the average freight locomotive haul is 46 tons more.

Mr. Lee: Yes, that is what I thought.

Mr. Atterbury: Please repeat that.

Mr. Lauck: The train mile increased a certain per cent. Now we find that the locomotive load has increased 46 tons in the last five years.

Mr. Atterbury: Does that mean that the train load has increased 46 tons?

Mr. Lauck: No, sir, you may have two locomotives on that train.

Mr. Atterbury: What is the increase per train?

Mr. Carter: Your locomotive has increased in weight more than that.

Mr. Lauck: The train increase is 35.13 per cent. The total ton mileage has increased 62 per cent.

Mr. Lee: That 46 tons is in your basic table, is it not?

Mr. Lauck: Yes.

Mr. Lee: It is not in this exhibit?

Mr. Lauck: It is on page 4 at the top of the page. Ton miles per freight locomotive mile. We are considering revenue miles. That is all miles of course; 46 tons.

Mr. Lee: At the top of page 4?

Mr. Lauck: No, the second item from the bottom, 12 per cent.

Mr. Carter: Ton miles per freight locomotive mile?

Mr. Lauck: Yes.

Mr. Lee: That is the same thing; that is right, isn't it?

Mr. Lauck: Yes.

Mr. Lee: That is your increase in 1902 over 1912, isn't it?

Mr. Lauck: Well, that ought to be 1908 there.

Mr. Lee: Yes, that ought to be 1912 over 1908.

Mr. Lauck: Using the separate roads, I have a net stated at the foot of the page.

Mr. Lee: That item there, ton miles per locomotive mile, should be a note made in there that instead of being 1912 over 1902 as shown in the table it should be 1912 over 1908.

Mr. Carter: Is that the top of page 4?

Mr. Lee: The top of page 4.

Mr. Atterbury: Per firemen for each locomotive mile, does that mean that from 1908 to 1912, the ton mile per fireman has increased 46 tons?

Mr. Lee. Per freight locomotive mile, per freight locomotive.

Mr. Atterbury: Yes, a fireman for each locomotive?

Mr. Lauck: No, sir; that doesn't mean that exactly—I beg your pardon, I didn't mean to interrupt.

Mr. Atterbury: I am trying to resolve this into something that I can appreciate.

Mr. Lee: It means that each locomotive is hauling 46 tons of revenue freight more than than it did in 1908?

Mr. Atterbury: Well, a firemen is firing that locomotive.

Mr. Lee: Yes, sir; I take it so.

Mr. Atterbury: Therefore, that fireman is helping to move 46 more tons per locomotive mile in 1912 than he did in 1908?

Mr. Lee: I take it, that is correct.

Mr. Lauck: That is all locomotive miles, not revenue locomotive miles. It would be higher if you took revenue locomotive miles, slightly higher. That is the correct interpretation of it.

Mr. Lee: Why, just a minute, isn't this revenue locomotive miles here in this table?

Mr. Lauck: No, that is total locomotive miles.

Mr. Lee: No, this is ton miles per freight locomotive miles. That must be revenue locomotive miles.

Mr. Lauck: Yes, I don't know; I don't remember exactly whether that is revenue or non-revenue. The distribution would enter into that then if it is freight locomotive miles.

Mr. Lee: I think that would be revenue locomotive miles in freight service.

Mr. Carter: I cannot understand why it should be only 46 there when it is 135 for the freight train miles.

Mr. Lee: Your locomotive miles are greater than your train miles. Then you divide them each into your ton miles to get your load per train?

The Chairman: It isn't three times as great?

Mr. Lee: That would depend altogether sir, on the freight train mileage and the freight locomotive mileage.

Mr. Carter: Are you taking in the possibility of charging in the switch engines and light engines and work train engines and everything else in your locomotive miles?

Mr. Lauck: I am not exactly clear as to whether that is total locomotive miles or just revenue locomotive miles. I will tell you in just a second.

Mr. Lee: You see there are different periods there Mr. Carter, one in 1902 and 1912, and the other is 1908 and 1912. That would have some bearing on it, rather a considerable bearing I would say.

Mr. Carter: Well, the second column shows a 12% increase in four years.

The Chairman: It seems to me that the increase in the weight of the cars, and the increase in the weight of the locomotive itself, in the last five years would be something like possible 46 tons of the train load. I do not know, but this seems to me to be something wrong about the figures.

Mr. Lee: Understand your Honor, that this is just revenue tons; this is tons of lading; it does not represent the tons weight of the cars at all. For instance, an engine hauling 50 or 60 or 75 heavy steel cars in a train with nothing in them would not appear in this table at all.

Mr. Lauck: I am not prepared to say that definitely Mr. Lee.

Mr. Lee: I think that is a fact, that this is ton miles of lading, because I fear that if this were total ton miles per train or tons per train, that some of our general managers might be in serious difficulty.

Mr. Atterbury: That is 12%?

Mr. Carter: It shows 12% whatever it is.

Mr. Atterbury: 12%, and 1,005 would be eight times that. Now, what is your average tonnage per train?

Mr. Lee: Per locomotive?

Mr. Atterbury: Yes, that is not far out.

Mr. Carter: It shows 12.07 per cent. increase.

Mr. Atterbury: What is your average—

The Chairman: That would mean if you used the word "lading," eight times, only 46 (46)—

Mr. Lee: Per locomotive.

The Chairman: Per locomotive, which would be only about 350 tons.

Mr. Atterbury: I think that is a pretty fair figure, for the 54 railroads.

Mr. Lee: You see, Judge, the Interstate Commerce Commission figures do not take into account the miles in this statement that we have used here, this ton mile statement, it does not take into account the ton miles made by the empty cars; they only take into account the ton miles made by the lading in these cars, and these are the figures that I think the witness has used.

Mr. Lauck: Yes, I think so.

Mr. Carter: I understand the locomotive mileage includes light engines and every other kind.

Mr. Lee: Yes, there might be engines running over the road without any cars behind them, and they would be in this statement.

Mr. Carter: Or if they had all empties, it would be the same thing.

Mr. Lee: Yes, but there would not be any corresponding ton miles in the Interstate Commerce Commission reports.

Mr. Phillips: Or for company material.

Mr. Lee: Not in the revenue report.

Mr. Phillips: That is in the revenue?

Mr. Lee: We are talking about revenue tonnage now.

Mr. Phillips: I was talking about what would be excluded.

Mr. Lee: Light mileage would be included for the engine, but there would be no tonnage included.

Mr. Phillips: Work trains and company material and empties.

Mr. Lauck: That would be all kinds of locomotives.

Mr. Atterbury: That is not a bad average for all the roads.

Mr. Carter: 368 tons for every locomotive mile, and that includes locomotives that are switching and going over the road light and in company service, and that 368 tons does not include the weight of the train.

Mr. Lee: No.

Mr. Lauck: No, it does not.

The Chairman: We are thirty minutes beyond our hour now, We will adjourn until 9 o'clock to-morrow morning.

(Whereupon, at 4:30 P. M., an adjournment was taken to March 19th, 1913, at 9 A. M.)

PROCEEDINGS.

ARBITRATION

between the

EASTERN RAILROADS

and

THE BROTHERHOOD OF LOCOMOTIVE FIREMEN AND ENGINEMEN

Submitted to Arbitration, under the Erdman Act,
By Agreement Dated Feb. 18, 1913

AT WALDORF ASTORIA HOTEL
New York

March 19, 1913.

HULSE & ALLEN, Official Reporters,
115 Broadway,
New York.

New York, March 19, 1913.

Met pursuant to adjournment at 9:14 A. M.

Present—Parties as before.

The Chairman: Mr. Lee, you can call the witness, Mr. Lauck.

W. J. LAUCK, resumed the stand, and having been previously duly sworn, testified further as follows:

CROSS EXAMINATION (continued):

Mr. Lee: Mr. Lauck, we will now go to your novel theory. At the bottom of page 15, Exhibit No. 12, you show there the ratio of cost of fireman to total cost of transportation, and the revenue attributable to firemen. Your theory, as I understand it, is, that you take all the elements entering into the cost of the transportation, and divide the revenue in accordance with the percentage that bears to the total operating expenses.

Mr: Lauck: No, that is just the ratio to total transportation, C. T. expenses, as you call it.

Mr. Lee: Oh, yes, I beg your pardon. That is, you say that all this operating revenue has been gained solely by the elements that enter into the question of conducting transportation, by this table.

Mr. Lauck: According to this table, yes, sir. My view, as you know, is not that however. That is, I put that there as exemplifying the theory if only applied to transportation. I think that I stated, or our discussion has been, that the fair test, owing to the reduction of grades and the building of bridges, and the purchase of new equipment, or the capital charges, would be the ratio to total operating expenses which would only yield $3,000,000—

Mr. Lee: Yes, but what I am getting at, what significance has this table here at the bottom of page 15?

Mr. Lauck: Why, I don't attach a great significance, Mr. Lee, to this table or to the other. That is a purely arbitrary matter, as I stated.

Mr. Lee: Yes, but they are in here, and if there is no significance to them, why are they in here?

Mr. Lauck: They are only significant in so far as you might believe the theory. If you do not believe the theory is correct, why, they have no significance whatsoever.

Mr. Lee: This $15,000,000 here at the bottom of the page, then you say it doesn't—assuming, for instance, that your theory was proper, and that there was $15,000,000 gain in this revenue, on account of firemen between 1902 and 1912, you would have to also assume that there had been no upkeep of the equipment, or no upkeep of the track, wouldn't you?

Mr. Lauck: Yes.

Mr. Lee: And the general expenses had not been paid?

Mr. Lauck: Exactly.

Mr. Lee: Nor the traffic expenses been paid?

Mr. Lauck: Yes, sir, I would concede all that.

Mr. Lee: You would have to assume all that if that figure meant anything?

Mr. Lauck: Yes, sir.

Mr. Lee: So as a matter of fact it don't mean a thing, does it?

Mr. Lauck: Well, I do not think it is a fair figure, no, sir. I think the other figure, if you accept the theory, is the fair figure.

Mr. Lee: I am going to assume your theory for a few minutes.

Mr. Lauck: All right, sir.

The Chairman: That ought to be $25,000,000, anyhow, instead of fifteen million.

Mr. Lauck: Well, I subtract the increase in operating expenses for firemen amounting to $10,000,000 from the increase in revenue.

Mr. Lee: That is not a direct subtraction there, Judge.

Mr. Lauck: The increase in operating expenses have been slightly more than ten million, I think.

Mr. Lee: Yes, he first subtracts the figure shown there at the bottom of page 15, the 1902 figures from the 1912, which gives about 25 million. Then he subtracts from that the gain to firemen:

Mr. Lauck: Yes.

Mr.Lee: Between 1902 and 1912, which is about ten million. That shows fifteen million.

The Chairman: Yes.

Mr. Lee: I think I am correct in that?

Mr. Lauck: That is right, sir.

Mr. Lee: But as the witness says this table don't mean anything, why we won't spend much time on it.

Mr. Lauck: I mean that it is not a fair—the other table is much fairer, I think, if you are going to assume the theory at all. I do not ask anyone to assume the theory, understand.

Mr. Lee: Well, you have got to assume the theory to prove this thing. But, as I say, the witness says that is not a fair comparison there, so we won't spend much time on it. At the top of page 16,—

The Chairman: It seems to me that when the witness introduces figures, if only for the purpose of substantiating the theory, and puts it under the head of revenue gains attributable to firemen, that it ought to be of some value to the Board.

Mr. Lauck: My statement was that it was only of some value if anyone considering it would put some credence or some belief in the theory that I made the basis of it, which is arbitrary, and has no basis other than simply a theoretical assumption.

The Chairman: Then we would have to sympathize with, or have confidence in your theory?

Mr. Lauck: Yes, sir.

The Chairman: In order for these figures to be of any value to us?

Mr. Lauck: Yes, sir.

Mr. Lee: I think, sir, the witness goes even a little further than that. I think I am correct, and he says, assuming his theory correct, that these figures are not fair.

Mr. Lauck: They are not so fair as the figures on 16, because the figures on page 16 take into account every item of operating expense, the maintenance of equipment, and the upkeep of equipment, and even there, as we brought out in the discussion, I believe, at the time we had this table up before, the point was made by Mr. Atterbury, if I remember correctly, that there would be no provision for new capital provided for, and that fact ought to be taken into consideration. I am stating the point now as most disadvantageous to the theory.

Mr. Lee: Yes; but what I want to bring out, if the Board please, is that this table at the bottom takes no account of the necessity for maintaining the equipment; takes no account of the necessity for maintaining the track, takes no account of expenditures for what in the account are called general expenses; nor does it take into account anything for the traffic expenses. There are five general heads of account that must be paid if the road runs at all. The witness has taken all the revenues of the railroad and distributed them only on the basis of one of those five accounts, and I say, merely assuming for the present, that his theory is correct, this table does not show a true statement of fact, of a railroad even as a going concern. Am I substantially correct, Mr. Lauck?

Mr. Lauck: Yes, I think that is a fair criticism of the table.

Mr. Lee: So that is why I say, as he has admitted, that there is not much use spending any more time on it, and the references to it do not mean anything?

Mr. Lauck: That is just the first section you are talking about now.

Mr. Lee: Yes, the one where you take the revenue gain attributable to firemen and compare that with the ratio of cost of firemen to the cost of total transportation.

Mr. Lauck: Yes.

Mr. Lee: Taking the table at the top of page 16, $3,531,510; that is gotten substantially in the same way as the previous table, except that in this case you have used the ratio of cost of firemen to total cost of operation?

Mr. Lauck: Yes.

Mr. Lee: In that case, you take into account maintenance of way, maintenance of equipment, general expenses and traffic expenses. Assuming that your theory is correct, this is a fairer comparison?

Mr. Lauck: Yes. To get it clear, that comparison is subject to the criticism on the one hand, from your point of view, that it makes no provision for new capital. From my point of view I think it is advantageous. It is not unfair in this case, for the reason that I assume that all labor is equally productive, or that all items of conducting transportation are equally productive.

Mr. Lee: In other words, you assume one thing here and in another place you assume another thing.

Mr. Lauck: No.

Mr. Lee: I thought you said here a while ago that the firemen were bearing the brunt of this thing.

Mr. Lauck: I say there is the liberality in the table from my standpoint.

Mr. Lee: This is rather an interesting theory.

The Chairman: You deducted the same $10,000,000 here that you did in the other case.

Mr. Lauck: Yes.

The Chairman: Tell me again what that $10,000,000 is.

Mr. Lauck: The $10,000,000 is the amount of increased money which the railroads have already paid to firemen in the last eleven years. That is, the cost of firemen to these 44 railroads in 1902 was in round numbers $12,000,000 and now it is $22,000,000.

Mr. Lee: Assuming, Mr. Lauck, that your theory is correct, your theory would divide up all the operating revenues among the elements of the operating expenses that went to make up those operating expenses?

Mr. Lauck: Yes.

Mr. Lee: What then would become of hire of equipment?

Mr. Lauck: Do you mean the equipment that you hire from other roads?

Mr. Lee: That is an expression of the Interstate Commerce Commission, and it is what a road pays per diem, and such things as that, for the use of the cars of other roads.

Mr. Lauck: So far as that was a cost in the operation of the railroad, if I understand you correctly, the hire of equipment appears in the operating expenses.

Mr. Lee: It does not appear in the operating expenses.

Mr. Lauck: Or the rental of equipment is deducted from gross corporate income.

Mr. Lee: Yes, I think you are pretty close to it.

Mr. Lauck: That is a capital charge to firemen.

Mr. Lee: You would not have money to pay that would you, if you divided all this money up among elements that are in the operating expenses?

Mr. Lauck: I stated just a short time ago that this makes no provision for capital requirements.

Mr. Lee: That is not capital.

Mr. Lauck: What is it then? If you hire some cars you are hiring some capital.

Mr. Lee: It is hire of equipment. That is a term that is used in the Interstate Commerce Commission report, at page 41.

Mr. Lauck: It is simply hiring them instead of buying them and paying interest on the purchase.

Mr. Lee: It is an accrued per diem that you have to pay. Then what would become of interest on bonds?

Mr. Lauck: I have already stated that that is not provided for.

Mr. Lee: What would become of rents?

Mr. Lauck: The same.

Mr. Lee: What would happen to an increase in taxes, over which we have no control?

Mr. Lauck: The same thing.

Mr. Lauck: I stated explicitly that it only provided for the railroad as a going concern and had no provision for new capital.

Mr. Lee: But there is a good deal based on this theory of yours. Perhaps it was this theory of yours that brought you to the feeling that the firemen had been bearing the brunt of the proposition and, therefore, needed this $3,000,000 and you were going to divide up the surplus on this theory and all that sort of thing. I want to get at where we are going to land after this theory goes into effect?

Mr. Lauck: It would mean an increase of $3,531,000.

Mr. Lee: To the firemen?

Mr. Lauck: Yes; but I worked that out simply in order to approximate some method of arriving at what might be the productive efficiency of firemen. There is no accurate method of getting that, I concede that.

Mr. Carter: I rather suspect you do not understand the questions asked as I do. My understanding of the matter is that all these items of rent, hire of equipment, etc., have been provided for and you are simply referring to the increased earnings. Do I understand that all this hire of equipment, rent, etc., that goes to conducting the road, is going to be taken from the increased earnings—don't they pay that now?

Mr. Lauck: The point I understand Mr. Lee is making is that they use some other road's equipment for which they pay a per diem.

Mr. Carter: Suppose they do not have this surplus you have

found, they would have to pay that. This is surplus you are talking about and he is talking about expenses?

Mr. Lauck: No, I am not talking about surplus.

Mr. Lee: Not yet. We will come to that after a while.

The Chairman: He is speaking about revenue.

Mr. Lauck: The point is, as I have repeatedly stated— I think this theory has value simply as a theory. I think if you want to arrive at what the effect would be of a $4,000,000 increase to firemen, the way to arrive at that would be what it would cost— what it would increase your locomotive mile cost or how it would affect your capital commitment.

Mr. Lee: Then what use is this theory?

Mr. Lauck: Beg pardon.

Mr. Lee: What is the use of this theory?

Mr. Lauck: It is no use whatsoever except that you assume the basis of it. I had much prefer to take as a standard the increased cost and base it on facts than to place any dependence in any such theory of mine or anybody else.

Mr. Lee: Why is this theory in here?

Mr. Lauck: It is in here for what it is worth, as I have repeatedly stated.

The Chairman: What is it worth? "In for what it is worth"—what is it worth?

Mr. Lauck: You mean—

The Chairman: To us now, to help us out of all this mystery?

Mr. Lauck: Well, if I should be perfectly frank, as I hope I am, I would say it is worthless to you, except as a corroboration of other things.

The Chairman: You are about as frank a witness, Mr. Lauck, as I ever heard testify, and, therefore, it gives me very great confidence in your sincerity. Now, you evidently believe in something about all this mass of figures, and you have produced them not merely to occupy time and cost to your employer; but you have produced them for some purpose, or effect, that you thought they would have in this arbitration. Now, what is that?

Mr. Lauck: I think that the best standard to judge as to the effect of any increase is to base it upon the facts as to the cost to the railroads of that increase on a locomotive mile basis or revenue train mile basis. For instance we find that the cost of locomotive firemen is five cents per mile, per revenue train mile,

and you give a 20% increase or a 10% increase or any increase, you take the percentage of cost the railroad pays upon the transportation unit and carry it all through your accounts, including capital account, why, you can see the exact effect of it upon all the financial transactions of the railroad?

Mr. Carter: Yesterday in reply to similar questions you always said "To show a tendency" but you do not say that this morning?

Mr. Lee: The tendency may be changed, you know.

Mr. Lauck: I will tell you about this theory. I think that there is no theory there for determining what any factor engaged in producing transportation should get. I think everybody will agree to that. You may equalize them. If you equalize all the factors as I have done there, you would simply be paying all labor the same rates of wages, from the General Manager down, and you would be paying all capital invested in the road the same rate of return. It would mean that all capital would be of equal value to the road, whether it was a car or a part of the ballast or anything else. I think that was very liberal in view of the statistics, what they have developed about the firemen.

Mr. Lee: You mean your previous assumptions?

Mr. Lauck: No, sir, I do not mean the assumptions. We know that he is shoveling more coal, that there was more work being performed by the firemen to my mind, than other factors, as far as my investigations have gone.

Mr. Carter: I understood you to say that in the early days of your examination that you reached this conclusion upon the theory that the fireman's rate in the percentage of increased profits would be based upon the percentage of increased expenses, or something of that kind, to other people?

Mr. Lauck: That is the basis.

Mr. Carter: Isn't that the basis of all these tables you are working on. You referred to a cotton mill at length the other day?

Mr. Lauck: The basis to my mind, of all these tables are the cost to the railroad and the gain to the railroad or the return to the railroad. Now, I base this theory upon the fact that the fireman's proportion of cost to total cost was say 2.31% or 3%, and therefore, if you assume that each factor participates in the gain according to that cost there would be so much

accruing to the firemen in addition to what has already been paid firemen. Now, that does not admit the capital element, however, as it only includes operating expenses; but I thought that fact would be neutralized by my conclusion of what the statistics seemed to develop, in assuming that the firemen should only participate as other factors and there were lots of other factors that should not participate, and that an increase of this kind would be justifiable to firemen from an economic standpoint, when a similar increase would not be justifiable to other factors.

Mr. Carter: I see in yesterday morning's paper a statement that one of Dr. Friedman's doctors had quit, because while the doctor was making a fortune, they were only paying him $45 a month. Is that the theory on which you have advanced this, that while the railroads are making enormous sums of money, the firemen are not sharing in the increased profit by reason of their increased productive efficiency, or something of that kind?

Mr. Lauck: That is the general broad basis, but the real test of what the effect of any increase should be—there is no accurate means of determining what the increase for each factor should be, that is, to the relative cost to the railroad.

The Chairman: Then the practical effect of your theory, and the conclusions you have worked out on it is, that you think there should be a readjustment of wages?

Mr. Lauck: Yes, sir, so far as the firemen are concerned.

The Chairman: Well, if you readjust the firemen, have you not got to readjust somebody else?

Mr. Lauck: No, sir, I do not think so. The theory that I am working on is that the railroads should pay a man according to what he is worth. If it can be demonstrated that their labor is worth more, they should receive more, but if it cannot be demonstrated that they are worth more to the railroads, they should not receive anything more, according to my point of view. My idea is, that, I dislike to be using similar phrases all the time, I know it is monotonous, but the fireman has been more productive because the burden of this efficiency of operation has fallen on him, and he has done more; and so far as my investigations show, I do not know accurately anything about any other form of transportation labor, except the mana-

gerial side. I think the managerial side has performed a great service here, the operating managers, and I do not know how they have participated; but I think that the fireman's work has resulted in service to the railroad, for which he should receive additional compensation. I do not know whether I make myself clear or not. And, if any other class of labor happened to increase their productive efficiency, they should not receive any participation, unless they establish—

Mr. Phillips: In other words, if other classes of labor felt that they were entitled to a similar participation, it would devolve upon them to show cause why they should have such participation?

Mr. Lauck: Yes, sir, the burden of proof is on them.

Mr. Phillips: The same as you feel these figures do for the firemen?

Mr. Lauck: Exactly, yes, sir.

Mr. Phillips: Let me ask another question. Did you not take a certain set of figures, supposedly authentic, so far as you know, and begin an investigation or from those figures attempt to learn whether there had been two things: An increased cost for firemen and increased labor to firemen; then if that resulted in an increased cost to railroads, whether it was a profitable investment for railroads? Now, was not that your theory?

Mr. Lauck: That is my whole point of view, yes, sir. There has been an increased cost, but the services have far outweighed the cost and left something over which should be returned to the firemen.

Mr. Phillips: These tables which run through these various exhibits here, of which Exhibit No. 12 is a general summary, start out upon that basis, and figured from various angles, all come back to the same point, do they not?

Mr. Lauck: Yes, sir.

Mr. Phillips: That there has been an increase of work for the firemen, and that the increased cost for firemen has yielded great revenue returns?

Mr. Lauck: Exactly.

Mr. Carter: You do not mean to convey the idea that you have repudiated all you have put in these statistics?

Mr. Lauck: No, I do not think anyone has that idea.

Mr. Carter: I am afraid that is the idea gained from your answers this morning.

Mr. Lauck: No.

Mr. Carter: Be careful. I am afraid that is exactly what it sounds like.

Mr. Lee: It certainly does.

The Chairman: Mr. Carter is substantially correct in that, because in reply to several questions Mr. Lee has asked you regarding two or three of these tables this morning, you have finally admitted to him, yes, they are worthless. Now,—

Mr. Lauck: My reason for—

The Chairman: That is the reason I tried to frame a question to you, to find out why it was they had become worthless, why you had done all this work, and yet, being a candid and frank witness, you had said they were worthless.

Mr. Lauck: I was misunderstood then. My reason for making that statement was practically to say that I was willing to abandon any theoretical assumptions I had made, and base the case entirely on facts of which there cannot be any controversy whatsoever. In other words, I would be willing to acknowledge all the objections to distribution to freight train miles and to freight train expenses, and accept all the objections that Mr. Lee has made to any distribution cost. And I think you take the quotations from the reports of railroad presidents that I read myself, that that is an official verification of the other figures here, about which there cannot be any controversy. There cannot be any controversy as to tractive power; there cannot be any controversy as to freight train loads—

Mr. Lee: I beg your pardon, there may be.

Mr. Lauck: The railroads report tractive power to the Interstate Commerce Commission, and it is there just as they reported it.

Mr. Lee: But there may be some question as to these figures.

Mr. Lauck: Well, if the figures are correct, there cannot be any question as to tractive power.

Mr. Lee: In additions and subtractions—

Mr. Lauck: If they are correct, there cannot be any dispute as to the train load ,or the coal consumed per locomotive mile. That is the exact figure reported by the railroads. That eliminates all distributions and computations I have made. But still the fact remains, whatever objection may be made, that the work of the fireman has increased. And then you take the figures as

to revenue miles or locomotive miles, they are the figures reported to the Commission, and the costs are shown there, what the increase in cost has been, and that I have used, and the revenues are reported directly as increased revenues; therefore, you have the idea of productive efficiency theoretically established without any theoretical assumptions on my part, or without applying any theories as to what the fireman should receive. That is all I mean by that.

Mr. Atterbury: Mr. Lauck, may I ask a question, please. You speak of the work of a fireman. Now, as I understand it, as an expert accountant, you are dealing with certain figures that you have taken from the Interstate Commerce Commission report. What elements in the work of a fireman are you an expert on from those figures?

Mr. Lauck: I do not exactly get your—you mean if he does shovel so much more coal, what do I know about it?

Mr. Atterbury: No, you speak of the work of a fireman?

Mr. Lauck: Yes, sir.

Mr. Atterbury: Now, you get certain information from statistics. Now, that is as far as your expert knowledge goes, I understand?

Mr. Lauck: Yes, sir.

Mr. Atterbury: All right. Now, there are two elements in those statistics, so far as I can see, that may or may not represent the work of the fireman. First, the tons of coal that may have been consumed; second, the tons of coal that may have been moved. That is right, isn't it?

Mr. Lauck: Yes, sir.

Mr. Carter: The increased hours of service also?

Mr. Atterbury: I beg your pardon, Mr. Carter, that is exactly what I want to develop. He knows nothing about the number of hours.

Mr. Lauck: No, sir, I am not speaking of that at all

Mr. Atterbury: He knows nothing about the cleaning.

Mr. Carter: That is theory.

Mr. Atterbury: Unless he may have heard it as evidence. Therefore, there are only two things or two elements that he is talking about, the tons of revenue freight that were moved and the tons of coal that were consumed, is that correct?

Mr. Lauck: That is correct.

Mr. Atterbury: And only in so far as those two items affect the work of the fireman are you competent to state, is that correct?

Mr. Lauck: If I understand you, that is correct.

Mr. Atterbury: Yes, I mean there art two elements in the work of the fireman only that you are an expert on?

Mr. Carter: Pardon me. Let me get clear as to your attitude this morning. I understand this morning you are not disposed to further press upon any one that your theory of political economy is correct, but you still insist that your statistics as furnished here as a statistician, are correct?

Mr. Lauck: Oh, yes, and I am not assuming any theories. That is why I wanted to get rid of that theory. That is, assuming that any criticisms of it might be legitimate, I am willing to yield it for the sake of basing the thing on the actual facts.

Mr. Carter: Well, what proportion of this statement in Exhibit No. 12, are you willing to state is probably debatable? The point is this. According to your replies a while ago, I think that the general listener would understand that you had practically changed your mind since yesterday.

Mr. Lauck: Oh, not at all; no, sir. The fundamentals of the points that I am holding to, are that the work of the fireman as measured by coal consumed has increased; the productivity of the fireman as measured by the tons of revenue freight transported has increased; that in terms of firemen, therefore, the revenue gained to the railroad has been greater than the increased cost to the railroad; and owing to the fact of this, and that the burden of the advances in progress in operating efficiency have fallen upon the fireman through this increased work, that he should receive a larger participation in revenue.

Mr. Carter: Then this theory is not worthless, is it?

Mr. Lauck: Just a minute. Holding to that point of view, I was willing, in order not to have any dispute about a theory as to what the fireman should get out of this, to yield to Mr. Lee the criticisms and to proceed upon the basis of facts as disclosed by the statistics.

Mr. Carter: I am afraid that your answers as they appear in the record would indicate that you have practically concluded that your Exhibit is unreliable. Now I know you did not mean that and that is why I am trying to help you out.

Mr. Lauck: If any one got that impression, it was a misunderstanding.

Mr. Carter: Well, I am afraid they did.

Mr. Lee: Why, Mr. Lauck, you did say, however, at the bottom of page 15, that that comparison did not amount to much

Mr. Lauck: Yes, but that does not invalidate any other statistics in the—

Mr. Lee: It might or might not.

Mr. Lauck: I cannot see how it would. I will tell you the primary point that I would like to hold to, is the primary fact of costs and revenue gains.

Mr. Lee: Yes, comparative.

Mr. Lauck: Yes, sir.

Mr. Lee: Now the fireman you say has shoveled 33 per cent. more coal, and there is an increase of ton miles per freight train of 35 per cent. You used per cents. there, didn't you? Those are percentages of increase?

Mr. Lauck: Exactly.

The Chairman: Mr. Lee, just a minute. I think it is fair Mr. Carter, to say that we have not reached the conclusion that the witness has discredited his theory at all.

Mr. Carter: I was afraid gentlemen, that that was the impression.

Mr. Lee: I think he has discredited his theory.

The Chairman: No.

Mr. Lauck: I just don't want to insist upon the basis of my statement—

The Chairman: We do not admit that the witness theory is correct, you understand, ourselves.

Mr. Lee: I understand, sir.

The Chairman: We have not reached any such point as that, but we do not think the witness, by what he said this morning, has discredited his theory.

Mr. Lee: Only one little piece.

The Chairman: If you will allow me to say right here, the witness can correct it, you need not hesitate to correct the Board any more than you would anybody else.

Mr. Lee: I want to say also, if the Board please, that if I should inadvertently make a misstatement to the witness I want him to feel perfectly free to correct me also.

Mr. Lauck: I certainly would, sir. I think that I have made sufficient explanation there. I simply did not want to get off into theory, but was merely willing to base the thing on the facts, and I thoroughly believe that the theory does not extravagantly state the second part of the theory that $3,351,000, what the proportion of increased revenues are due to firemen, but I freely acknowledge it is based upon this arbitrary assumption that the fireman should participate on the basis of his cost.

Mr. Lee: You show an increase in coal consumed per fireman of about 35%. You show an increase in ton miles per freight train mile of 35%?

Mr. Lauck: Yes. You are reading from the diagram now?

Mr. Lee: Yes, I am reading from the diagram. The ton miles per freight train mile in 1912 are compared with the ton miles per freight train mile in 1902?

Mr. Lauck: Yes.

Mr. Lee: The coal consumed per fireman in 1912 is compared with the coal consumed per fireman in 1902?

Mr. Lauck: Yes.

Mr. Lee: And those percentages show the percentage of increase?

Mr. Lauck: Yes.

Mr. Lee: To your mind they show the percentage of increase of work performed?

Mr. Lauck: Yes, they show that.

Mr. Lee: Provided there have been no changes in conditions that would affect either of those figures, assuming that those are the figures reported to the Interstate Commerce Commission?

Mr. Lauck: Yes.

Mr. Lee: And provided there have been no conditions intervening that would make those comparisons improper, those are the percentages of increase, to your mind, of the work that the fireman has done?

Mr. Lauck: Yes, it is a relative tendency.

Mr. Lee: A tendency?

Mr. Lauck: The figures are unsatisfactory, as all figures are, but they show the relative tendency.

Mr. Lee: They show an increase of 35% in one case and 33% in another. Then, Mr. Lauck, if you can use percentages of increase there, why can you not use percentages of increase at other points?

Mr. Lauck: Do you mean your horizontal?

Mr. Lee: Yes, if it is fair in one instance why is it not fair in another instance?

Mr. Lauck: It seems to me it is unfair in this way: For instance, you invest a dollar of capital in your railroad. You do not inquire what basis of percentage of revenue increase you have got, but you compare in dollars and cents what basis of return you get for that dollar.

Mr. Lee: You find out what percentage you have got. If you have got five cents for that dollar, you have got 5%.

Mr. Lauck: If you start with a dollar?

Mr. Lee: Yes.

Mr. Lauck: But if you start with $2,000,000 worth of revenue and put in $10, you do not estimate the per cent. of increase in the revenue, or if you do, you deduct that and compare it with the $10, if you want to find the relative return.

Mr. Lee: We might handle our finances a little differently, but it seems to me if it is proper to compare by percentages in one case, it is perfectly proper to compare by percentages in another case, and you say you were brought to this frame of mind where you think the fireman bears all the brunt, after investigating only the fireman's work and the fireman's pay; that the ton miles per freight train mile increased 35%, the coal consumed per fireman increased 33%, and the cost to the railroad per fireman increased 45%.

Mr. Lauck: It is in terms of firemen, or in wages outlay or cost, in terms of dollars and cents for firemen in 1902 as compared with 1912. The outlay for firemen has increased according to that percentage?

Mr. Lee: Yes.

Mr. Lauck: But that does not mean anything in terms of a fireman, or in relation to hours of time consumed.

Mr. Lee: Just stick to these firemen, the whole of them. I am not talking about a fireman.

Mr. Lauck: That was what I brought out yesterday on that point.

Mr. Lee: You are arguing now that firemen as a class have not received what was coming to them?

Mr. Lauck: Yes.

Mr. Lee: Now, I show you that the work has increased about

33% measured in one way, or about 35% measured in another way?

Mr. Lauck: That is per fireman.

Mr. Lee: While as a class, you have shown by your own tables that the compensation to firemen has increased 35%?

Mr. Lauck: To firemen.

Mr. Lee: Or take the case of a fireman, it has increased 39%. All these increases to firemen are greater than the increases of coal consumed per fireman, or ton miles per fireman?

Mr. Lauck: Per fireman, yes.

Mr. Lee: Per fireman?

The Chairman: It is possible that in a period of years such as you have investigated here a railroad might be paying twice as much money to its body of firemen in 1912 as it did in 1902, and yet each fireman might be earning less money?

Mr. Lauck: Oh, yes, and he might be doing twice the work. That comparison proves nothing.

Mr. Lee: There might be almost anything in there?

Mr. Lauck: Yes.

Mr. Lee: But you have to draw your conclusion from the statistics as you find them, do you not?

Mr. Lauck: Yes.

Mr. Lee: Without knowing anything about anything else?

Mr. Lauck: Please explain what you mean.

Mr. Lee: I say you are drawing your conclusions, and you are brought to this frame of mind by the study of these figures applying only to firemen?

Mr. Lauck: Yes, I know nothing of mechanical or operating conditions.

Mr. Lee: Nothing of operating conditions?

Mr. Lauck: No, sir.

Mr. Atterbury: May I ask if the converse of Judge Chambers' statement may not also be equally true?

Mr. Lauck: His statement that each fireman might be earning less?

Mr. Atterbury: Yes.

Mr. Lauck: Yes.

Mr. Atterbury: The converse might be true, that is, they might be earning more?

Mr Lauck: Yes; but the point is that in one branch of

the statistics mentioned by Mr. Lee we are considering the increase of work per fireman, and in the other we are considering increase of cost to the railroads for firemen as a body, and that does not invalidate the fact that each fireman may be doing more work.

Mr. Lee: Nor does it invalidate the fact that he may be doing less work?

Mr. Lauck: That is simply stating the case; but the fact that the revenue has greatly increased would indicate that it has increased for some reason?

Mr. Lee: Yes.

Mr. Lauck: Now, if the revenue has increased, and it is shown that the fireman is bearing the brunt of the increased work—

Mr. Lee: If it is shown. You have not shown it?

Mr. Lauck: The revenue has increased has it not?

Mr. Lee: Yes, 29%, against 45% increase to the firemen.

Mr. Lauck: It has increased as I recall on the revenue mile basis about 40 times the increased cost of the firemen?

Mr. Lee: Yes, if you want to count it that way. That is the way you would count it, but you do not count it that way when you count your coal consumed.

Mr. Lauck: Oh, well, it is a different proposition there.

Mr. Lee: Yes, I suppose so.

Mr. Lauck: That does not change my basis.

Mr. Lee: And it does not change your mind either, does it?

Mr. Lauck: No. You might take $10,000,000 and work the increase on that, or $957,000,000 and work the increase on that.

Mr. Lee: Really the bases are not comparable then, you think?

Mr. Lauck: What bases?

Mr. Lee: The bases on which this thing that we have been talking about here has been worked out.

Mr. Lauck: Yes, I think they are comparable.

Mr. Lee: Then why not the percentages?

Mr. Lauck: You mean you want me to acknowledge that the cost for firemen as a class has increased 45%, without any regard to what the payment to each fireman has been, and what the fireman is doing, and so on?

Mr. Lee: Yes.

Mr. Lauck: I think that is evident from the figures.

Mr. Lee: I am glad to find that.

Mr. Lauck: That means nothing whatsoever.

Mr. Lee: Not to you, but a whole lot to us?

Mr. Lauck: It means to the railroads that they have an increased cost for firemen of 45 per cent., but that they have had a revenue gain many times that.

Mr. Lee: 29%?

Mr. Lauck: 29% on the basis of say a billion dollars, and a 45% increase in firemen on basis of $10,000,000, and the disparity in profits is apparent to anyone. The revenue gain is forty times the cost.

Mr. Lee: For firemen?

Mr. Lauck: Yes.

Mr. Lee: This increased cost for all firemen of 1.75 cents—only 1.75 cents as against an increased gain of 55 cents, as the witness says, forty times as much. Now, the total cost of operation, increased total cost of operation, has taken up 43 cents of that 55 or 56 cents, as I take it—the operating expenses alone have taken up 43 cents.

Mr. Lauck: 43 cents.

Mr. Lee: Now, we submit when you compare 1.75 cents with 55 cents, that you are not comparing them with the same basis unless you compare them by percentages. The significant thing to my mind, from this table, is that the cost of all firemen to the railroads has increased 45%, while the revenues from the operation of the railroads have only increased 29%.

Mr. Lauck: No, Mr. Lee—you are comparing revenue increase on a basis, say, of a billion dollars.

Mr. Lee: Yes.

Mr. Lauck: And firemen on ten million dollars?

Mr. Lee: That is all money. That is why you have to reduce these things to percentages.

Mr. Lauck: To express it in another way—

Mr. Lee: The witness himself has compared the coal consumption and train miles on percentages. Percentages are the proper thing. We agree with him on that. When he comes to compare cents with dollars and he says they are not on the same basis, we admit they are not on the same basis. This 1.75 cents

is on a basis of something like $27,000,000, while this 55 cents is on a basis of something like a billion dollars. I think I am correct about it in my figures.

Mr. Lauck: I think they are about correct.

Mr. Lee: And when he says he compares that 1.75 cents—subtracts that from the 55 cents, it really doesn't mean anything, because they are increases, but they are increases on different bases, and you have got to apply your increase to one basis for the firemen to get that percentage, and then you have got to apply your increase of operating revenue to another basis to get that percentage, and your percentages alone are comparable. I don't know whether you agree with me on that, but that is the fact.

Mr. Lauck: Not at all. The fact in my mind is that for all firemen you pay 1.75 cents more per revenue train mile, and, in taking all the expenses in the past eleven years, you pay out 43 cents more per revenue train mile. If something had not been more productive, your management, or equipment or firemen, you would have lost the 43 cents. Instead of that, you got the 43 cents back and in addition to that, you got 13 cents more. In other words, through the increased productivity of the road, due to better managerial operating ability and better equipment, which has fallen on the fireman in the way of increased labor, you not only got your increased cost back, but you get a net gain of 13 cents over that increased cost.

Mr. Lee: Yes. What is done with that 13 cents?

Mr. Lauck: That is added to your gross operating revenue, which before was—

Mr. Lee: Do you have to compensate your additional investment which permitted you to earn the additional 13 cents?

Mr. Lauck: Yes, so far as labor permitted you to earn it.

Mr. Lee: Labor is compensated before that.

Mr. Lauck: You have already provided for your increased labor cost out of the 56 cents. After providing for your increased labor cost out of that, and all other increased cost—increased cost of materials, which I believe is correct, now the other items of increased cost—you have 13 cents left there.

Mr. Lee: Yes.

Mr. Lauck: Which I claim you should now give a part of to the firemen on acount of the burden of work which has fallen upon the firemen in enabling you to make that 13 cents.

Mr. Lee: In spite of the fact he has gotten a 45 per cent increase? I don't know that it is necessary to continue this discussion much further. The fact is very significant, however, from the witness's own table that shows a 45% increase in cost of firemen, and that the railroads have had only a 29% increase in revenue. He puts the "only" in one place, and I put it in another.

Mr. Lauck: If you could continue making investments of that kind, it would be exceedingly profitable; if you could put in 43 cents and get out 56 cents.

Mr. Lee: No matter how much you put in.

Mr. Lauck: But you are getting your return on your investment.

Mr. Lee: No, we are not. We are getting the 43 cents increase.

Mr. Lauck: In addition to the 43 cents you are putting in taxes and the actual capital invested in the road?

Mr. Lee: That 13 cents might or might not be profitably invested in accordance with what you put in to get the 13 cents.

Mr. Lauck: If you can demonstrate that the capital that you invested in the road more than absorbed that 13 cents or was properly put into the road and that the road was properly managed—but I don't believe you could demonstrate that.

Mr. Lee: You mean you put the burden of proof on us. The burden of proof is on you to show that the 13 cents is not properly invested.

Mr. Lauck: Well, I think I could do that.

Mr. Lee: I thought you stated the other day that you could not?

Mr. Lauck: In answering a question by Mr. Atterbury I said there was no means of accurately ascertaining what amount of the capital or the money you secured from floating your securities went into the road.

Mr. Lee: Yes.

Mr. Lauck: And there is not, from the reports; but I can demonstrate what did not go into the road, and I can demonstrate from your cost of road and equipment how much you did add to the value of your property, which, if you take it on that basis, the increase of your cost of road and equipment, the interest on the capital invested I think would absorb on this

basis, on a five per cent. return per year, about 6 cents, which would be about $1.20—

Mr. Lee: Why do you take 5 per cent.? I thought you did not like percentages and did not use them?

Mr. Lauck: Where I do not think it is proper to use them, no, sir.

Mr. Lee: It is rather interesting. The other day the witness said he could not figure it out, and now he says he can.

Mr. Lauck: I said to-day I can figure it out on the available data I have.

The Chairman: You can do a good many things one day that you could not the day before.

Mr. Lauck: I do not want to be misunderstood. Mr. Atterbury asked me whether capital would not be a factor to be considered in this net return, and I said yes. But I did not attempt to work that out, because of the exhaustive study that would be required, and from the fact that the reports to the Interstate Commerce Commission would require a minute analysis for many years to see what had actually gone into the road and what securities might be used in acquiring any properties, and there might not be any proceeds to the road at all. I find, though, on the basis of cost of road and equipment, that that 13 cents would make a fair return to capital and leave about 50 per cent. to go to surplus in addition.

Mr. Carter: May I ask you a question about your theory, that you do not seem to want to back up very strongly: If one fireman is instrumental in transporting revenue freight to the extent of $1,000, for $2.50 and then by the substitution of a large locomotive, and the consequent increase in tonnage and labor, he is required to transport freight to the extent of $2,000 for $3.00, it seems, according to your theory, that you believe the fireman should receive more than 50 cents for the additional $1,000 productive efficiency. Is that what you mean?

Mr. Lauck: That is my general theory.

Mr. Carter: That is your theory, whether it is any good or not.

Mr. Lauck: No, Mr. Carter, you misunderstood there. We were not talking about that theory.

Mr. Lee: There are two or three theories in here as I understand.

Mr. Lauck: No, there is only one.

Mr. Carter: I think that is what we are talking about, when we are talking about relative percentages, you do not mean the percentage of the fireman's pay, which is 25, really should be compared with the 100 per cent. or whatever it may be, of the increase in the tonnage he hauled. The point as I understand it, is that you think the percentage of the fireman should be much larger than he gets.

Mr. Lauck: Oh, yes, that is undoubtedly my point of view.

Mr. Carter: And while counsel for the railroads may not agree with you in that, I understand that is your theory that you are trying to advance.

Mr. Lauck: Yes, sir.

Mr. Lee: Only knowing or only having investigated the statistics applying to firemen?

Mr. Lauck: Yes, sir.

Mr. Lee: And not having investigated the statistics applying to any other class of labor and knowing nothing about the operation of a railroad other than you can get from the statistics that you have placed before you, with all those things in mind—

Mr. Lauck: Except the general knowledge I have of such matters. I was born and reared on a railroad.

Mr. Lee: Standing on the side of a track and watching the trains go by?

Mr. Lauck: Well, I have worked for railroads, too.

Mr. Lee: But you do not know much about the operation of them, do you?

Mr. Lauck: Well, you can—

Mr. Carter: I am going to suggest to you that you be as liberal with me in my cross-examination as I am with you.

Mr. Lee: Oh, absolutely.

Mr. Carter: I am allowing you to establish precedents right along.

Mr. Lee: I think we have a lot of them established so far as you are concerned.

Mr. Lauck: Well, if you mean I may not know enough about the mechanical operation of the railroad, I have no mechanical knowledge that would be of any value to the Board, no.

Mr. Lee: Now to get back to this page 16, this novel theory of yours, if the fireman's wages were artificially increased, the

firemen would then increase in their participation—I mean artificially without any additional work. I am making an assumption now?

Mr. Lauck: You are going into theories now?

Mr. Lee: Yes. If the fireman's wages were artificially increased without an increase in work, the firemen would then increase in their participation without any increased work, would they not, according to this novel theory of yours?

Mr. Lauck: Let us see if I get your theory now. You are talking now about an assumption—

Mr. Lee: Yes, not exactly the opposite, but in line with your theory.

Mr. Lauck: I think that we have already had that theory brought out to the members of the Board in another way. I was asked yesterday if all this increase was due to capital, without any increase to firemen.

Mr. Lee: No, I have not got to that point yet.

Mr. Lauck: Well, it is the same theory, and I answered that if the fireman's work has not increased, on the basis of this theory, of course he would not participate on the basis of any increased work.

Mr. Lee: What I am getting at is this: In this method of distribution of yours, if the fireman's wages were artificially increased by some means without any increase in work, then the firemen would increase greatly in their participation in this division of revenue without any increased work on their part?

Mr. Lauck: If I get your point correctly, it is, if the firemen got an increase by any means, and thus increased their ratio of labor cost, that they would share in the increase in the revenue proportionately to that?

Mr. Lee: Yes.

Mr. Lauck: I would answer that by the point that was brought out yesterday, that the ratio of fireman labor cost to total labor cost has declined instead of increasing in the last eleven years.

Mr. Lee: Is that on cents or percentages?

Mr. Lauck: That is on a percentage basis.

Mr. Lee: Sometimes you use percentages, and sometimes not. Would you apply this theory to your own business, Mr. Lauck?

Mr. Lauck: Yes, sir, undoubtedly I think that is the only theory to apply where you are employing labor, to pay them what the value of their services are to you.

Mr. Lee: Now, for instance, suppose you were a certified public accountant—I do not know whether you are or not—

Mr. Lauck: No, sir, I am not.

Mr. Lee: Suppose so—and you had an office with fifty clerks doing a certain amount of work. You bought fifty adding machines and had to borrow the money to buy them and gave your note at 6 per cent.

Mr. Lauck: That is more theory, isn't it?

Mr. Lee: By the introduction of these adding machines you increased your output and increased your revenue?

Mr. Lee: Yes, sir.

Mr. Lauck: If your expenses of operation were accounted for on the same lines or similar lines as prescribed by the Interstate Commerce Commission for the railroads, and you figure your net earnings on this same basis, on your theory then, all that increased revenue would go to each of the items of expense in proportion to that expense to the total expenses before the introduction of the machines, wouldn't it?

Mr. Lauck: Why, according to my theory—you are referring to my general theory as to the payment of wage?

Mr. Lee: No, I am referring to this theory on pages 15 and 16.

Mr. Lauck: I thought you had passed over that.

Mr. Lee: Oh, no.

Mr. Lauck: You are just asking me if I would pay my office clerks, or if I were in an industrial undertaking, or any kind of an undertaking on this basis, did you not?

Mr. Lee: Yes.

Mr. Lauck: My reply was that I would pay them according to the value of their services.

Mr. Lee: Well, you have demonstrated a theory here, and I want to find out what there is in it, and you say that you would apply this theory on pages 15 and 16 to your own business?

Mr. Lauck: I thought you were asking my theory of the payment of the rate of wages, not that theory.

Mr. Lee: No, this theory I am talking about now. This is where it shows the firemen are due three million and a half dollars.

Mr. Lauck: Why, I misunderstood your first question, Mr. Lee. I thought that the underlying contention of all my statistics is that the firemen—

Mr. Lee: Oh, no, I am not talking about the underlying contention of your statistics, or why they were gotten up, or anything of that sort, but here is this three and a half million on page 16, this novel theory—would you apply that theory to your own business?

Mr. Lauck: If I applied that theory to my own business, sir, I would take into consideration the capital factor. If I applied it flat as it is there, and if the increase came entirely from capital, I would give it all to capital. I should say that that was accruing to capital. As I explained, a moment ago, when we were talking on that theory, it does not include capital. I think that point is indicated to you.

Mr. Lee: Yes, it is. But I want to know what good this thing is if you cannot apply it?

Mr. Lauck: I said that by eliminating the capital factor, and by also considering that all other labor had been equally productive as firemen, two things that are not true—

Mr. Lee: Yet you do not know whether they are true.

Mr. Lauck: That it was not an extravagant conclusion to reach, by any means, that the fireman, we know the fireman's work has increased according to the statistics.

Mr. Lee: According to these statistics?

Mr. Lauck: Yes, sir, and that therefore he should receive a larger participation.

Mr. Lee: Now, your thought is that the increased work of the fireman that has been required of the fireman, overbalances all these other things?

Mr. Lauck: I should think so.

Mr. Lee: Do you know?

Mr. Lauck: Well, if you mean by that—if you mean to ask me whether the increased work of the fireman has overbalanced the capital commitment and the managerial efficiency—

Mr. Lee: And the other things.

Mr. Lauck: I reply to that, sir, that by examining the different factors, I find that as a result of your capital commitment, according to the statistics that have been available to me, that the burden of work has fallen upon the fireman. The fireman

should receive a larger gain. I am not prepared to say exactly what proportion of that gain in revenue resulting from the increased work of firemen, or the increased commitment of capital, should go to capital or firemen, but it is perfectly evident to me that some of it should go to firemen.

Mr. Lee: Suppose we applied your theory, Mr. Lauck, and raised the firemen's wages, and also the engineers and conductors and brakemen, how long do you think it would be before they wanted another raise?

Mr. Lauck: I do not know anything about that, sir.

Mr. Lee: Do you think it would make any difference that firemen's wages were raised in the west?

Mr. Lauck: Well, I am not competent to speak of that.

Mr. Lee: Do you think the railroads have it in their power to stop these increases if they become unbearable? That is, can they tie up their railroads and lock out? Do you think it would tend to stop the demands for increases if freight rates were raised? Do you know?

Mr. Lauck: I do not know why you wish me to express an opinion on these things, Mr. Lee.

Mr. Lee: Why, you have been expressing opinions pretty freely here, as though you knew all about it.

Mr. Lauck: Well, you have been asking me to express my opinions.

Mr. Lee: Yes, but you say that the fireman has borne the brunt, and you do not know much about it, I don't think.

Mr. Lauck: Well, that is for you to judge.

The Chairman: Has the ratio of cost of firemen to the cost of all other labor, gone down in the last ten years?

Mr. Lauck: Yes, sir, it has gone down from 4.96 to 4.94 per cent. That is the ratio of cost of firemen to total labor cost of operation.

The Chairman: Yes. You think it should have advanced instead of declined in ratio?

Mr. Lauck: Yes, sir.

Mr. Lee: That is the one in table 17 where you say .02—

Mr. Lauck: .02 of one per cent.

Mr. Lee: That is the total cost.

Mr. Lauck: The total cost for all firemen.

Mr. Lee: How about the transportation end of it?

Mr. Lauck: The transportation labor?

Mr. Lee: The total cost of firemen to total transportation expense.

Mr. Lauck: Total cost of firemen to total transportation expenses has increased, but I did not think you wanted to consider that, Mr. Lee. You have objected to any consideration of transportation expenses.

Mr. Lee: Oh, no; some places it is proper, and other places it is not.

Mr. Lauck: Like percentages.

Mr. Carter: We are all tired of the same statement.

Mr. Lee: I cannot altogether agree with you on that; I am rather surprised that you admit that. Mr. Lauck, if there had been any marked change between 1902 and 1912, in the operation of these various railroads, or any one of them particularly, or any three or four of them, that might affect this coal consumed, or might affect the miles, or might affect the number of firemen where they would not be comparable between 1902 and 1912, might or might it not affect these statistics and conclusions? In other words, what I am trying to get at, perhaps I can explain it a little better to you. You have taken the coal consumed in 1902, and the coal consumed in 1912, and the mileage in 1902, and the mileage in 1912, and assumed they represented the same thing in 1902 and 1912?

Mr. Lauck: Yes.

Mr. Lee: If there was any marked change in any way whereby it could be shown that they did not represent the same thing in 1902 as in 1912, it might affect your conclusions, might it not?

Mr. Lauck: Yes, but I think that the general conclusion is well established, even if it could not be fully demonstrated by these statistics. That is, I think any technical criticism of the statistics would not dis-establish the conclusion.

Mr. Lee: I do not mean any technical criticism. There might be some change in conditions whereby you would have one thing in 1902 and another thing in 1912. I don't mean in the accounts or anything of that kind, but in the railroads themselves.

Mr. Lauck: Oh, yes.

Mr. Lee: In the minutes, on page 684,—let me see what you were talking about there—the second table at the top of page 19,

you were talking of that, and you said: "As a consequence you see that the stockholders received an increase in remuneration per revenue train mile equivalent to conservatively 8 times the increased cost of firemen during the last 11 years." What did that 8 refer to?

Mr. Lauck: The 8 refers to the 19 cents increase in dividends. That is more than 8. I suppose the 16 cents net corporate income—

Mr. Lee: Aren't you talking about net corporate income?

Mr. Lauck: It would be approximately 8 times the increased cost of firemen.

Mr. Lee: Does this take into account the interest required for additional stock issued between 1902 and 1912, to cover investment in cars, locomotives, change of line, reduction of grade, new lines and branches?

Mr. Lauck: No. I stated at that time or some similar time in the record, just as we were discussing a while ago, that I did not consider the capital factor.

Mr. Lee: There is a whole lot in the 16.73 cents that is not in the 13 cents net above there to which the fireman has not contributed at all?

Mr. Lauck: Oh, yes, the increase in interest outlay.

Mr. Lee: Isn't it a fairer comparison to compare the 1.75 cents with the 13 cents?

Mr. Lauck: On the basis of pure operations, you mean?

Mr. Lee: Yes.

Mr. Lauck: Yes, sir.

Mr. Lee: There isn't so much in the 13 cents that the fireman has not contributed to as there is in the 16.73 cents?

Mr. Lauck: No. As I understand, you still claim that the capital charges must be taken out of the 13 cents?

Mr. Lee: Yes, they have got to come out of the 13 cents. We might discuss these percentages here again, but I don't think we will gain much by it. If the Board pleases, I would like to ask for a recess for about five or six minutes.

The Chairman: We will take a recess of ten minutes.

(Whereupon a recess was taken at this point for ten minutes.)

Mr. Lee: I believe you stated, Mr. Lauck, just before the recess, or at least that was the impression I got, that the increase

in cost of firemen of 1.75 on page 19, was more comparable with the net revenue gain from transportation, 13 cents, than the 16.73.

Mr. Lauck: Well, if you want to eliminate the capital factor. We would have to eliminate the capital factor.

Mr. Lee: If you compare it?

Mr. Lauck: Yes, either way.

Mr. Lee: That is, there are a whole lot of things in the 16.73 to which the fireman has not contributed? There are more things in the 16.73 to which the fireman has not contributed than there are in the 13?

Mr. Lauck: Yes, a good many more things, things of different kinds.

Mr. Lee: Yes. It would be more properly comparable then, with the 13 than with the 16.73.

Mr. Lauck: Yes, more satisfactory.

Mr. Lee: From your side and my side both?

Mr. Lauck: Yes. Looking at it simply from the standpoint of operating efficiency I think it would be more satisfactory.

Mr. Lee: Then his wages are not so comparable with increase in dividends, or additions and betterments, and surplus at the bottom of the table? That all follows, I think.

Mr. Lauck: That they are not so satisfactory?

Mr. Lee: Yes.

Mr. Lauck: Well, it depends on what we mean by "satisfactory."

Mr. Lee: It depends on the point of view?

Mr. Lauck: No, it depends on what we mean by "satisfactory."

Mr. Lee: What I mean is, it is more comparable with that portion of the net gain to which he has contributed than it is comparable to that portion of the net gain to which he has not contributed. Perhaps I do not make myself clear. This 13 is in the 16.73.

Mr. Lauck: Yes.

Mr. Lee: There is a portion of this 16.73 to which he has not contributed at all.

Mr. Lauck: Well, the same thing is true of a portion of the 13 cents.

Mr. Lee: Exactly, but he has contributed a larger portion to the 13 cents than he has to the 16.73.

Mr. Lauck: Well, do you want me to admit that, or do you want to proceed on that basis?

Mr. Lee: I want to know whether it is a fact?

Mr. Lauck: Of course both bring in the capital factor.

Mr. Lee: The 13 cents does not bring in the capital factor?

Mr. Lauck: If there has been any increased capital used, invested in the road or quipment, between 1902 and 1912, that increase must be provided for out of the 13 cents also.

Mr. Lee: What I mean is, there are for instance, rents accrued from lease of roads. That is in that 16.75, net corporate income—

Mr. Lauck: That is after all those have been paid.

Mr. Lee: Yes, but these are the incoming things that I am speaking about now. These are other income, rents accrued from lease of roads?

Mr. Lauck: Yes, rents accrued to a proprietary company.

Mr. Lee: Yes, and where there is a credit of hire of equipment, or a credit of point facilities, or a credit of miscellaneous rents, those are all in that net corporate income?

Mr. Lauck: Yes, our income from securities owned.

Mr. Lee: Yes, other properties, or separately operated properties. All those things are in there, to which the fireman has not materially contributed?

Mr. Lauck: There would be more of managerial ability or disability.

Mr. Lee: Financial, also?

Mr. Lauck: Yes, financial management goes in there.

Mr. Lee: Therefore I say that the 13 cents is more comparable with the 1.75 cents than the 16.75 cents is?

Mr. Lauck: I am willing to proceed upon that basis, yes.

Mr. Lee: Does the train mile have any bearing on the investmtnt in the property?

Mr. Lauck: You mean does the investment in the property influence the cost, and so forth, per train mile?

Mr. Lee: No, sir, I will state frankly to you, what I am getting at, is, whether or not the train mile is a proper measure of the investment in the property. For instance—

Mr. Lauck: Do you mean whether it would not be better to consider it in terms of dollars and cents?

Mr. Lee: For instance now, take a road on which you run

ten trains a day. If you take that same road and run 25 trains a day upon it, your investment in the property might be exactly the same, might it not?

Mr. Lauck: Your maintenance would be higher, would it not, and your depreciation would be higher.

Mr. Lee: I am talking about investment now?

Mr. Lauck: Yes.

Mr. Lee: Your road probably would not cost you any more, to run 25 trains on it, than to run ten. Your return in dollars to capital investment would be about the same on a five or six per cent. basis, but your return per revenue train mile would be more or less according to the number of trains you run?

Mr. Lauck: Your operating expenses would be more or less also.

Mr. Lee: But I am talking about investment. You are comparing return from investment on revenue train mile, which has nothing to do with it.

Mr. Lauck: I start on the revenue train mile basis to compare operations. Now in order to make the cost in operation comparable, I continued the train mile through the investment factor, which is unusual.

Mr. Lee: You would not consider it a proper gauge of an investment though, would you?

Mr. Lauck: The usual gauge of an investment is the per cent. returned.

Mr. Lee: Yes.

Mr. Lauck: But my idea is not to gauge the per cent. of return upon your investment, because in the case of some of these roads from the investment standpoint the percentage return is nil. But simply starting on the basis of operating costs showing what the increased costs have been, I continued the revenue train mile analysis for the purpose of showing a relative comparison, and in that way I think it is satisfactory. Ton miles would be the same.

Mr. Lee: It is a little unusual, though, is it not?

Mr. Lauck: It is a little unusual, but it carries the thing to the logical conclusion.

Mr. Lee: It carries it to a conclusion, whether it is logical or not.

Mr. Lauck: Well, it is a logical outcome of the analysis that was started, I mean to carry it to its final end.

Mr. Lee: Have you a copy of the minutes of March 15th?

Mr. Lauck: No, sir.

(A copy of the minutes was then handed to the witness.)

Mr. Lauck: All right, sir; I have it now.

Mr. Lee: Page 687, at the bottom of the page, where the Chairman starts: "And then, after the additions and betterment account was closed, capital could be issued against those additions and betterments." Just read through that and over on to page 688, and tell me whether or not you have correctly stated your thoughts?

Mr. Lauck: Do you want me to read it out loud?

Mr. Lee: I will read it to you:

"The Chairman: And then, after the additions and betterment account was closed, capital could be issued against those additions and betterments?

"Mr. Lauck: Yes, sir, that has been frequently done.

"The Chairman: And sold to the stockholders at less than the market price of stock?

"Mr. Lauck: Oh, yes, sir; that is quite a common practice in the leading railroads.

"The Chairman: That is not the point I am getting at specially. Then the railroad with the cash received from the sale of that capital could make other additions and betterments, could it not?

"Mr. Lauck: Yes, sir.

"The Chairman: And then capitalize that, could it not, again?

"Mr. Lauck: Yes, sir, it could do that."

That is a correct statement of your views?

Mr. Lauck: The point that I had in mind there, that additions and betterments having been made out of income, that subsequently capital was used to cover—I believe when the Pennsylvania Company declared its stock dividend of $20,000,000 several years ago they said they did that to cover previous improvements made from surplus or income. And I believe the policy of the railroads in issuing stocks to cover assets not represented by capitalization has been based upon that idea, that it has a value accrued—

Mr. Lee: I was just getting at, I got one impression from that, that I really did not think you intended to convey, and I

am rather inclined to think perhaps the board got the same impression. The impression I got was that you would put the money from income into additions and betterments and then you would capitalize that and sell it to the stockholders and get the money; and you would keep on doing this thing without any additional money being put in the property, except what came originally from income. I do not think you meant that, did you?

Mr. Lauck: I meant when this was given to the stockholders—I did not mean to pile capitalization upon capitalization in that way.

Mr. Lee: That is the impression I got from your statement.

Mr. Lauck: But when it was given to the stockholders it was given to them at such a figure that they got this value and it was returned to them in stock, in other words.

Mr. Lee: This says, however: "After the addition and betterment account was closed, capital could be issued against those additions and betterments? Yes, sir; that has been frequently done. And sold to the stockholders at less than the market price of the stock." Now, the impression I gained from that testimony was that you would keep piling this thing up without putting any additional money in the property; that you could keep on issuing these additional securities forever without putting any additional money in the property. I do not think that was your intention.

Mr. Lauck: No, sir; not in that connection. If I recall the idea I had, that a certain amount of value had accrued to the property through the diversion of earnings into the property, and that was returned to the stockholders in stock. Of course, we have had numerous cases where no value accrued to the property and that was returned in stock; that is, that would be a capitalization on earning power.

Mr. Lee: Yes, but you did not desire to create the impression that these stock issues kept on growing without additional money other than came from income to be put back into the property?

Mr. Lauck: Not in that connection, no.

Mr. Lee: I was a little fearful from reading this that that inference might have been drawn from the testimony, and I really did not think you meant that?

Mr. Lauck: No, sir, I did not.

Mr. Lee: I just wanted to clear up that point; because if you sold the stock to the stockholders, you got additional money to put into the property from outside sources, not from income. That is, if you sold this stock to—

Mr. Lauck: Yes, this is the point. It is the policy of some leading companies that if there is a value accrued, say equivalent to $10 a share, the stock is apportioned to the stockholders at $10 less per share, but the remaining value of the stock, money is received for it.

Mr. Lee: Yes, that is, additional money from outside sources is put into the property.

Mr. Lauck: That is the explanation of the statement. I did not mean to say they built a basis of inflated credit or inflated capital obligations upon nothing, although there might be capitalization of earning power and that would be the case. But in that connection I mean that certain earnings of the road had been put back into the road, and this distribution of stock was really equivalent to another distribution to the stockholders growing out of the fact that part of the earnings of their property had been put back into the property.

Mr. Lee: That is, they are given outright the value of the additions and betterments in stock?

Mr. Lauck: Exactly.

Mr. Lee: They are given that—they do not get any money for that particular thing?

Mr. Lauck: To my mind, that is an additional distribution to stockholders.

Mr. Lee: That is, the railroads do not get any additional money from the stockholders for this stock, that is issued on additions and betterments?

Mr. Lauck: No, the stockholders get that.

Mr. Lee: That is the point I wanted to bring out, that I thought might not have been clear in the minds of the Board.

Mr. Lauck: The stockholders got that, of course, as an increased return on their investment.

Mr. Lee: That has been earned by the property?

Mr. Lauck: Yes.

The Chairman: I think all of the members of the Board understood it that way.

Mr. Lee: I was rather in hopes that they had, but I wanted

to make sure of it, and that it was not a question of pyramiding on the value of additions and betterments. Now, referring to page 20, in the right hand column, how did you arrive at the figures for additions and betterments in 1902 up to and including the year when the additions and betterments classification was prescribed by the Interstate Commerce Commission?

Mr. Lauck: Under 1902 classification you will find permanent improvements which are deducted—I think in that case they are deducted from the gross corporate income, if I remember, and now are deducted from net corporate income. You usually find in the reports to the Commission, at that time, where there are large amounts put into permanent improvements, there are usually notes explaining what they were.

Mr. Lee: I believe you made the statement the other day that there were a good many items formerly charged in operating expenses, and properly so under the classification, that now are charged to additions and betterments?

Mr. Lauck: Yes, sir.

Mr. Lee: That would not show, would it, in this table—those matters that were formerly charged to operating expenses, and now charged to additions and betterments?

Mr. Lauck: Not prior to 1908, no, sir.

Mr. Lee: That would tend to increase these figures between 1902 and 1908?

Mr. Lauck: Yes, sir, it would also have a very beneficial effect upon my operation calculations.

Mr. Lee: It would tend to decrease the operating ratio formerly, if those were taken out.

Mr. Lauck: Decrease the operating ratio formerly?

Mr. Lee: So there would be a greater increase in operating ratio than is actually shown.

Mr. Lauck: Yes.

Mr. Atterbury: The converse of that is also true, is it not?

Mr. Lauck: Yes, sir.

Mr. Lee: There is a rather interesting feature in this table; you will note that in 1902 there was substantially something a little under $19,000,000 charged to additions and betterments?

Mr. Lauck: Yes.

Mr. Lee: That is the smallest amount charged since 1902, with the exception of two years. Would that indicate anything to your mind?

Mr. Lauck: That indicates to my mind what is indicated by the revenue mile comparison. It is even more significant than the cost of dividends; that part of the dividends had been paid from previous surpluses. This indicates that the amount of money, after meeting your capital requirements, that you formerly had to put into the property.

Mr. Lee: Would that not also indicate there was less money to put into the property in 1912 than there was previously, all factors considered?

Mr. Lauck: All factors considered, yes, not saying anything about the factors.

Mr. Lee: Not saying anything about the factors, operating expenses, capital requirements, and so forth.

Mr. Lauck: Yes.

Mr. Lee: There was less money put back into the property in 1912 than any other years since 1902, with the exception of two years—1902 was less, and 1905 was less?

Mr. Lauck: Yes.

Mr. Lee: Since 1905 that indicates that the smallest amount of money that was available to put back into property, since 1905, was in 1912?

Mr. Lauck: That is correct, yes, sir.

The Chairman: Does it indicate the amount available to be put back was less, or that they actually did not need to put back more?

Mr. Lee: It would indicate to me that there was less available—although I am not under oath, I think I am correct in stating that.

Mr. Lauck: That is correct, I think, sir. That is my opinion. Of course, we are not saying anything about whether it should or should not be.

Mr. Lee: No, we are perhaps not competent as yet to state that.

Mr. Phillips: It might be these larger sums for preceding years had made it unnecessary to expend an equal sum in 1912.

Mr. Lauck: Well, I think that might be possible. Like the case of the Erie, or any road that has put a large amount in in the past, or is now putting it in, it must be expected it will not have to put a proportionate sum in in the future. I don't think

that is due to that fact. I think if the capital requirements were more, there was less available.

Mr. Carter: Would the amount of interest on funded debt in 1912 and the dividend payments in 1912 probably make it necessary to decrease the other expenses?

Mr. Lauck: Yes, sir. It would render a smaller amount available to put back into the property.

Mr. Carter: Would this indicate, these three tables, that instead of putting it back into the property, they have now begun to distribute it in interest on funded debt and dividend payments, just take the three amounts there.

Mr. Lauck: Well, it might mean that. It might be that there are larger fixed charges and larger dividends being paid, and therefore less available.

Mr. Lee: You spoke of the Erie; they have not been paying very heavy dividends lately, have they?

Mr. Lauck: They have not paid any, no, sir.

Mr. Lee: They did formerly?

Mr. Lauck: They are putting their money into their property.

Mr. Lee: Yes, as fast as they can.

Mr. Lauck: Yes.

Mr. Lee: Properly so.

Mr. Atterbury: Might not also increased payments to labor have so reduced the money available as to have brought about this reduction?

Mr. Lauck: It might have been so, but I do not think so.

The Chairman: The corporate income was $13,000,000 more in 1912 than it was in 1911.

Mr. Lauck: Yes, sir; of course the capital requirements were greater though. The capitalization had increased during this period, and there I didn't enter into a comparison into the relative increase in capitalization, and the relative increase in corporate income, but simply compared straight down the line. To have an accurate comparison you would have to take into consideration the relative capital and relative—

The Chairman: On a basis of six per cent., if the dividend payments all went to increased capital, there was an enormous increase; there must have been about $400,000,000 increase in capitalization in that one year.

Mr. Lauck: I think there would be much more than that, sir, including funded debt as a part of the capitalization.

The Chairman: Well, the increase on funded debt did not increase any that year.

Mr. Lauck: Funded debt, 7 cents.

The Chairman: Interest on funded debt was less in 1912 than it was in 1911.

Mr. Lauck: You are taking the revenue train mile table?

The Chairman: No, I am taking this table on page 20.

Mr. Lauck: Oh, I beg your pardon. Yes, it was slightly less in 1912 than in 1911, while the dividends were $26,000,000, roughly speaking, more.

The Chairman: That would not necessarily indicate an increase in capitalization, would it?

Mr. Lauck: No, sir.

The Chairman: Paying dividends on stock which formerly did not pay?

Mr. Lauck: Yes, sir.

Mr. Lee: You spoke Mr. Lauck about it might be that the railroads did not need to put so much money into their property. Do you know how long it takes for the traffic of this country to double itself?

Mr. Lauck: I have heard, but I have forgotten, Mr. Lee. I do not know.

Mr. Lee: In ten or fifteen years, and if traffic doubles itself, it is necessary to take care of it and provide additional capital facilities for it, isn't it?

Mr. Lauck: Yes, sir.

Mr. Lee: And these facilities must be provided or the traffic cannot be moved, is that right?

Mr. Lauck: That is right.

Mr. Lee: Then it is hardly probable, or is it likely that the railroads would stop putting money into their property unless they had to?

Mr. Lauck: I do not think so, not judging from their past practices in that line.

Mr. Lee: What I was just getting at was that this, a little under $19,000,000, which is third from the bottom in number of years and amount, the small amount of that money was not due then probably to the fact that the railroads did not feel that

they should have it and put it into their property, but probably they did not have it available to put into their property?

Mr. Lauck: I think the latter is correct, that under the conditions of financial operation of the roads, they did not have it available.

Mr. Carter: Would that apply to the road that is trying to get out of the movement, where they bought the Alton and have gone in debt so much for the Alton, they haven't any money left for the firemen.

Mr. Lauck: Well, that was due to bad financial management and improper management.

Mr. Carter: Well, if any other road did the same thing, wouldn't it perhaps have the same effect?

Mr. Lauck: Any other road would have the same effect, yes, sir.

Mr. Lee: A pretty small railroad, isn't it?

Mr. Carter: The Pennsylvania is on the other side of the fence.

Mr. Lee: How large is this railroad.

Mr. Carter: Four or five hundred miles.

Mr. Lauck: The idea in presenting, I might say, those comparisons there Mr. Lee, on the revenue train mile basis, and relative payments as to dividends and putting back in the road and so on, was to simply show the relative tendency in the way and the small effect an increase in wages of firemen would have upon these different payments.

Mr. Lee: I just want to turn back to page 19 for a moment, in the left-hand column, at the bottom of the first paragraph, just above where the ink corrections have been made: "Stockholders actually received in dividends and in additions to their property on the basis of a very conservative calculation more than 11 times the amount of the increased outlay for locomotive firemen per revenue train mile in 1912, as compared with 1902." Do you think these two figures are comparable; that is, is the work performed by the stockholders the same work as performed by the firemen?

Mr. Lauck: Well, we are speaking of relative money returns now; we are not speaking of work performed.

Mr. Lee: Yes, it is relative money returns for different kinds of work.

Mr. Lauck: Yes.

Mr. Lee: Is it comparable to say, how do you know for instance that a stockholder perhaps has not done harder work to get his money to put into the property than the fireman has?

Mr. Lauck: Well, if he has, he has received proportionately many times the remuneration.

Mr. Lee: Yes, and perhaps he has worked eleven times harder than the fireman?

Mr. Lauck: Perhaps he has worked eleven times less than the fireman.

Mr. Carter: Perhaps he has blisters on his hands.

Mr. Lee: Yes, many of them. But what I mean is, for instance take Mr. Carter's case, and assume now, this is purely an assumption—

Mr. Lauck: More theory.

Mr. Lee: This is another theory. Assume that he receives $5,000 a year and assume that a fireman receives $1,000 a year, does this prove that Mr. Carter receives five times as much as a fireman?

Mr. Lauck: On your assumption do you mean?

Mr. Lee: Yes.

Mr. Carter: Tell him how much capital I have.

Mr. Lauck: You have already assumed that he does get five times as much.

Mr. Lee: Yes, I assume that; I do not know what it is.

Mr. Lauck: I do not know either, so it is all right.

Mr. Lee: Then he gets five times as much as the fireman does, does he not?

Mr. Lauck: Yes.

Mr. Lee: Then does that fact of itself prove that the fireman should have an increase in wages? Mr. Carter's work is not the same as the fireman's work, is it? His is head work; the fireman's work is physical labor.

Mr. Lauck: Well, I have stated frequently that if there were different elements connected with different kinds of labor, that the compensation should be determined on different bases,—firemen on the arduousness of the work and the stockholders' return is based on the risk involved and the current rate of return upon money invested.

Mr. Lee: A different kind of work?

Mr. Lauck: A different kind of a basis for estimating return for certain services.

Mr. Carter: It is something like playing faro, is it not?

Mr. Lee: You say the stockholders received 11 times as much as the firemen. Perhaps their risk is greater than that of the firemen. What I am trying to bring out is, whether or not you think that fact of itself proves that the firemen should receive greater wages?

Mr. Lauck: What I establish by that comparison is that as a result of the increased operating efficiency, and despite the rising cost and your increased taxes and other elements of operation, the firemen's gain has been small as compared with the stockholders' gain expressed in terms of dollars and cents, without reference to the actual amount of capital that the stockholder put in to get his out.

Mr. Lee: Without reference to that at all.

Mr. Lauck: Yes.

Mr. Carter: Let me ask a question there?

Mr. Lee: Go ahead.

Mr. Carter: Pardon me for asking about something that I know nothing of. Suppose a man was proprietor of a gambling house, or had capital invested in it, and he hired a man to operate a roulette wheel, and the man who operated the roulette wheel got a dollar a day, or five dollars a day, and by the twist of his finger the man who invested in the roulette wheel was making $5,000 a day, do you think there would be any way of comparing the man who owned the roulette wheel with the man who was operating it?

Mr. Lauck: None whatever.

Mr. Carter: And it is about the same here?

Mr. Lauck: Yes.

Mr. Carter: The man who invests his capital is taking a chance. It is a gambling proposition. He may lose or he may win. The fireman is getting pay for what he does.

Mr. Lee: I hardly see the analogy to the gambling house.

The Chairman: I have had no experience in either place.

Mr. Lee: Why not take poker, as an example?

Mr. Carter: The reason I did not mention poker was that I thought somebody would have experience, and I wanted a purely theoretical basis.

Mr. Lee: I am rather of an investigating turn of mind, and I do not see the analogy at all. Perhaps I can speak as an expert (laughter). A man puts his money into a railroad for an investment, for a return. In some instances he has taken a chance but I hardly think the analogy is worth applying.

Mr. Carter: He is not taking so much of a chance perhaps. The percentages in the game are not quite so high.

Mr. Lauck: I thought the spinning of the wheel was the thing that Mr. Carter had in mind as the significant fact.

Mr. Lee: That was the work performed. Well, that might be comparable.

Mr. Carter: And what he said when he twisted it?

Mr. Lauck: Yes.

Mr. Carter: The same thing would apply to a speculative investment in real estate. It is not the labor you perform, it is your judgment in knowing where to put your money.

Mr. Lee: I believe Mr. Lauck, you made the statement that any well regulated road had a surplus?

Mr. Lauck: Please read that statement.

Mr. Lee: That is the impression I gained.

Mr. Lauck: I thought you were going to point out where I had made that statement.

Mr. Lee: No, I just have it in mind. I haven't it in the book here. Is not that a fact?

Mr. Lauck: I think any well regulated road should have a surplus to cover unforeseen expenses, to make the rate of dividends uniform.

Mr. Lee: We have used the word "surplus" in a good many ways. I want to find out what you mean by "surplus."

Mr. Lauck: That is the credit balance to profit and loss.

Mr. Lee: To profit and loss?

Mr. Lauck: Yes.

Mr. Lee: That is what I thought. That is the way I am using it. If you had a debit to profit and loss, you would not have any surplus?

Mr. Lauck: No. To use another expression here, they would have "the reverse condition." The reverse condition may be true.

Mr. Lee: I believe it is true of some of the roads. I am not sure.

Mr. Lauck: Yes.

Mr. Lee: Some of the roads in this book?

Mr. Lauck: Yes.

Mr. Atterbury: Are you through with this, Mr. Lee?

Mr. Lee: No, sir.

Mr. Atterbury: There is one question I want to ask, on page 20, to bring out the point that I tried to bring out before, in regard to what you are discussing, of the increase in surplus, that there was a possibility of that surplus not coming from income at all; that is, by the appreciation in the investments of the road.

Mr. Lauck: Yes.

Mr. Atterbury: This you say was set aside from income?

Mr. Lauck: Does it state that?

Mr. Atterbury: "This $121,000,000 was set aside from income for the benefit of the stockholders during the past eleven years."

Mr. Lauck: Some of that value might have accrued—

Mr. Atterbury: From the appreciation in investments?

Mr. Lauck: Yes.

Mr. Atterbury: That is all right. I wanted to understand that.

Mr. Lauck: That is in your profit and loss account, what you write off or add to the value?

Mr. Lee: What is that profit and loss account? It is a bookkeeping account, is it not?

Mr. Lauck: Yes, as I stated before.

Mr. Lee: Let me just ask you this question, and perhaps it will bring out just what I want to. To realize on that profit and loss account would you not have to liquidate the road? Does not that profit and loss account represent the amount that should be left over if you disposed of the road entirely?

Mr. Lauck: Yes, it represents a long time liquidation. It is not quick assets.

Mr. Lee: You could not realize the whole of that profit and loss, provided it was proper and was there, without liquidating the road?

Mr. Lauck: No, if—

Mr. Lee: In other words it is a bookkeeping account?

Mr. Lauck: Well, you are supposed to have the value there.

Mr. Lee: The value is supposed to be in the road?

Mr. Lauck: If you can properly liquidate it.

Mr. Lee: You would have rather a good deal of difficulty in distributing it, would you not?

Mr. Lauck: Well, you would know more about that than I would.

Mr. Lee: I thought you knew about these accounts?

Mr. Lauck: According to the accounts it would require a long time liquidation to realize the full value of your assets. Of course, that would vary from road to road; one road would have more quick assets in its surplus than another, probably; and another might have assets that were questionable investments. They might write up the property account or write it down. Such things have been done.

Mr. Lee: Oh, yes. It is not entirely accretions from income?

Mr. Lauck: No, sir.

Mr. Lee: It is a balancing account in the bookkeeping?

Mr. Lauck: Yes. On the other hand it might be really of more value than is indicated.

Mr. Lee: Oh, yes.

Mr. Lauck: You might have securities which you are carrying at a certain book value when the market value might be much more?

Mr. Lee: Certainly.

Mr. Lauck: I might add that surplus—I believe I did make this statement though—as the result of adding together the deficits and subtracting them from the positive elements—in other words the good roads will carry the bad roads in that surplus, financially speaking.

Mr. Lee: Yes, that is, this might or might not appear for all the roads, but when you lump them together the good road carries the bad?

Mr. Lauck: Yes, you have some roads in this movement that are in the hands of receivers and with large deficits.

Mr. Lee: Yes, those would be rather difficult to follow through on your theory, would they not?

Mr. Lauck: Not as to operations.

Mr. Lee: I mean this novel theory of yours?

Mr. Lauck: No, you mean the theory—the operating efficiency might be very great and their financial condition might be due to entirely different causes.

Mr. Lee: Do I understand that if you had a road that made a deficit in its net operating revenue that you think the firemen should contribute to that?

Mr. Lauck: If the road was properly managed?

Mr. Lee: Yes, granted. That would be your thought, following it to a conclusion?

Mr. Lauck: Yes, that would be the logical conclusion, if the road was properly managed.

The Chairman: How could there be a deficit in net operating revenue?

Mr. Lee: It might cost more to operate the road than you get in returns.

The Chairman: Then there would not be any net operating revenues?

Mr. Lee: There would be no net operating revenue.

Mr. Lauck: Mr. Lee means a deficit in the net operating returns.

Mr. Lee: I am not familiar with these terms. Net operating deficit instead of net operating revenue. You would have a net operating deficit. If it cost you more to operate the road than you got for operating it you would then have a net operating deficit instead of net operating revenue and you would not have enough money then to pay the cost of operation.

Mr. Phillips: That is what they call "operating in the red," is not that true?

Mr. Lee: I do not know what they call that term, but the ultimate conclusion is—

The Chairman: Deficit and profit are opposing terms to me, but net operating revenue cannot imply to my mind any net operating deficit.

Mr. Lee: Well, I did improperly use the term, yes, sir. What I meant was where the net operating revenue was a minus quantity; in other words called net operating deficit. This is where you are losing money below the red line, and where you are gaining money is above the red line.

Mr. Atterbury: There can be no net operating revenue where there is a deficit.

Mr. Lee: No.

The Chairman: That is what I thought.

Mr. Lee: I improperly used the term.

Mr. Carter: If the management of a road succeeds in establishing a deficit and it gets into the hands of receivers, and at the end of a year or two the receivers have put the road on a profitable basis, would it indicate that the receivers were more efficient as managers than the men who could not do that?

Mr. Lauck: Yes, sir, I would think so.

Mr. Carter: Do roads ordinarily stay for a great period of years in the hands of receivers?

Mr. Lauck: It depends on the receivers.

Mr. Lee: Following that same comparison on through, as to net corporate income, where there is a deficit in net corporate income, should not the firemen participate to help make that up, on this same theory?

Mr. Lauck: No, sir, for the reason that if there is a deficit in the net corporate income and the road has been properly operated, I should think the deficit would arise from financial management and not from operating management.

Mr. Lee: Suppose it was a properly managed road and a properly financed road, and there was still a deficit, should not the firemen participate in that deficit?

Mr. Lauck: I would like to make one more qualification.

Mr. Lee: Go ahead.

Mr. Lauck: If there had been no economical justification for building the road—

Mr. Lee: The road is built—it has got to be operated.

Mr. Lauck: If the promoters of the road made a mistake in building it, then the fireman is not responsible for that. The road ought to be reorganized and put on a proper financial basis.

Mr. Lee: Suppose the road had been ordered built by legal authorities, where would that come under your theory?

Mr. Lauck: Then redress should be had upon the legal authorities.

Mr. Lee: Your theory has got a good many qualifications around it, hasn't it?

Mr. Lauck: Not at all. I don't think in that way, sir.

Mr. Lee: You say there are quite a number of roads showing deficits, which roads may or may not have been properly managed—

Mr. Lauck: Or it may have been a mistake to build the road—

Mr. Lee: But the road is built and must be operated?

Mr. Lauck: Then reorganize it and put it on a proper basis.

Mr. Lee: It may not be possible to reorganize it—I am putting a few qualifications in now.

Mr. Lauck: If it is impossible, I think the firemen ought to leave the road.

Mr. Lee: Where would you get the money to reorganize it if you divided up all this money as you propose?

Mr. Lauck: Take the New York, Chicago & St. Louis. The original capitalization was say 100, in 1882. Four years later they scaled it down about 50 per cent. in order that the road might be properly financed. That is what I mean. The testimony is that the road never should have been built.

Mr. Lee: Who lost that $50,000,000?

Mr. Lauck: The people who were foolish enough to follow the promoters and put their money into the road.

Mr. Lee: Wouldn't you say that perhaps that firemen who were foolish enough to work for a road of that sort, ought to participate in it—you need not answer that question.

Mr. Atterbury: I think the witness has been perfectly logical in his theory that if the firemen profit from certain things, they ought to also suffer from the losses. I think he is perfectly logical in that.

Mr. Lauck: I simply wanted to make the qualification that if the loss came through financial mismanagement of the road or through any mistake in its construction from an operating standpoint, it was a mistake for which the firemen should not be held responsible. You might have a very badly financed road and a very efficient railroad, from an operating standpoint, and the net operating revenue might still be insufficient.

Mr. Atterbury: Mr. Lauck, let me ask you this question: In your mind is there any relationship as to the participation of capital and labor in the profits of a concern?

Mr. Lauck: Meaning by "the profits" the net corporate income?

Mr. Atterbury: Yes.

Mr. Lauck: I think this, that the capital having been placed in a road and labor having been employed and the road having been managed properly, that the capital should be remunerated for the risks it assumed, and should have a return for managerial

ability, both financial and operating, after labor has been properly reimbursed, according to its value to capital, capital should have the remainder.

Mr. Atterbury: Capital should have the remainder?

Mr. Lauck: Yes.

The Chairman: No matter what the remainder is?

Mr. Lauck: I am not speaking of railroad capital now, because I would run in conflict with the theory which seems to be popular now as to the consumer participating—I mean a railroad would not be in the same category as an industrial corporation according to the prevailing idea. All that I am contending for is that labor should be reimbursed according to the value of its services. When that is done I care nothing about capital. I mean in the present connection.

The Chairman: You think when labor gets that much and capital gets a reasonable return of five or six per cent., the public ought to get the benefit of the balance?

Mr. Lauck: You are asking me for my opinion, Judge Chambers?

The Chairman: What are you going to do with this surplus; would you continue to put it into the property, or increase the wages of the employees, or increase the dividends?

Mr. Lauck: I think there ought to be a sufficient fund accumulated in surplus, to maintain the uniformity of returns on dividends over a bad period as well as a good and provide for any unforeseen expenses, like wrecks or things of that kind—any unusual expenses of that kind. After that I think if there is a surplus or if there are some gains and the risk has been properly remunerated and the ability of the management, and so on, has been properly compensated, that should inure to the benefit of the public.

The Chairman: You don't think the wage should be increased in proportion to the earnings then?

Mr. Lauck: No, sir; I think the labor should be paid according to the value of its services.

The Chairman: By what standard would you fix that, the value of the services? I am trying if I can, to get a clear idea out of your theory.

Mr. Lauck: My idea would be that labor and capital are two factors engaged in producing transportation; that both are

essential to the manufacturing of ton miles; that labor has either arduousness of work or mental work, or whatever peculiar qualification may be necessary, and it should be reimbursed for that service according to the prevailing standards for those services elsewhere.

The Chairman: What I am getting at, Mr. Lauck is, take railroads operating in the same general territory like the Lackawanna Road and the Erie Road and the Lehigh Valley, and the Pennsylvania Road, do you think the firemen ought to be paid on those roads exactly alike?

Mr. Lauck: For similar work or similar conditions of employment, I should say yes, sir.

The Chairman: Now we will suppose that one of those roads makes money and accumulates a large surplus on the same rate of freight and passengers as the other road loses money on, makes a deficit, you think the firemen ought to be paid the same on both roads, do you?

Mr. Lauck: Yes, sir.

The Chairman: Then. the element of profit and surplus earnings does not enter into your opinion at all?

Mr. Lauck: No, sir.

The Chairman: Then why did you want to elaborately prove here that the railroads were making money?

Mr. Lauck: That is not the object of this, to prove they are making money, but that the relative returns to capital and labor are—

The Chairman: But you say the fireman, if he does a certain amount of work, ought to get a certain pay whether it has any relation to the revenue or not?

Mr. Lauck: I should say that my study is primarily concerned with operation, and that in operating this road my point of view is that a fireman should be paid in accordance with his efficiency in connection with the operation.

The Chairman: Isn't his efficiency represented in the success or failure of the railroad to earn a profit?

Mr. Lauck: Well, this might be true, that the fireman might be very efficient, and still the railroad not be profitable, or the operation of the railroad might be efficient, and still the railroad's stockholders receive nothing due to the fact, well, due to a number of facts,—there might be bad financial management;

the funded debt might eat up all the returns from transportation. On the other hand, a railroad might be operating at a deficit, because it was built through a country that could never develop any traffic. The fireman has to work just as hard in running a train through that country. The mistake there is due to the promoters of the road, and consequently the fireman should receive, to my mind, the same remuneration for his work performed on that road as he would for similar work performed on another road. He is not responsible for the mistake in locating the road or building the road.

The Chairman: And in periods of slackness when railroads were running, we will say, at a loss, the railroad should adjust its situation by using less men, but paying those that it retained the same wage, rather than to reduce the wages?

Mr. Lauck: I think that that is the usual practice now, yes, sir, with all concerns; I think that is the fair practice; that is, it is the same thing to the railroad. That is in the recent depression, the United States Steel Company you will recall, maintained the existing rates of wages but worked the men less time; and in a period of depression, a railroad would have less traffic to handle, and therefore they could just as well maintain the rates of pay for transporting that traffic with fewer men.

Mr. Carter: Are you familiar with the nature of the wage requests submitted for arbitration?

Mr. Lauck: No, sir.

Mr. Carter: Do you know that a different rate is requested according to weight on drivers?

Mr. Lauck: I do not know anything about the bases of the requests.

Mr. Carter: Well, presuming that the firemen here are requesting eight different rates in a graduated scale in accordance with weight on drivers, and presuming that this same graduated scale would appear in his productive efficiency, have we not already anticipated this condition by showing that where the fireman by his labors is not so efficient in the productivity of revenue, we are only asking for less money?

Mr. Lauck: I think that would follow, yes, sir.

The Chairman: What is that, Mr. Carter?

Mr. Carter: I think perhaps the basis for wages of weight on drivers is largely a basis upon productive efficiency in addi-

tion to labor. For instance, if you will go through the eight different classifications of weights on drivers you will note that there is a graduation in the rates requested. Now the question under discussion was that if on some road, or some place on some road, or I might say, on some engine on some road, his productive efficiency and going with it his labor is not so high whether that has been recognized. I think we have recognized that in our request, for if we had not recognized it, we would have asked for the same rate on all engines regardless of ton miles hauled or the revenue produced by the service, or the labor performed. I think if you will refer to the request of the firemen you will see that they have asked high wages where their work is excessive, and where their productive efficiency, if I may use the same expression, is excessive, and they have asked comparatively low wages where their labor is less and where perhaps their productive efficiency is less. I mean to say that the discussion has brought out practically what the firemen have recognized in making a request for a graduated increase in wages in accordance with their labor and productivity.

Mr. Lee: Do I understand that these wage requests are on the basis of productive efficiency?

Mr. Carter: I mean to say that is the result to the railroad. I am not saying that is why we make the requests. Where the railroads pay the higher wages, they find the higher productive efficiency. Of course, the firemen find a higher degree of labor; and by paying we will say $3.00 or $3.50 or whatever it may be to a fireman on a very heavy locomotive, in a certain class of service, and perhaps paying $2.00 or $2.25 to another fireman on a smaller engine on the same division, that difference has been recognized. The question that was under discussion at the time I rose to speak was that the higher the productive efficiency of the fireman, because of the larger engine and his increased labor, higher compensation is asked. If we were to go to a flat basis, disregarding the labor or productive efficiency we would say "We want $3.50 for 100 miles on all engines regardless of their size and regardless of the tonnage hauled.

Mr. Atterbury: Mr. Carter, do you accept the theory of the witness that the firemen should profit in accordance with the profits of the corporation?

Mr. Carter: I say, Gentlemen of the Commission, that if

costs just so much to secure anything; and as the consumer becomes prosperous he may look for an advance in price. For instance, when the producer of steel rails finds that the railroads are no longer able to buy steel rails, he does not always cut the price; but when he finds that the consumers of steel rails are making a lot of money, he generally increases the price, because he believes that the consumers have the ability to purchase. Now the same would apply to a farmer. He would ask more. If the farmer finds he is selling butter or wheat to a poor man with a big family, he wants so much for his butter or wheat anyway; but if he finds that a community is exceedingly prosperous, the price of butter generally goes up. Pardon me, but that is the theory.

Mr. Lee: We are dealing in theories.

Mr. Carter: I mean by that, there is a minimum below which no producer is willing to go. No producer is willing to accept less than he thinks his product is worth, regardless of the condition of the market or the financial distress of the country. I believe that that is the usual procedure in all matters, that we observe from time to time in the commercial world.

The Chairman: You believe then in a mobile wage, but that it ought to move upwards?

Mr. Carter: I mean to say that if it moves downward, if it is not arbitrarily prevented from moving downward, the manufacturer of steel rails would have to accept one-half the price he formerly charged. Perhaps in turn he would pay his laborers one-half, and his laborers would pay one-half for that which they consumed, and in the end we would have a chaotic condition of affairs. I mean to say that because there seems to be a standard of American living we have established a remarkably grand country. In China, where there is no bottom or minimum limitation, you know what they have there.

Mr. Lee: If I gather properly the analogy from the steel rail man, that my friend says he expects more money as a road becomes more prosperous, I take it he means that the firemen should get more money as the road becomes more prosperous. If that is so, then by the same analogy, I would take it that if a railroad becomes less prosperous, the firemen perhaps should get less money. It seems that that is the natural conclusion.

Mr. Carter: Pardon me, gentlemen, perhaps I have not made

myself clear; but I have never discovered any railroad which because it was in the hands of a receiver was able to purchase its material very much more cheaply than its wealthy rival, or that it could secure material at a lower price simply because it was poor.

Mr. Atterbury: Then, Mr. Carter, do you believe that labor also is governed in its price by the question of supply and demand as the price of material is a question of supply and demand?

Mr. Carter: Well, not necessarily so. For instance, the supply and demand of steel has but little to do with the price. I mean to say that the manufacturers of steel generally maintain a pretty fair price for steel regardless of the supply or demand. They stop producing rather than reduce the price. I think that same thought will apply perhaps to argricultural products. When it was found some years ago that the raising of cattle was not profitable, because, perhaps, of the increased price of land, farmers began to raise corn and sell their cattle. I understand that some economists say we are now suffering because of that economic indiscretion.

Mr. Lee: I understand from my friend that the price of steel rails is perhaps an artificial proposition?

Mr. Carter: Not necessarily.

Mr. Lee: Brought about perhaps, from his standpoint, by a combination.

Mr. Carter: No, not necessarily. I mean to say they stop producing steel rails unless they make a profit on their production.

Mr. Lee: Oh. The analogy perhaps might be followed further, but perhaps we had better not.

Mr. Carter: I mean whenever the farmer cannot get enough for butter, he stops milking his cow.

Mr. Lee: And when a railroad does not get enough for transportation, it cannot stop; it has to keep on going.

Mr. Carter: I think the railroads have been assured by a body of almost supreme authority in the matter, that whenever it can be shown that they are not securing ample return on the investment, those returns will be provided by an increase in freight rates.

Mr. Lee: There also has been a statement made by that same Commission in regard to the labor, and if it applies in one case, it should also apply in the other.

Mr. Carter: I am awfully glad that counsel for the railroads brought that out, because it gives me an opportunity to say something good naturedly about something that usually makes me very ill-natured. The railroads, by their peculiar methods of reporting average daily compensation—

The Chairman: What sort of methods?

Mr. Carter: I say, the railroads and the Interstate Commerce Commission, or their progenitors, by their peculiar methods of reporting average daily compensation as paying $3.33 when it is only $2.26, actually convinced Mr. Prouty that they were right. They did not convince me. And Mr. Prouty, taking the reports of the railroads, that these average daily compensations were so excessively high, perhaps, like the arbitration of the Board in the engineers' matter, they fell for it, and so did Mr. Prouty.

Mr. Lee: The statement is still in existence, however, with Mr. Prouty's own interpretation upon it, and not by Mr. Carter. Very well. I do not think this discussion is particularly profitable, unless you desire to carry it further.

The Chairman: No, go on.

Mr. Lee: I mean from our side, or from Mr. Carter's side.

The Chairman: You say the Interstate Commerce Commission did issue a statement that the average wage of firemen was $3.36? What was it he said?

Mr. Carter: That the wages of railroad employees—I will not quote his language—were higher than other employees, and I am saying good naturedly about something that makes me very ill-natured, that he based his opinion upon the false statements of the railroads as to what was the average daily compensation of employees. For instance—

The Chairman: That took in the whole class?

Mr. Carter: Yes, all employes that are reported, so far as their average daily compensation is concerned. For instance, I mean to say this, if we could be deceived into believing that the firemen are getting $10.00 a day, I might confess they are getting too much money. But I know they are not getting $10.00 a day.

Mr. Lee: I think perhaps my friend's statements as made, were not intended as they sounded. He has talked about false reports and deception. They are not false reports, sir, in the meaning of that word generally. They are made in accordance

with the requirements of the Commission. I think what he means may be perhaps misleading to those who do not know how they were obtained. I do not think he intended to state that the railroads intentionally made false reports. If he did, I desire to take decided issue with him.

Mr. Carter: Perhaps I had better make myself better understood. I have said that the methods of making these reports are grossly unjust to railroad employees. I have said, that I believe that the members of the Interstate Commerce Commission recognize it. I have said, that I understand they are now going to change their basis entirely. I have said, that it appears that each railroad interprets even that unjust basis, according to their own desire and whim. For instance, I know of one railroad that simply says the average daily compensation of a fireman is the rate shown for a day in their schedule. Another road (and I want to repeat it, because I got it wrong the other day), found out that the entire engine days made by their engines would show an average of $110 a month. Now, in order to report to the Interstate Commerce Commission the number of employees, they divided the total compensation paid to all employees by $110 a month, and the result is what they reported to the Interstate Commerce Commission as the number of employees on that road.

Now, it so happened that there was an arbitration proceeding on that road. The initials of the road are Denver & Rio Grande. It so happened that there was an arbitration proceeding on that road, and the company, availing itself of the so-called records of the Interstate Commerce Commission, as described in the Engineers' Arbitration Award, took their own reports to show that the average daily compensation on that road was exceedingly high. Now, the representatives of the firemen questioned the accuracy of the reports to the Interstate Commerce Commission, and requested that the payrolls of the company be produced to show how many firemen they did have, and what their average daily earnings were. Upon the production of these payrolls and a careful audit by so-called experts, it was discovered that instead of the average daily compensation being $110 a month, I think it was about $85 or $87, I don't remember, and instead of having the number of firemen reported to the Interstate Commerce Commission, they had perhaps 25 per cent. more firemen.

Now, I say when Mr. Prouty made the statement that he

thought the railroad employees were a highly paid class of labor, that was the basis of his statement, that class of information.

Mr. Lee: I haven't the original document here but I have an extract from the document. I do not know who wrote this, whether it was Mr. Prouty or who it was. It is an official statement from the Interstate Commerce Commission. It was in an official statement concerning the advance in rates case in 1910, No. 20 I.C.C. 243, in which this announcement was made:

"Railroad labor. Certain organized railroad labor is probably as well paid, and some say better paid, than labor of other kinds upon the average.' Railroad employees will hardly expect to receive wages which exceed those paid to other forms of labor for the same grade of service, and this Commission certainly could not permit a change of rates for the purpose of enabling railroads to pay their laborers extravagant compensation as measured by the general average compensation paid labor in this country as a whole. It is likely, therefore, that the labor item of these railroads will not in the immediate future much increase, unless there should be a general advance in all prices."

I have read that just because the Board desired it. We can get a copy of the original document, if desired. How they came to that conclusion I have no manner or method of knowing, whether it was through these pernicious statements that my friend seems to dislike so much, I do not know, but that is a body which controls the income of the railroads very largely, and that is an expression of their views as to 50 or 60 per cent. of the expenses of those railroads. For what it is worth it is read, sir.

Mr. Carter: Pardon me for prolonging the debate, but the "some say" to which Mr. Prouty referred, I understand the "some say," was the reports of the railroads to the Commission, because no other people could say, and what I protest against is the furnishing of information that would deceive Mr. Prouty, or deceive the Engineers' Arbitration Board, or deceive this Board; and as I have said on sundry occasions on previous days I am going to do my best to see that this Board is not deceived on any such statistics.

Mr. Lee: And it is my purpose, sir, to attempt to see that this Board is not deceived on any statistics, ours or the other side

Mr. Carter: If you do not introduce the same information

on which poor Mr. Prouty formed his opinions, we have nothing more to say.

Mr. Lee: Why that will develop as we develop our case, what our statistics are.

Mr. Carter: I will confess we are crossing a bridge before we get to it. May be their modesty will prevent them saying anything about their reports to the Interstate Commerce Commission about the average daily compensation of employees.

The Chairman: With this declared purpose of the representatives of both sides to keep all the untruths and misrepresentations out of the case, we probably will be able to arrive at a fair conclusion.

Mr. Lee: I trust so, sir.

Mr. Carter: Then we won't expect any average daily compensation from the records of the Interstate Commerce Commission.

Mr. Lee: That is as you may view it perhaps. I have not said what we would put in yet. That will develop. I think perhaps, if the Board please, we can get through with this Exhibit No. 12 in about five or ten minutes. There are just one or two things. Just take page 17, Mr. Lauck. You note the reduction in cost of total transportation expenses to total operating expenses of 56.14 to 52.87 per cent.

Mr. Lauck: Yes, sir.

Mr. Lee: Not to burden the record too much or prolong the time too much, I have, I think, some things here that you already have admitted, and I will just read them to you. It is the question of these reductions of grades. Isn't it a fact that a reduction in grades, or change of line, and expenditures for larger locomotives and larger cars, would have the effect of reducing this ratio of transportation expense to operating expense?

Mr. Lauck: Yes, sir.

Mr. Lee: In fact that is why the money is spent, isn't it?

Mr. Lauck: Why undoubtedly that is why you invest your capital, in order to receiev a more economical operation, that is my whole point.

Mr. Lee: Yes; this addition to the equipment—

Mr. Lauck: I was just going to say that for each 43 cents you put in, you get 56 cents out.

Mr. Lee: This addition to the equipment and the additional

facilities such as tracks, stations and so forth, requires a great outlay, additional outlay, in the maintenance charge and that is the reason why the ratio of transportation expenses to total operating expenses has decreased also, is it not? That is the maintenance expenses have increased while the transportation expenses have decreased?

Mr. Lauck: Exactly.

Mr. Lee: Now all these additional facilities in stations and so forth, additional larger engines and cars, all have to be maintained, don't they, at an additional cost?

Mr. Lauck: Oh, yes.

Mr. Lee: For instance, if you build a double track railroad where you had a single track railroad before, it is going to cost you more to maintain that doubletrack railroad than a single track railroad?

Mr. Lauck: Exactly, yes.

The Chairman: But the relative cost of operation to maintenance could be increased, the profit of operation could be increased in the case of a double track?

Mr. Lee: I do not think I quite get you.

The Chairman: You asked the witness if a railroad was double tracked, it would cost more to maintain that road than it did a single track?

Mr. Lee: Yes, sir.

The Chairman: But the relative increase in the revenue results would be larger?

Mr. Lee: It might or might not be, yes, sir.

The Chairman: That is what it is done for?

Mr. Lee: It is done because your single track cannot carry the traffic that a double track could, and you put in a double track railroad to take the place of a single track on account of your increase in traffic?

Mr. Lauck: Doesn't your increase in traffic yield you a larger revenue gain?

Mr. Lee: The total?

Mr. Lauck: Yes.

Mr. Lee: Oh, yes. I do not know whether I got that.

Mr. Lauck: Doesn't it yield you a larger gain per unit of cost? If it doesn't do that, it seems to me that the railroad is improperly managed; you better not have the traffic.

Mr. Lee: I do not know as I get the drift of your thought there.

The Chairman: When you have more traffic than can be handled on one track and you double track the road, doesn't your revenue increase more than the fixed charges on the double tracking?

Mr. Lee: It should, yes, sir. I catch your point now. The witness is talking here about the total compensation of firemen and total compensation of other classes of labor. Say you are running 60 trains on a single track and you put in a double track, you are still running 60 trains but you have the same number of firemen running those trains on the double track as you had running the 60 trains on the single track, but your labor cost of maintenance of those tracks has increased, and therefore its proportion of the total operating expense has increased. Do you catch the drift of my thought?

The Chairman: Yes, sir.

Mr. Lee: Now, he is comparing the ratio of cost of firemen and the ratio of cost of labor to total operating expenses, transportation expenses. I think that is the ratio he is attempting to show here, that the increase in the ratio of maintenance labor has been greater than the increase in the ratio of firemen labor, taking the classes as a whole. All these additional things that have been put in have to be maintained.

Mr. Lauck: And maintained at a profit, we will say. Turn to the next page and you will find the relation of revenue.

Mr. Lee: I am talking here of the percentage of increase to operating expenses. They would naturally increase if you had more tracks to maintain and the same number of firemen—your percentage would increase—it is bound to. That was all I was referring to.

Mr. Lauck: The point I would like to mention there would be that the proportionate increase of expenses, from any source, would give this increase of revenue which might not be proportionate or might be greatly in excess of the proportion.

Mr. Phillips: Just in railroad terms, so I can understand it, there would be no increase of revenue unless there was an increase in business?

Mr. Lauck: From operating. The reduction of expenses—

Mr. Phillips: It takes more men to keep the firemen busy.

Mr. Lauck: Yes, that is what it means.

Mr. Phillips: In other words, you don't have to hire more firemen to do the increased work, but you have to hire more of other employees?

Mr. Lauck: According to Mr. Lee's account of the maintenance situation, with the heavier equipment, which has added to the burden of the firemen—the heavier locomotive which has added to the burden of the fireman's work, requires more labor to maintain them and also the track requires more labor to maintain the conditions under which the fireman works?

Mr. Lee: You understand, if the Board please, that it does not necessarily mean that if you substitute a double track for a single track, that your business is going to be twice as great on those two tracks?

The Chairman: Oh, no.

Mr. Lee: But your maintenance charges would be, perhaps not twice as great, but more for track labor, for instance, that would be more nearly twice as great.

The Chairman: Is the risk, and responsibility, and the physical hardship of the fireman less on a double track road?

Mr. Lee: I would think so, sir. I think my friend will agree with me on that, that there is less risk and less hardship on a double track than on a single track road.

The Chairman: Less responsibility.

Mr. Lee: I would think so. Do you agree to that?

Mr. Carter. What is that? The point the Judge asked was, and I think this is the fact and we can agree upon it: If there isn't less risk and responsibility on a double track railroad than on a single track railroad?

Mr. Carter: Without considering any other factor, such as the labyrinth of block signals and the greater density of traffic —take the Lake Shore for instance, do you mean to say that the responsibility on the Lake Shore with its double tracks is not greater than out on the Pea Vine?

Mr. Lee: I don't think that is what the Judge meant.

Mr. Carter: I would think, Judge, that other factors had a great deal to do with it. For instance, the density of traffic. If you were on a road with a light engine and there isn't any engine around to run into. I am sure you would not have any head-on collisions.

The Chairman: Perhaps the double track illustration is not

proper. What I was getting at if the use the railroads make of the surplus for betterments and improvements does not operate somewhat to the advantage of the firemen as well as the stockholders?

Mr. Carter: Well, if you take the Lake Shore Railroad, where they have a water level route and no grades, I believe they have got three or four tracks, and you compare that with some other road, where there is only one track, they might work as hard, or they might not work as hard. There might be more or less danger. There are so many factors to be taken into consideration I hardly think there could be a comparison.

The Chairman: Wherever the conditions are more favorable the railroad makes the situation about the same for the fireman by putting more work on him; is that your idea?

Mr. Carter: I think the two tracks and the fact that the Lord cut the grades down for the Lake Shore hasn't helped the fireman over there.

The Chairman: Have you finished with Exhibit No. 12, Mr. Lee?

Mr. Lee: Not quite. I think as we cannot agree on the fact of that single track or double track road, Mr. Carter and myself will have to leave it to the Supreme Court.

The Chairman: My colleagues have agreed on it.

Mr. Lee: That is where I was going to suggest that it be left. This table is on the basis of all firemen and all labor.

Mr. Lauck: Yes, sir.

Mr. Lee: It is not on the basis of—

Mr. Lauck: A fireman.

Mr. Lee: A fireman at all?

Mr. Lauck: Ratio of outlay to firemen.

Mr. Lee: It does not show what the fireman has got, or what he has not got?

Mr. Lauck: No, not what a fireman has got.

Mr. Lee: Not what a fireman has got. It does not in any way show, or indicate, or show a tendency whether or not the fireman has received proper compensation.

Mr. Lauck: A fireman?

Mr. Lee: A fireman.

Mr. Lauck: No, it is simply an attempt to locate the increase in operating cost.

Mr. Lee: All these comparisons on page 17 are on the basis of total compensation to certain classes of employees, and it does not indicate whether the individual fireman—that is what I said before. This comparison of labor cost between various classes of employees does not indicate the compensation to various individuals in those classes. It only takes in their aggregate compensation. I understand this is an arbitration to get additional compensation to individual men. While this ratio might have been very much greater or very much less, it would not indicate whether the individual fireman has gotten any more money or not, and whether or not he is entitled to any more money. I am talking about table 17. I understand you agree with that.

Mr. Lauck: Yes, sir, I agree with it, the object being to locate the relative proportion of different items of operating cost.

Mr. Lee: I think that is about all I want to say on Exhibit 12.

Mr. Carter: Are you going into other exhibits?

Mr. Lee: Yes.

Mr. Carter: I mean to say you will just keep on?

Mr. Lee: Yes; there are just a few things I want to go over with this witness this afternoon.

The Chairman: You think you will finish with this witness this afternoon?

Mr. Lee: Yes, I intend to.

Mr. Carter: I will have but very few re-direct questions to ask, very few.

The Chairman: I hope you can get through with Mr. Lauck this afternoon.

Mr. Lauck: I hope so.

Mr. Lee: Just a moment, and I think we can arrange to get through. How much time will you want?

Mr. Carter: I think thirty minutes.

Mr. Lee: We will get through with him this afternoon.

The Chairman: We will adjourn now until 2 o'clock.

(Whereupon, at 12:25 P. M., an adjournment was taken to two o'clock P. M.)

After Recess, 2.10 P. M.

W. J. LAUCK, resumed, further testified:

Mr. Lee: If I may, I will refer again for just a moment to Exhibit 12. It will not take very long, and I want to get something in the record.

The Chairman: What page?

Mr. Lee: Page 21: "Gross corporate income in 1902 was $233,973,044. Gross corporate income in 1912 was $356,560,375, or an increase of $122,587,331. Compensation of firemen in 1902 was $12,342,513. In 1912 the compensation of firemen was $22,615,962, or an excess for 1912 over 1902 of $10,273,449." I think I read the figures correctly.

The Chairman: Those figures are transposed.

Mr. Lee: Yes, I am reading the transposed figures. I think I read them correctly.

Mr. Phillips: Yes.

Mr. Lee: If I may refer to page 3, that table with the diagram, it shows an increase in combined tractive power of all locomotives of 120.69 per cent. That, I understand, is the increase in the combined tractive power of the railroads upon which this exhibit is based.

Mr. Lauck: Yes.

Mr. Lee: Of simple, single expansion engines, and it does not take into account compound engines?

Mr. Lauck: That is correct.

Mr. Lee: May not that increase have been brought about by an increased number of locomotives?

Mr. Lauck: An increased number of locomotives would increase the tractive power, yes.

Mr. Lee: It would increase the combined tractive power?

Mr. Lauck: Yes.

Mr. Lee: For instance, you might have one locomotive with a tractive power of 50,000 pounds, and if you bought another locomotive of exactly the same size, with 50,000 pounds tractive power, you would have an increase in tractive power of 100 per cent.?

Mr. Lauck: Yes.

Mr. Lee: That is all of that. I want to touch lightly—

The Chairman: You may couple that up with something else afterwards, but I have just asked Mr. Atterbury what these questions mean.

Mr. Lee: I was going to get at that in just a moment, but I will tell you right now what it means. You refer to the figures I quoted on page 21.

The Chairman: And what you asked about the diagram.

Mr. Lee: I will explain both of them. On page 21, gross corporate income shows an increase of 53 per cent. between the ten years, while the compensation of firemen shows an increase of 82 per cent. between the two periods.

Mr. Lauck: The increase of compensation of firemen is only ten per cent. of gross corporate income increase however, is it not, taking my basis of comparison?

Mr. Lauck: Yes, I suppose that is correct. That is, for instance, what you want to say is that gross corporate income has increased 12 times as much as the compensation of firemen?

Mr. Lauck: Yes.

Mr. Lee: That is the way you want to put it?

Mr. Lauck: Yes, to continue my tendency.

Mr. Lee: To continue your same line of reasoning?

Mr. Lauck: Yes.

Mr. Lee: Merely showing the tendency; but what I wanted to show was, that gross corporate income has increased 53 per cent. in these ten years, while the compensation to firemen has increased 82 per cent., on the witness's figures as quoted here.

The Chairman: What does that signify?

Mr. Lee: It signifies, sir, that the compensation to firemen has increased in greater proportion than the gross corporate income has increased.

The Chairman: Yes. Well, that has been my idea all the time. I do not think the witness has attempted to show anything different.

Mr. Lee: No, sir, it shows on the figures here. The only point I want to bring out is that the witness interprets that that gross corporate income has increased 12 times as much as the compensation to firemen. What that means to his mind I do not know. It does not mean anything to my mind.

Mr. Lauck: I think I have made myself clear as to what that means. It means to my mind that the relative increase in

productivity of firemen and other factors, with the amount accruing to capital, has been very liberal as compared to the increase to firemen.

Mr. Lee: Without taking into account the capital commitment in the road at all?

Mr. Lauck: No, we have never considered that at all.

Mr. Lee: No, we have not considered that at all. What I want to bring out in the top of this table on page 3, showing the combined tractive power of all locomotives, is that it means that the combined tractive power, adding up all locomotives in 1902, and adding up all the tractive power of all the locomotives in 1912, that this combined tractive power has increased about 121 per cent. What I am going to get at in a minute is that if there were portions of roads that were included in 1912, that were not included in 1902, this 121 per cent. might not be correct.

Mr. Atterbury: If there were what included?

Mr. Lee: If there were portions of road included in 1912 that were not included in 1902. I will give to you directly the one case that I have in mind.

Mr. Lauck: Mr. Lee, I don't know whether it is proper for me to ask a question—

Mr. Lee: Go head.

Mr. Lauck: When you increase your number of locomotives you increase your capital commitment, do you not?

Mr. Lee: Yes. I am not connecting page 21 with page 3 at all.

Mr. Lauck: I was just going to make the point if your locomotives are profitable why you would increase your gross corporate income of course?

Mr. Lee: You understand, Judge, that those two things I have got into the record have no connection in my mind.

The Chairman: I thought they did.

Mr. Lee: I want to disabuse your mind and the witness's mind, if you had that idea.

Mr. Lauck: I thought you did.

Mr. Lee: No, they have no connection in my mind in the present talk. What I had in mind about this increased tractive power was as to the Baltimore & Ohio. As I understand it, the witness has taken the Baltimore & Ohio reports to the Commission in 1902, and the Baltimore & Ohio reports to the Commission in 1912.

Mr. Lauck: Including the Baltimore & Ohio Southwestern, you mean?

Mr. Lee: In 1902 separate reports were made to the Commission for I think 11 different roads—10 or 11 different roads that were all combined in the Baltimore & Ohio system and for which one report was made in 1912. For instance, the Valley Railroad of Virginia, the Ohio River Railroad, the Ravenswood, Spencer & Glenville—most of those are small except the Ohio River and the Cleveland Loraine & Wheeling and the Pittsburgh & Western. Those made separate reports to the Commission in 1912, and are combined in the reports to the Commission in 1912. This one particular case may not be very material, but if there are many of those cases in this combined report, this increase in tractive power of 121% is not particularly convincing to my mind that the tractive power has increased 121%. Am I correct in that, Mr. Lauck?

Mr. Lauck: I don't think it would make very much difference. I think the same locomotives that were on the Valley Branch of the Baltimore & Ohio in 1912, are there now.

Mr. Lee: But they are not taken into your computation for 1902?

Mr. Lauck: I think it would make some difference—

Mr. Lee: For instance, the Pittsburgh & Western, 362 miles, the Cleveland Lorain & Wheeling, 192 miles. The difference it makes in this Baltimore & Ohio exhibit is that the tractive power, instead of being 218% increase; it brings it down to 151%?

Mr. Atterbury: What is the average tractive power of all locomotives in 1902 and 1912?

Mr. Lee: I don't understand, sir, that he took the average tractive power for this exhibit.

Mr. Atterbury: I was just looking over these statistical tables to see whether there was anything indicating that increase.

Mr. Lauck: No, sir. I took the percentage of increase in 1912 over 1902.

Mr. Lee: That would be a proper measure and I think is the measure used generally by operating officials. That would not be affected by the point I raise. His ratio then would be perhaps proper; but to show this long black mark at the top as

the increase in per cent. of tractive power for certain roads in 1902 when other roads were taken in in 1912, is not exactly correct. There has been an increase in the tractive power of locomotives; there is no question about that, and an increase in the tractive power also. But if we find there are many of these cases it might have been quite a material bearing on this particular point.

Mr. Lauck: It would not disturb the point, would it, Mr. Lee, of the large increase in tractive power of locomotives in 1912 as compared with 1902?

Mr. Lee: There has been—we spend money to get it.

Mr. Lauck: That is the only point I cared to establish. I don't care to establish the exact percentage of increase.

Mr. Carter: Pardon me. Were there statistics on that same page from the same sources, other statistics?

Mr. Lauck: They were from the same sources.

Mr. Carter: Then if they were used relatively would not the proportion be comparatively accurate?

Mr. Lauck: Yes, the relative proportion would remain the same.

Mr. Lee: Not exactly, I think, the other statistics on that page?

Mr. Carter: Yes, taking them altogether, you know.

Mr. Lee: They might or might not. I could not say.

Mr. Lauck: The main point I think is not the exact per cent. I have explained that I am not attempting to show, for instance, in the number of freight firemen, the exact percentage, because that is impossible. I am attempting to arrive at a tendency there.

Mr. Lee: That would have a material effect, however, Mr. Lauck, would it not, on the statistics of gross corporate income and funded debt and dividend payment and surplus, if you had some roads in 1912 that you didn't have in 1902, when you get over to your exact figures?

Mr. Lauck: Did those roads report separately in 1902?

Mr. Lee: Yes, I think there were 10 or 11 separate reports to the Commission that year, now combined in the Baltimore & Ohio system.

Mr. Lauck: If those roads are roads that are earning, that

would make some increase in the gross corporate income, but I think nothing of any importance.

Mr. Lee: If the Board please, I personally at this time, do not know what difference this will make. I really don't know whether it is a material difference. We are having these reports gone through upon which these statistics and conclusions were based, and if we find that the conditions surrounding the statistics in 1912 are very much different from those surrounding the statistics in 1902, we would expect to bring out that point. This is just one, apparently, rather glaring case. It may not be a very material matter, this particular case, but it is a case where 10 or 11 roads are consolidated into one, in 1912, that were separate in 1902, and if there are many of those cases it might rather affect, and seriously affect, the statistics as put forth in Exhibit No. 12.

Mr. Lauck: Might it not be true, Mr. Lee, that the inclusion of these roads in 1912 would show less gross corporate income than in 1902? Some of these roads may be operated at a deficit.

Mr. Lee: Yes, it may be one way or the other. That is why I say it may or may not be material. I do not want to take up the time of the Board ,and if we find it is not material we will drop the subject.

Mr. Atterbury: Did I understand Mr. Carter to ask the question that if there was a factor of error in the statement of 1902, and the same factor of error in 1912, that then the figures would be comparable; was that Mr. Carter's question?

Mr. Lauck: No, sir; his statement was that if for all the other statistics in 1902, the same basis or the same report was used as used for the gross corporate income or the total tractive power, and therefore the relations would be the same.

Mr. Carter: The relations for the year 1902, and then the relations for the year 1912.

Mr. Lauck: I would like to reiterate that in the diagram I am establishing a tendency on a general movement, and do not wish to show that this is 120.5 per cent., and claim that it is accurate to the last degree, because it is impossible, under the method of proportioning numbers, to do so.

Mr. Lee: Also it would have a material effect on these revenue figures. For instance I have these figures before me, and I will just read them. This is the figure of operating revenue

of all the properties in 1902, $62,215,000; in 1912, $92,591,000, an increase of $30,379,000 instead of an increase of $11,416,000; or, in other words, an error of about 25% in the revenue.

Mr. Lauck: Well, that would not affect the results, would it, Mr. Lee, if you would apply the same method and use the same report in 1902 and 1912; it would affect the total in the total, but at the same time if you leave out the train miles and the locomotive miles—

Mr. Lee: It would affect more materially the statistics on page 20, and might not affect the others so much; I am not clear myself, and do not care to have you commit yourself one way or the other.

Mr. Lauck: I do not think it would have much effect.

Mr. Carter: Would not the same situation be found if a railroad was building, we will say in 1911, and you found certain relative percentages or ratios between income and expense and so forth, and yet in 1912, they had built 100 miles more, and you found the relative elements of expense and income, it would not be necessary to deduct that 100 miles to make a comparison between 1912 and 1911, would it?

Mr. Lauck: Oh, no, sir.

Mr. Lee: These properties, however, were in existence at that time, and made reports to the Commission.

Mr. Lauck: I knew the B. & O. Southwestern was taken in, I have forgotten, at a recent date, and included in the main operating report. I did not think that that would have any material difference.

Mr. Lee: Well, it might or might not. I do not think at this time, until we develop the fact, whether it would or would not make any material difference, it is worth while taking up the time of the Board. It might or might not.

Mr. Atterbury: There is just one question before you leave this. I would like to have the witness's opinion on this point. As I understand it, Mr. Carter questions the correctness of the base figure, that is, the number of firemen. Now, if the same factor of error existed in 1902 as existed in 1912, the results that are obtained from using the number of firemen as a divisor, are they necessarily incomparable; in other words, will the Board have to throw out the statistics in this—

Mr. Lauck: Per fireman.

Mr. Atterbury: Where the number of firemen enters as a factor in the result.

Mr. Lauck: As I expressed my view the other day that this factor of error may remain constant, that is, assuming that the railroad had the same element of error in 1902 and the same in 1912, but the statistics are worth less in my opinion, on any per fireman basis.

Mr. Atterbury: Then the results for what they purport to be are comparable, notwithstanding the error.

Mr. Lauck: Well, they are comparable, but it seems to me that they have no value after realizing that the error is in them, and realizing the danger of using any such statistics, that it would be exceedingly dangerous to establish any comparisons on that basis. Just as I have said about the diagram, that it illustrates a tendency, I think, but not anything that can be accepted as a fact.

Mr. Carter: Gentlemen of the Commission, the point I wanted to bring out, that if because of the fact the Baltimore & Ohio Railroad had absorbed one or two little lines, it is no longer possible to compare 1912 with 1902, then we might say there are no roads in existence, with perhaps a few exceptions, where we can compare 1912 with 1902, because most all roads have built some branches, are a little larger to-day than they were in 1902, the mileage is increasing all the time, and therefore if we are going to assume that because the B. & O. has taken over some minor properties, and therefore has an increased mileage, or perhaps an increased number of firemen or the number of locomotives by that fact, then the same principle would be involved if the Chicago, Burlington & Quincy in 1902 did not own a line into Sheridan, Wyoming, and in 1912 it did, therefore we could not make any comparisons between 1912 and 1902, because they had not built their Sheridan line. That is the point I wanted to bring out, the fact that the Baltimore & Ohio Road happened to buy this instead of building, would not change the situation.

Mr. Lee: As I think I stated to the Board, we were not clear whether it had any material bearing on the main issue.

Mr. Carter: I think, as I said before from my understanding of the case, if it has any material bearing, then there are no statistics of any railroad hardly, that are comparable, because there is always a change of mileage in 11 years.

Mr. Lee: Mr. Lauck, I am going to do a little supposing now, just for a few minutes.

Mr. Lauck: You have been doing a great deal.

Mr. Lee: Suppose a fireman received an average pay of $100 per month, I am taking these figures in round figures, or $1200 a year, this amount capitalized at 5% is equal to a capitalized value of $24,000 per fireman. The increase in number of firemen in 1912 over 1902 is shown by your tables to be 5,798. The capitalized value of this number of firemen is, therefore, 5,798 times $24,000, or $139,152,000. You show that the amount of actual new capital put into the property, excluding that taken from income, was $1,849,971,000. The revenue train miles in 1912 were 412,000,000 miles.

Mr. Lauck: I do not know whether I am retaining all these figures or not. Go ahead.

Mr. Lee: Well, I think they can be verified.

Mr. Lauck: I mean retaining them in my mind.

Mr. Lee: Here is the point I am getting at. The capital assets per train mile were increased $4.60; the capitalized value of firemen increased 33 cents; therefore the relative profits should accrue in the ratio of 14 times to capital based on the capitalization of the fireman. Am I right or wrong?

Mr. Lauck: It seems to me you are over-capitalizing.

Mr. Lee: It shows from your exhibit that the capital got only 11 times as much, but from this statement they are entitled to 14 times as much.

The Chairman: Well, either way will be enough for you.

Mr. Lauck: Yes.

Mr. Lee: They are due 14 times as much, and only got 11 times as much.

Mr. Carter: I am interested in knowing how much you capitalize that fireman at. I want to know what they are worth.

Mr. Lee: There you are (handing paper). Figure them out.

Mr. Carter: At 5 per cent. it would be $24,000 per fireman. I wanted to know how much you are going to pay for a man if he gets killed. $24,000?

Mr. Lee: That is all right, some get more than that.

Mr. Carter: In Texas?

Mr. Lee: I don't know where it is.

Mr. Carter: Or in Arkansas?

Mr. Lee: These individual exhibits which were put in, as I said before, we are having them analyzed, and if there are any material discrepancies which would affect the final result, we will perhaps raise the question a little bit later on. I presume the witness will be here?

Mr. Carter: The witness will remain with us always, that is if he does not get sick. He will be here until the close.

Mr. Lee: Taking your Exhibit No. 49, you quote in that exhibit from the annual report of the Baltimore & Ohio Railroad for the year ending June 30, 1912. I am about to bring out, if the Board please, that in the main these extracts are correct, but to our mind do not go quite far enough. For instance, in this annual report of the Baltimore & Ohio Railroad which is quoted, I will read the paragraph ahead of the quotation given here: "The extensive program for additions and betterments authorized and directed by the Board from time to time during the past three years, and for which provision was made through the issue of the company's three year notes, is nearing completion. Much of the more important work has been completed, and an indication of the benefits to be expected from these improvements is reflected in the operations of the year." Then substantially this quotation comes: "The point I wish to bring out in that is that these results that are mentioned here, were largely brought about by this issue of money."

Mr. Lauck: I believed I acknowledged that, Mr. Lee.

Mr. Lee: What I am trying to bring out is that this quotation is not complete in itself.

Mr. Lauck: Does not that quotation say at the end, "if the present program is completed?"

Mr. Lee: No. "With the final completion of the work now under way it is believed that considerably larger volume of business may be handled, and with more marked economy."

Mr. Lauck: Well, that refers to the section you were just reading.

Mr. Lee: Yes, but that was obtained by additional investment in the property.

Mr. Lauck: I believed we discussed that on some other road at the time, and I—

Mr. Lee: We discussed the Panhandle. I am coming to that in a moment.

Mr. Lauck: And I conceded the point, as I have always conceded, that capital had been a factor.

Mr. Carter: Don't you believe the extra efforts of the firemen on the Baltimore & Ohio contributed to that too?

Mr. Lauck: Well, of course the B. & O. has put a good deal of capital into the road—

Mr. Carter: You are going to give all to capital, as Mr. Lee suggests?

Mr. Lauck: My point through all the argument has been, as the result of better capital equipment, the work of the fireman has increased, and his productive efficiency has increased by the use of better locomotives and better cars and better roadbed and structures and—

Mr. Carter: Suppose he has—

Mr. Lauck: I will answer your first question. It has been my consistent argument, referring to the question whether the firemen did anything; of course the B. & O., as is well known, has put a great deal back into the property out of income. If you mean in that sense whether the firemen have contributed anything, about $34,000,000 in the last twenty years I think.

Mr. Lee: More than that I guess. There is this D. L. & W. statement that has been spoken of here. That is in the annual report of 1910 instead of 1911.

Mr. Lauck: 1910, yes, sir.

Mr. Lee: 1910?

Mr. Lauck: That is stated there, is it not?

Mr. Lee: No, this says 1911. I think the 1910 report is just a typographical error. I do not find it in the 1911 report at all.

Mr. Lauck: He is referring to the ten year report, 1910 and 1900.

Mr. Lee: I mean this anual report of the D. L. & W. was for 1910 and not 1911. I have the 1911 report, and cannot find it here, so I think it must be a typographical error.

Mr. Lauck: Those were all verified, but there might be a typographical error.

Mr. Lee: . Is it your purpose to straighten out this Pittsburg, Cincinnati, Chicago & St. Louis Railway statement?

Mr. Lauck: What is that, the one we were speaking of the other day?

Mr. Lee: Yes.

Mr. Lauck: Yes, I am going over to Washington and will get the correct report.

Mr. Lee: I would like to have you insert two or three words at the end that are not in this one.

Mr. Lauck: I thought we had done that. You read that.

Mr. Lee: I will read it in, if that is perfectly agreeable to you.

Mr. Lauck: Yes, I do not take any issue with any of your points there. I have conceded all along that capital has been a factor, but the burden has been on the firemen.

Mr. Lee: Taking Exhibit No. 50 in the second column, the figures, ratio of cost of firemen to operating revenue, and applying the percentages you speak of, 10, 15 and 20 per cent., etc., I think I am correct, and I think you will agree with me that if you applied wages on the basis of weights on drivers of various locomotives, these percentages in themselves would not have much relation to that. This is just a statement of what 10% and what 15% would be?

Mr. Lauck: Yes, sir.

Mr. Lee: It has no relation to the present demands at all?

Mr. Lauck: Not on the basis of rates. It is just on the basis of revenue.

Mr. Lee: It seems to me 10% on one road is entirely different from 10% on another road?

Mr. Lauck: It would all depend on the relative revenues.

Mr. Lee: And one road is perhaps better able to stand 10% or 15% than another road?

Mr. Lauck: Some roads, of course, according to the revenue basis, probably could not stand it at all.

Mr. Lee: What is the particular purpose of this exhibit? Has it any particular purpose, or is it just giving the percentages of increase?

Mr. Lauck: I thought it would be convenient, if any information was wanted as to what would be the effect upon revenues of a certain per cent. of increase, to ascertain it by reference to that exhibit, and at the same time, by ascertaining what effect a certain per cent. of increase in a case of firemen, which I have used altogether as my basis, would have upon gross revenue?

Mr. Lee: It would have a very different effect on some roads than it would on others?

Mr. Lauck: Oh, yes, very different.

Mr. Carter: Those roads that are already paying a high rate would not be affected so much as those roads that have saved a few million dollars by not paying that rate. Is not that true?

Mr. Lauck: It would all depend upon the revenues. I could not say what the relation between—

Mr. Carter: I mean to say that if some road was paying a remarkably low rate at the present time, and it was brought up to this standard we are asking for, it would affect them more than it would a road that was already paying nearly this rate?

Mr. Lauck: Yes, the cost would greatly increase.

Mr. Carter: And it would require them to go into their stocking and take out some of the money that they had saved on their firemen in the last few years.

Mr. Lauck: It would make them go down somewhere I suppose.

Mr. Lee: I am very much obliged to Mr. Lauck.

RE-DIRECT EXAMINATION:

Mr. Carter: Mr. Lauck, I will ask you only a few questions. If I had asked all the questions that I have written and then rolled up and thrown away I would be asking questions for a year. I will only ask a few questions, to reiterate what I think is the intent of Mr. Lauck. Turning to page 4, when you say total cost of firemen, you mean the total cost of all firemen, without regard to what their rates of pay may be?

Mr. Lauck: Yes, exactly.

The Chairman: Page 4 of what exhibit?

Mr. Carter: Exhibit 12. Turn to page 4, Article 6, Increase in Total Cost of Firemen. It is possible, is it not, that the total cost of firemen might have increased 1,000% without any increase in the rate of pay? For instance, suppose a small factory had started to work in 1902, and had a hundred men working, and in 1912 it had blossomed out into a huge industry and had 1,000 men working. Would not the increase in total cost of those employees be 1,000%?

Mr. Lauck: It might have increased a great per cent. without affecting the individual employe, yes, sir.

Mr. Carter: You do not mean to answer my question, and I will ask it again. When you refer to the increase in total cost of firemen, does it even indicate—

Mr. Lauck: I have used that altogether. That is the basis of all my arguments, and that gives the increase in the total cost of firemen, the outlay or cost to the railroad, without regard to the individual fireman, without regard to how many hours he works, without regard to any conditions of employment.

Mr. Carter: Then the great increase in the cost of firemen may be attributed to an increased number of firemen—yes or no?

Mr. Lauck: Yes, it might be.

Mr. Carter: Therefore when we show all the way through here that the total cost of firemen has been so much, it means the total cost of all the firemen.

Mr. Lauck: Yes.

Mr. Carter: For instance, suppose it could be shown just for argument sake that in 1902, there were only 30,000 firemen, and that in 1912, there were 60,000 firemen, even at the same rate of pay, it would show an increase of 100% in the cost of all firemen. Is not that true?

Mr. Lauck: Yes.

Mr. Carter: The reason I am asking these questions is that there seems to be among some of the auditors here an idea that Mr. Lauck means that the individual fireman has received this great increase.

Mr. Lee: We do not even claim that.

The Chairman: When you say "the auditors," do you mean the people who are listening?

Mr. Carter: Yes. If listeners would get that impression, I am afraid other people might. Now, pardon me, if I am reiterating questions that Mr. Lauck has already answered. I simply want to emphasize it. At the head of page 6, where you say "Total average annual expense per fireman," that does not refer to the rate of wages paid to the fireman entirely, does it?

Mr. Lauck: That does not refer to that at all. It is the total annual compensation divided by the number of firemen on June 30.

Mr. Carter: That might be brought about by having firemen work 15 hours where formerly they only worked 10 hours.

Mr. Lauck: It might be, yes.

Mr. Carter: Therefore, if it is shown that they are paying a 75% greater expense per fireman now it might be in additional hours of work and not in additional rates of pay?

Mr. Lauck: It might be, yes.

Mr. Carter: Now, turn to page 7, at the head of the page, where you speak about the average expense per passenger firemen, and back on the last table on page 6, the average expense per freight train fireman; I understand that you have repeatedly said that you do not believe that this is an accurate segregation or division of expense among passenger and freight firemen.

Mr. Lauck: Yes, sir.

Mr. Carter: I understand you have simply adopted the method which has been used by others?

Mr. Lauck: Just to illustrate a tendency.

Mr. Carter: You have not invented some new way?

Mr. Lauck: Oh, no, sir.

Mr. Carter: Turning to page 11, total cost per revenue train mile of firemen. Presuming that in 1902 a fireman was able to go 100 miles in ten hours, at $2.00, it cost the railroad 2 cents per train mile—presuming they were all revenue train miles, it would be two cents a mile. Now, let us presume that because of the big trains in 1912, it took them 15 hours to go over the road with the same amount of mileage, quite an increase in the expense of firemen per train mile would result, would it not?

Mr. Lauck: Certainly.

Mr. Carter: Would that be to your mind any benefit to the fireman, because he had cost the road fifty per cent. more per train mile, because he was longer getting over the road?

Mr. Lauck: There would be no increase in the rate of pay.

Mr. Carter: Although the expense per fireman per train mile would have increased fifty per cent.

Mr. Lauck: Yes.

Mr. Carter: Now, will you turn to page 15, total cost and revenue per locomotive mile cost of firemen. The same thing would apply to the locomotive mile, if the locomotive was 15 hours going over a 100-mile division, where formerly it went over it in ten hours, would it not?

Mr. Lauck: Yes, sir.

Mr. Carter: On page 17, you show the total cost of firemen to total labor cost of transportation. In 1902, it was 4.96; in 1912, it was 4.94, a decrease of two points.

Mr. Lauck: 2/100 of one point.

Mr. Carter: How is that?

Mr. Lauck: A decrease of 2/100 of one point.

Mr. Carter: 2/100 of one point. Now, what would that indicate; would it indicate that notwithstanding the increase in the number of firemen, and any increase in wages they might have had, that at least as great increases had occurred in one total labor cost?

Mr. Lauck: It indicates that the relative cost of firemen to other labor has practically remained stationary, or, is slightly less than it was in 1902.

Mr. Carter: Now, you were asked the question this morning, if you believed that firemen should share in the prosperity, and also in the adversity of a railroad. Is it not a fact, although you are not a railroad man—that the first person, not the stockholder, not the managing officials, not the station agents, but the first person to feel the disastrous effects of a panic or a reduction in business is the man employed in the actual transportation of revenue freight? For instance, suppose the business of the Lake Shore was depressed next month by a panic to that extent that their business decreased 50 per cent., wouldn't that decrease the earnings of the firemen on that road 50 per cent. immediately, taking them collectively, I mean?

Mr. Lauck: There would be less traffic handled, and consequently less employment of firemen.

Mr. Carter: I mean to say the firemen, taken collectively, would lose fifty per cent. immediately before the stockholder or anybody else had heard about it.

Mr. Lauck: Yes, there would be 50% decrease in the outlay for firemen.

Mr. Carter: What would the remaining firemen do; wouldn't they be just as proficient individually in the production of revenue as they had been before the other fifty per cent had been laid off, and given no job, providing they handled as much traffic?

Mr. Lauck: If the conditions of transportation were the same.

Mr. Carter: I mean to say, by reducing the number of firemen to the requirements of the traffic, the company has lost nothing so far as the productive efficiency of the firemen that remain in the service is concerned.

Mr. Lauck: Not on a revenue train mile basis, no.

Mr. Carter: That is what I mean, presuming they are haul-

ing just the same tons, and getting the same freight rate. Now, upon whom has the adversity first fallen, the firemen who are out of jobs, if they are laid off? For instance, in 1908 I am told that when the depression of business struck the Pennsylvania Railroad East, they laid off 1700 firemen. Now, taking the firemen collectively, don't you think that they were sharing in the adversity of the Pennsylvania Railroad more than anybody who still remained in the service, be they stockholders or anybody else?

Mr. Lauck: They were sharing in the adversity. I don't know to what extent.

Mr. Carter: Gentlemen of the Commission, the point I want to bring out is the firemen can share in adversity without a reduction in wages. They do share in every depression of business; the men in train service bear the brunt of all depressions, and it is upon those men who are working by piece-work system that the burdens of depressed business fall long before the stockholder or any other man in the service feels it.

Mr. Lee: How about the maintenance of way men and maintenance of equipment.

Mr. Carter: If the maintenance of way men are reduced in the same manner, then they suffer in the same manner, but ordinarily they first wait until the firemen are out of a job before they discover that they must put somebody else out of a job.

Mr. Lee: I would call the attention of the Board to the fact that the witness at the table is not under oath at all.

Mr. Carter: I agree that that is true, but I wanted to show that there were other methods of sharing in adversity without a reduction in wages.

Mr. Lee: Do you know anything about the operations of a railroad. I think you stated you did not, Mr. Lauck, except in a very general way.

Mr. Lauck: My answer to the question was that the firemen would lose employment, but compared with other factors, I did not know the extent of the loss.

Mr. Lee: You do not know really anything about the detailed operation of a railroad though?

Mr. Lauck: Nothing about the technical side of the operation.

Mr. Lee: Nor the detailed operation of it, how the firemen are dropped off, who asks to have them dropped off the list; you do not know who does that?

Mr. Lauck: No, sir.

Mr. Lee: That is all.

The Chairman: You are going to remain here?

Mr. Lauck: I am going away over to-night, but I will be here the rest of the session.

The Chairman: Any other witness?

Mr. Carter: You have requested some information I think that Mr. Lauck is going to try and prepare.

The Chairman: Will you put on any other witness now, Mr. Carter?

Mr. Carter: No, sir, we tried to close last Saturday night, and I think we have got enough time to the thirty days charged to us now for direct evidence.

The Chairman: Do you wish to introduce a witness this afternoon?

Mr. Lee: Prefer to start in the morning, sir, with the consent of the Board.

The Chairman: By agreement of all parties interested in the Arbitration, we will adjourn this afternoon to resume the Arbitration at 9 o'clock Friday morning.

(Whereupon at 3 o'clock P. M. an adjournment was taken to March 21st, 1913, at 9 A. M.)

PROCEEDINGS.

ARBITRATION

between the

EASTERN RAILROADS

and

THE BROTHERHOOD OF LOCOMOTIVE FIREMEN AND ENGINEMEN

Submitted to Arbitration, under the Erdman Act,
By Agreement Dated Feb. 18, 1913

AT WALDORF ASTORIA HOTEL
New York

March 21, 1913.

HULSE & ALLEN, Official Reporters,
115 Broadway,
New York.

New York, March 21, 1913.

Met pursuant to adjournment at 9:14 A. M.

Present—Parties as before.

The Chairman: Mr. Lee, you may call your first witness.

Mr. Lee: If the Board please, in opening our case I want to say a few words. First, I will say that we propose, a few days later in the case, to put on certain statistics, and to explain those statistics, showing what they mean. We propose to draw certain conclusions from those statistics, which conclusions we think appear on the face of the statistics. There is no theory in our statistics, because we believe that we are confronting a fact and not a theory.

There are a number of these statistics. A good many of them are compilations of the existing schedules which have been gone over, and in order to save time when the statistics are presented, and to give our friends, the firemen, a chance to go through these statistics we have thought we would present them with a copy of those statistics this morning, so that they may go through them and be prepared to ask any questions that they may desire to ask when they are presented. If there is anything wrong with the statistics, we want to know it. So I am going to present Mr. Carter with a copy of them, so that he will be ready when we put the statistics in.

There are two volumes of the statistics. One is a summary of the rules of pay and regulations covering the United States. The other volume contains statistics that have been compiled, showing various matters which will be explained at the time they are put in. I will say that we do not desire at this time to burden the Board with these large books, in the way of carrying them around, but if the Board desire them to look over ahead of time, we shall be very glad to furnish them to you. We have them ready.

There are of course a good many of these statistics. They cover the railroads as a whole. It was necessary to send for certain information concerning the statistics, and we have here, as nearly as we could get at them, the instructions and requests that were sent to the various roads for the statistics. These

necessarily are largely summaries of the replies from the various roads interested in the movement, and the information from which these summaries are made is in our possession, and if the Board or the firemen desire to see that information, we should be very glad to present it. Of course there is a mass of stuff that has been gone over and collated, added, subtracted and divided, that we did not think would be of particular interest, and that would involve the question to a very great extent.

Here are the instructions, as a general proposition that were sent out to the railroads, from which these statistics have been prepared. These are also presented to Mr. Carter, in order that he may go through them and be in a measure prepared when we put in these statistics.

I would also say that this matter is a very important one, a most important one to the railroads as well as to the men. I believe my friend, Mr. Carter, in his opening address mentioned the fact that the firemen had twice reduced their request. As we have figured it, the original request amounted to a 77% increase of the payroll. As we figure it, the second request amounted to about 55% increase in the payrolls.

This last request, as we figure it, amounts to about a 35% increase in the payrolls. Mr. Carter's concession that he speaks of, in dropping from 77% to 55% and then to 35% appears to us, to use a homely expression, to be a good deal like stage money; that he really has lost nothing. But on the other hand every cent that the railroads are required to pay, is hard, cold money. It means money, and money is the sinews of railroad life. We must have it in some form or another, and the way we earn it is the way we get it.

The matter being so important, we suggest to the Board that in addition to putting in the testimony that we have, which of course could be extended for weeks and weeks, but we do not desire to do that, we hope to close our case, depending of course on the cross-examination by Wednesday next; but, in cutting down our case, we have felt that we would like to file a brief within two or three days after the case is closed. We make this statement now, because necessarily the brief must be made up during the sessions, and must be ready shortly after the sessions to be of any service to the Board. It is merely to place in short form our reasons why we think that the demands of the firemen

are extravagant, and we feel that those reasons should be placed before the Board.

We are making this statement now, and asking for this permission at this time, so that our friends on the other side would have ample time to do the same if they so desire it. We request that permission.

The Chairman: The request with reference to the brief is granted.

Mr. Lee: Thank you, sir.

The Chairman: We will expect that brief to be ready within three days after the case is closed.

Mr. Lee: After the hearings have been closed?

The Chairman: And, I take it for granted, the other side will file a brief too, we would like to have a brief from both sides, and those briefs will be exchanged each to the other, before we consider them.

Mr. Lee: The reason I made this announcement, made this request at this time, was to give our friends notice that we desire to do that, so that if they also desire, they could do the same.

Mr. Carter: Pardon me, the fact of the matter is I won't have time myself, and I have not anybody else to do it for me. The reason that I consumed but little or no time in the opening statement of the case, is that I would like to have considerable time in closing the case. What we have to say will be said as best I can, at random, without any notes, and it may take a whole day, to give it, and I ask you to accept that in lieu of opening statements and briefs.

The Chairman: It is agreed to, then. Nevertheless, I have found, Mr. Carter, from my rather long experience on the bench, sitting alone for some years, and with associates for three years, that it was always well enough to reserve the right to make the last statement. You have the right to make the last statement, in this case; you have the opening and the closing and, notwithstanding your proposition to give us your brief in the nature of a dictation which will be taken down, of course, and we shall have it, we will furnish you with a copy of the brief that is handed to us by the other side, before the Board considers it at all, and you can take such action then, in reply to it, as you may wish.

Mr. Carter: I do not believe at this time we could change

our plans. Of course, if there is something in the brief that you want me to reply to, I shall be glad to do so, but if you care to see my brief, just remember what I say in the closing statement.

The Chairman: Yes, but the Board will not receive anything from one side that the other side does not see beforehand.

Mr. Carter: I do not object to it, not at all.

The Chairman: With that understanding, we will proceed.

Mr. Lee: Just exactly how would the Board suggest that should be done, sir? That, at the time we forward our brief to the Board, we forward a copy also to Mr. Carter? That would be agreeable to us.

The Chairman: And, you can furnish us with some extra copies?

Mr. Lee: Oh, yes, give you as many as you desire, I think we can, half a dozen.

The Chairman: That would be plenty, yes; all we want is to have evidence of the fact that the other side has a copy of the brief before our conferences begin.

Mr. Lee: My idea, sir, in presenting a brief was this: In following through a case, and in conducting a case, as I, being a pseudo-lawyer, for the present see it, there must, of necessity, be more or less changing from one subject to another, and it might be that the Board would not exactly follow our line of thought, and I thought that if we had that stated shortly and as clearly as we could in the brief, the line of thought that we are trying to follow, it would help the Board in telling what that thought we were trying to prove is, or what we were trying to prove. That was my idea in giving a brief to the Board.

There is another thing about which I desire to make a statement, and with the indulgence of the Board I will do so. I would like to say a few words as to the general theory which will underly the evidence we will present, and ask you to consider.

The railways appear before this tribunal as institutions built up by the investment of private capital, and yet unable to control the price at which they may sell their transportation, to produce which is the purpose of their existence. We believe that it is wise and in the public interest that the people should, through properly constituted commissions, protect themselves

against unreasonable or discriminatory charges or practices by public utility.

But the railroads constitute institutions which, not only cannot control the price of their product, but they have not the privilege of getting, in the cheapest market, the labor with which that product is largely manufactured. They can neither utilize the most favorable market, nor can they refuse to buy.

They must keep the transportation machine moving. The public has given unmistakable evidence of a disposition highly to disapprove of any interference with railroad operation, no matter by whom caused.

It was in recognition of our responsibility to this public that we consented to abide the arbitrament of this Board.

It should be understood that before this tribunal was constituted, there had been long and tedious negotiations between the firemen and the railroad managers. We conceded that the firemen were faithful and hard working.

We offered to apply to them the conclusions of the fair and able Board which had adjudicated last summer the case of the engineers. But the demands of the men were so far beyond what we felt we could in reason concede that an impasse was created which—to prevent the public inconvenience of a strike—your Honorable Board was constituted to dissolve.

This Board represents the public in a peculiar sense. It embodies primarily the widespread and justifiable view that strikes on public utilities should not be permitted to take place. It gives visible evidence of the principle that public convenience is paramount, and that to that end all interests must bow.

To such sentiment the railway companies feel a keen sense of responsibility. Their corporate character renders them peculiarly subject to a belief on the part of the public that responsibility for any cessation of traffic rests solely upon the railway managers.

To our firemen friends, however, this sense of responsibility does not seem to be so acute. They represent no one but themselves, not even their fellow workmen in other lines of railway employment. They cannot experience the direct results of public displeasure. Their purpose is with an eye single to but one achievement. This is not said to blame or criticize.

Railway employees have come to know that a strike which

would tie up traffic is well nigh unthinkable. They know that if a strike doesn't take place, the railways must give way. The men make large demands upon railway managers not expecting those demands to be granted, but believing that arbitration must take place, and that in the end the splitting of the difference between what they demand and what the railways offer will result in their favor.

In thus stating the case we but paraphrase the observations of the representative court which adjudicated the case of our engineers but a few months ago.

The course of railway labor in the United States moves in a circle which is certainly not economic.

Originally, wages of engineers and firemen were on a mileage or hourly basis. The theory was that there were many unforeseeable and incidental features of their employment, and so a lump sum was fixed to cover the duties as a whole. As time went on, a claim was made for separate pay for each of the incidental duties. Then the basic sum would be raised and the incidentals had to go along too.

There was originally a virtual equilibrium in the wage payments of this country. Railways west of the Mississippi paid higher wages because labor was scarcer in that territory, and the cost and conditions of living were less favorable. There was a similar differential in favor of Southern roads.

The plan of labor leaders has been to get the roads paying lower wages to raise them. Then apply pressure to those paying higher wages to re-establish the previous differential. Step by step, the campaign has proceeded. Thus, to-day, the railways are face to face with large demands from their trainmen.

We are likewise confronted with constantly increasing demands through mandatory legislation. The State of New Jersey has just enacted into law a Bill placing it within the power of the Board of Public Utility Commissioners of that State to designate grade crossings which should be removed and that upon the railways shall fall the entire burden of cost of such removal. The President of the Pennsylvania Railroad has stated publicly that to remove all grade crossings remaining on that road alone would cost his Company $60,000,000. There is thus created a constant menace to the revenues of all railroads per year. The State of Pennsylvania has passed an Extra Crew Bill, which has

already cost the Pennsylvania Railroad over $800,000. Similar measures arbitrarily burdening the roads with unnecessary expenditures are pending in New York and New Jersey. The New York Central Railroad estimates that the cost to them—and the waste to the public—of the Extra Crew Bill now pending in New York will be over $700,000 per year. The purpose of these citations is to place before this tribunal something of the state of mind and the feeling of uncertainty of railway managers in their dealing with their labor. We are unable to deal with these questions with that confidence in the result, with that ability and freedom to recognize in every class of labor, whatever just claim it may have upon our revenue. Such unexpected, such burdensome, such unprecedented and unforeseeable exactions as we are now faced with make it impossible for us to approach the subject with any feeling that past experience or even current statistics can guide us with any accuracy to a proper solution of these problems.

In the presentation which the railways will make to this court, therefore, we shall ask you to bear in mind these somewhat intangible but nevertheless essential elements in the situation. All the roads concerned in this movement do not plead poverty or impending bankruptcy as a reason why even the whole of the demands of the firemen should not be granted. The basis of our contention, the theory which has pervaded all our negotiations is this:

Appreciating our responsibility to the public to provide an adequate and efficient transportation machine, menaced upon every side with growing burdens making it constantly more difficult for us to obtain adequate capital with which to finance needed improvements, unable to estimate either our revenues or upon what basis of cost we shall be permitted to earn them, we have felt it our duty not only to our shareholders, but to the public whom it is our duty to serve to resist to the breaking point those demands of labor which we believe are extravagant and entirely out of accord with our obligations as a whole.

We now propose to show that these men are to-day well paid for the services rendered, and that the rules and working conditions are such that they do not require the radical changes requested.

The Chairman: Do you mean that the proposition covered

by the last sentence in your remarks will apply to all the railroads in this movement?

Mr. Lee: We propose to show that, generally, sir. There may be some individual roads that are not adequately compensating their men. There may be some, but we have to judge the proposition as a whole. There may be some low spots that should be brought up, but we question, and seriously question, whether this is the way to bring them up. There may be some individual cases that require attention in their working rules. But because there are those individual cases, it does not seem to us proper that all the roads in this movement should be penalized. That is the thought that we tried to convey, sir.

The Chairman: Let us suppose a state of things like this: there is one road, and that road a very great road, which is now compensating its firemen up to the standard requested by the men, and that railroad's earnings show it can afford those wages; but, there are other roads in the arbitration whose earnings are absorbed at present by the present scale of wages; and, apparently, by the statistics you may furnish, those roads would not be able to make an advance in wages without a deficit. How would your proposition cover a state of that sort?

Mr. Lee: I would say, sir, in answer to that, that the conditions surrounding the employment on any road should largely govern. There may be cases where the service required of the men is the same on both roads. There would be a serious question even then, in my mind, whether those two roads should pay the same wages. Our thought is that a road should be permitted to pay the amount for which it can get the labor it requires. It is a question of supply and demand, sir. It is an economic question, I believe. It is only when we put in an arbitrary factor that we oppose the laws of economics. A road may have just only so much money to spend; it cannot get any more; and it does not seem to me that a road should be required to pay more money than it can take in, if it can get the labor it needs at a lower price.

The Chairman: Then you would have one scale on one road and another scale on, perhaps, a parallel line?

Mr. Lee: It exists to-day, sir, in the East, and it exists in the West, to which these roads are comparing. There is no standardization in the West.

The Chairman: Don't you think it would be better to standardize the wages and teach the roads that do not know how to manage the road, to bring their standard of management up to that of another road that does know how?

Mr. Lee: Well, I have never been able to bring myself to that, sir. There may be something in it, but I have never been able to bring myself to think that. I have tried pretty hard. I have heard some pretty long discussions on it, and some pretty strong ones, and there are very strong arguments on both sides. There are strong arguments on the other side, that the whole thing should be standardized; but just as soon as you get into the question of standardization, sir, it seems to me you are running largely counter to the laws of economics, and there is bound to be more or less waste; and where waste comes in, it does nobody any good.

The Chairman: Then do you resist the idea of fixing the wage upon the weight of the engine on drivers?

Mr. Lee: I do not think it is a proper way to do it; because, for instance, we will show you I think, that in the case of one engine weighing a great many more pounds on the drivers than others, in some instances the work required on the heavier engine is lighter than that required on the smaller engine. In some instances the work required of the fireman of the smaller engine is heavier than that required of the fireman on the heavier engine. It is a question in my mind whether the weight on drivers has very much to do with the work required of the fireman. It is true, it is generally the larger engines that have the heaviest weight on drivers; but we have engines that are heavier on the drivers than some others. For instance, take the extreme case of a large passenger engine and a small freight engine. The small freight engine may haul a good deal more stuff and earn a good deal more money for the company than the large passenger engine, the large passenger engine having a heavier weight on the drivers than the small freight engine, on account of the design of the engine. So, we have many instances where these large passenger engines are put in fast freight service. We have many instances of that all over these roads.

The Chairman: Of course, these questions will all come out.

Mr. Lee: I think they will, sir. They will develop as we go along.

We will first call Mr. Holbrook.

WILLIAM H. HOLBROOK, called as a witness, being duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your occupation, Mr. Holbrook?

Mr. Holbrook: Road foreman of engines, Pittsburg Division, Pennsylvania Lines West, the Southwest System.

Mr. Lee: Between what points does your division extend?

Mr. Holbrook: Pittsburg and Columbus.

Mr. Lee: With the branches?

Mr. Holbrook: With the branches.

Mr. Lee: What position did you hold prior to your present one?

Mr. Holbrook: I held the title of motive power inspector out of the office of superintendent of motive power.

Mr. Lee: And prior to that?

Mr. Holbrook: I was road foreman of engines on the Cincinnati Division.

Mr. Lee: And prior to that?

Mr. Holbrook: Assistant road foreman on the Pittsburg Division.

Mr. Lee: Prior to that?

Mr. Holbrook: Running an engine on the Pittsburg Division.

Mr. Lee: And were you a fireman before that?

Mr. Holbrook: Yes.

Mr. Lee: What are your duties as road foreman of engines of the Pittsburg Division of the Pennsylvania Lines West?

Mr. Holbrook: I have charge of the engine men and firemen, and consult with the master mechanic with reference to the condition of power.

Mr. Lee: Do you have direct charge of the engineers and firemen on your division?

Mr. Holbrook: Yes.

Mr. Lee: Do you employ firemen?

Mr. Holbrook: Yes.

Mr. Lee: Are you frequently on the road?

Mr. Holbrook: Quite frequently.

Mr. Lee: Do you understand the duties of a fireman?

Mr. Holbrook: Yes.

Mr. Lee: Can you tell whether a fireman is firing properly or not?

Mr. Holbrook: I think so.

Mr. Lee: That is a part of your duties?

Mr. Holbrook: Yes.

Mr. Lee: You can tell whether he is a good fireman or not?

Mr. Holbrook: Yes.

Mr. Lee: Good, as far as he performs his work?

Mr. Holbrook: Yes.

Mr. Lee: Are you conversant with the working rules of the fireman?

Mr. Holbrook: Yes.

Mr. Lee: When was your last schedule for firemen made?

Mr. Holbrook: In September, 1910.

Mr. Lee: Did the men seem to be satisfied with the rules and rates of pay at that time?

Mr. Holbrook: Yes, as a general proposition it was very satisfactory.

Mr. Lee: Had you ever heard any comments or complaints up to the inauguration of this movement?

Mr. Holbrook: Nothing only of a minor nature.

Mr. Lee: Some little details that they wanted fixed up?

Mr. Holbrook: Yes.

Mr. Lee: Have any conditions arisen since September 1910, that would require a change in these rules and rates, in your opinion?

Mr. Holbrook: Not in my opinion, no, sir.

Mr. Lee: Have you introduced any larger engines since 1910?

Mr. Holbrook: No, sir, we have not. We have more of the same class of engines than we had at that time; more of the heavier engines.

Mr. Lee: More of the heavier engines?

Mr. Holbrook: Yes, sir.

Mr. Lee: Do you give your firemen help at any given points to shovel coal, or anything of that kind?

Mr. Holbrook: No, sir; it is not necessary.

Mr. Lee: Does the brakeman assist the fireman at all?

Mr. Holbrook: He does, but it is optional with him.

Mr. Lee: In your opinion, how does the work of a fireman

in local freight service compare with the work of a fireman in through service?

Mr. Holbrook: It is much lighter.

Mr. Lee: Are they considered preferred runs?

Mr. Holbrook: Yes, sir.

The Chairman: What?

Mr. Lee: Preferred runs.

The Chairman: What kind of run are you talking about?

Mr. Lee: Local freight runs. You say, they are considered preferred runs?

Mr. Holbrook: Yes, sir.

Mr. Lee: The older men work for them?

Mr. Holbrook: Yes, sir.

Mr. Lee: Why is that?

Mr. Holbrook: On account of the lighter work, and nights at home.

Mr. Lee: Mostly all day work?

Mr. Holbrook: Yes, sir.

Mr. Lee: Are the hours pretty good?

Mr. Holbrook: Run from 8 to 12 hours.

Mr. Lee: Are your firemen required to do any cleaning of engines?

Mr. Holbrook: The regulations require that they wipe the inside of the cab on the freight service, and wipe the windows both inside and out, but that practice is not followed up, they practically do none of that.

Mr. Lee: How about work train, double crew yard engines?

Mr. Holbrook: Work trains and double crew yard engines, we follow that up, and require them to clean, or wipe, rather.

Mr. Lee: What portion of the engine are they required to wipe?

Mr. Holbrook: They wipe the inside of the cab, and above the running board, outside.

Mr. Lee: Formerly were they required to do any more cleaning than this, the men?

Mr. Holbrook: Yes, sir.

Mr. Lee: Did you ever hear of a fireman remaining on duty, after his pay stopped, to clean his engine?

Mr. Holbrook: No, sir.

Mr. Lee: Never heard of that?

Mr. Holbrook: No, sir.

Mr. Lee: You heard the testimony of the witnesses, I believe, Mr. Holbrook, to the effect that it was the practice, in case of depression in business, to lay off a number of men?

Mr. Holbrook: Yes, sir.

Mr. Lee: That is a fact, is it not?

The Chairman: You understand, Mr. Lee, the other side offered evidence to show that the time consumed in cleaning an engine was not counted in overtime.

Mr. Lee: I do not know that they did specifically, sir, but they said they were not paid for cleaning.

The Chairman: About this last question you asked the witness,—

Mr. Lee: What I was getting at sir, is this: "While they do not specifically charge that the men were required to stay overtime to do their cleaning, they did claim that the railroads did not pay them for cleaning. We claim they are paid for this cleaning in their regular time, and I was just bringing out by this witness, whether or not the men were ever required to stay overtime, after their time stopped, to do cleaning; that is the only way they would be required to do this work without being paid for it; do you catch my point, sir?

The Chairman: Yes.

Mr. Lee: You heard the testimony of witnesses, that it was the practice in business depressions to lay off a number of men?

Mr. Holbrook: Yes, sir.

Mr. Lee: That is a fact?

Mr. Holbrook: Yes, sir.

Mr. Lee: Does this laying off of the men materially affect men in passenger service?

Mr. Holbrook: No, sir, not as a rule.

Mr. Lee: As a usual proposition in a depression of business then the passenger service is not reduced?

Mr. Holbrook: No, sir.

Mr. Lee: Of course if there was an extreme depression in business, the passenger service might be reduced?

Mr. Holbrook: In cases where any passenger runs were taken off due to a depression, why of course that would maybe shove back down the line.

Mr. Lee: Then a depression in business generally affects the freight service?

Mr. Holbrook: Yes, sir.

Mr. Lee: Mainly through freight service?

Mr. Holbrook: Yes, sir.

Mr. Lee: What happens when this depression in business comes and the number of freight runs is lessened?

Mr. Holbrook: It means to take crews out of the freight pool, which in turn increases the extra list to the extent that the extra firemen, the younger extra firemen, are let out of the service.

Mr. Lee: How do you usually cut down the extra list?

Mr. Holbrook: Why unless we get to it first we are requested by the firemen to make the reduction.

Mr. Lee: That is, if you are a little bit slow in making a reduction in the number of men, the firemen themselves ask you to reduce the list?

Mr. Holbrook: Yes, sir.

Mr. Lee: And lay off the junior men?

Mr. Holbrook: Yes, sir.

Mr. Lee: That is, the youngest men in the service?

Mr. Holbrook: Yes, sir.

Mr. Lee: Why do they ask you to have the number of firemen cut down?

Mr. Holbrook: Well, in order to make the rate per month for those left in service on a higher plane.

Mr. Lee: Then the reduction of the men in the pool equalizes, or divides, up the total amount of money that is to be given out for pool service?

Mr. Holbrook: Yes, sir.

Mr. Lee: That is, the number of runs is cut down and the total money earned is smaller?

Mr. Holbrook: Yes, sir.

Mr. Lee: And that is divided up into a smaller number of men when the list is cut down?

Mr. Holbrook: Yes, sir.

Mr. Lee: That is occasioned, isn't it, by running the men first in and first out?

Mr. Holbrook: Yes, sir.

Mr. Lee: That is, if you have a pool full of men, young and old, you cannot give the older men all the runs and let the younger men in the pool stand idle?

Mr. Holbrook: No, sir, we could not afford to do that.

Mr. Lee: This running first in and first out proposition, was that at the request of the men?

Mr. Holbrook: My recollection is that it was.

Mr. Lee: And has this accomplished the purpose of dividing up the amount of money to be divided about equally among the men?

Mr. Holbrook: Yes, sir, it equalizes the money.

Mr. Lee: In periods of depression in business, what has been your experience with reference to the number of fast freight trains run in proportion to the total number of through freight trains, slow freight trains?

Mr. Holbrook: Well, there is practically no decrease in the fast freight service.

Mr Lee: Although there might be in an extreme depression?

Mr. Holbrook: Yes, sir.

Mr. Lee: But in the usual depression there is not as much decrease in the fast freight service as there is in the slow freight service?

Mr. Holbrook: I would say not.

Mr. Lee: Then the men who remained working, if they were all working in one pool, would get over the road faster in a depression than they would in a full time?

Mr. Holbrook: Yes, sir, it usually works out that way.

Mr. Lee: In fast freight service is it the general practice on your road, or on any others that you know of, to have firemen assigned to such trains or filled by separate pool?

Mr. Holbrook: They are usually assigned to regular men.

Mr. Lee: Then such regularly assigned men are not disturbed unless men senior to them come down in the list and force them off their good runs?

Mr. Holbrook: No, sir.

Mr. Lee: Then it is pretty safe to say, that in the reduction of crews, only the men in the slow freight service are laid off or affected?

Mr. Holbrook: That is usually the case, yes, sir.

Mr. Lee: And in such slow freight service only the youngest men are laid off?

Mr. Holbrook: Yes, sir.

Mr. Lee: Did you hear some testimony the other day about the responsibility of a fireman for the water in the boiler?

Mr. Holbrook: Yes, sir.

Mr. Lee: On your road, do you hold the firemen responsible for the amount of water in the boiler?

Mr. Holbrook: No, sir; we do not.

Mr. Lee: Did you ever hear of any case of a fireman being on an engine alone and being responsible for the water?

Mr. Holbrook: Not to the best of my recollection.

Mr. Lee: Well, if a fireman were alone on an engine on your division, would you hold him responsible for the water?

Mr. Holbrook: If he was left in charge of the engine, as I understand the question?

Mr. Lee: Well, if he was there alone; for instance, if the fireman should come down a little ahead of the engineer to the engine house and get on the engine ahead of the engineer, would you hold the fireman responsible for the water in that engine?

Mr. Holbrook: No, sir.

Mr. Lee: Who would you hold as a general proposition responsible for the water on the engine?

Mr. Holbrook: In that situation we would hold the hostler and the engine man.

Mr. Lee: Do you ever have cases of yard engines during the noon hour not going to the shop?

Mr. Holbrook: Yes, sir.

Mr. Lee: Whom do you leave in charge?

Mr. Holbrook: The crew broom the engine in such a way that she stands for that length of time without it being necessary to require any work from either of them.

Mr. Lee: But if the engine is left and does not go to the shop yard, there is somebody in charge of the engine, is there not?

Mr Holbrook: The engine crew; yes, sir.

Mr. Lee: The engineer and fireman?

Mr. Holbrook: They are responsible, yes, sir.

Mr. Lee: And if the water got low during that noon hour, who would be responsible?

Mr. Holbrook: The engine man.

Mr. Lee: Mr. Holbrook, have you any engines equipped with automatic stokers under your charge?

Mr. Holbrook: Yes, sir, quite a number, probably a total of 35 or 40.

Mr. Lee: Have you ever had any perfect trips with them, where the stoker put all the coal in the firebox?

Mr. Holbrook: Yes, sir, quite a number of them.

Mr. Lee: Do you consider that the stoker is of any assistance to the fireman?

Mr. Holbrook: It is a very great help.

Mr. Lee: Why?

Mr. Holbrook: It lightens his physical exertion; that is,—

Mr. Lee: That is, he does not have to—go ahead.

Mr. Holbrook: The only work he has to perform in that case is to operate the throttle valve of the stoker engine.

Mr. Lee: Of these 35 or 40 engines that have stokers, do they put a large per cent. of the coal in the firebox?

Mr. Holbrook: Yes, sir; a very high per cent.

Mr. Lee: To your knowledge have there been—

The Chairman: Did I understand the witness to say in some instances they put it all in?

Mr. Lee: Yes, sir. To your knowledge have there been any engines equipped with stokers that have made continuous performances, where all the coal has been put in the firebox by the stoker? That is your question.

Mr. Holbrook: Yes, sir. I recall on one occasion I rode a nine steel car passenger train over a 100 mile division, the engine being equipped with the stoker, and aside from the building-up process at the terminal, the fireman informed me that that trip was his fiftieth consecutive trip that he had 100 per cent. stoker firing.

Mr. Lee: That is, that was the 50th consecutive trip this fireman had made?

Mr. Holbrook: Yes, sir.

Mr. Lee: Where he had put no coal into the firebox by hand after leaving the terminal?

Mr. Holbrook: Yes, sir.

Mr. Lee: As a matter of information to the Board, it may be well to say at this point, that in fixing the fire at the roundhouse, or ready track, in very many instances, and it generally, is a fact, as I understand it, that some little coal must be put in the firebox by hand; is that correct?

Mr. Holbrook: That is true in every case.

Mr. Lee: In every case, is it?

Mr. Holbrook: Yes, sir.

Mr. Lee: How much would that amount to as a rule?

Mr. Holbrook: Oh, anywhere from 200 to 500 pounds, I would say.

Mr. Lee: Just in getting the fire ready?

Mr. Holbrook: Yes, sir.

Mr. Lee: Now, all these engines equipped with automatic stokers, do not run 100 per cent. trips, do they?

Mr. Holbrook: No, sir, not by any means.

Mr. Lee: From your experience, how do the majority of these trips run?

Mr. Holbrook: Oh, they will run from 70 per cent. and above.

Mr. Lee: That is, the automatic stoker will average, day in and day out, over 70 per cent. of the coal into the firebox?

Mr. Holbrook: I would think that would be a close approximate figure. I have not any data on that subject.

Mr. Lee: From your experience—

The Chairman: Unless you have a question of that kind to ask the witness, how many engines are there on his division?

Mr. Lee: 35 or 40, he said.

The Chairman: But how many engines altogether?

Mr. Lee: How many engines have you altogether on your division?

Mr. Holbrook: 238.

The Chairman: I expect Mr. Carter will ask him the same question that I wanted to bring out.

Mr. Lee: Yes, but you ask him now.

The Chairman: I was a little curious to know why only 12 per cent. of your engines have got this machine on them, if they do the work.

Mr. Lee: The reason is that more are ordered but have not been received as yet. The stoker proposition is one of development. You have heard a good deal in the last week about what an invention of the devil the stoker is, and we want to show you there are some bright spots in connection with it. We will introduce testimony later on as to the number of stoker engines that are in service on this particular railroad as a whole, and the number that have been ordered. They are being introduced as rapidly as the money can be obtained to buy them.

From your experience and the knowledge you have obtained, and the impression that has been made upon you, what is the attitude of the firemen on your division towards these automatic stokers?

Mr. Holbrook: Very friendly.

Mr. Lee: They seem to like them?

Mr. Holbrook: Yes, sir; there are no objections that I have heard of at all.

Mr. Lee: They are glad to get a stoker engine?

Mr. Holbrook: They are very glad to get hold of one of them.

Mr. Lee: These stoker engines that you have are about equally divided between passenger and freight?

Mr. Holbrook: Nearly so.

Mr. Lee: How does the proportion of perfect stoker trips run in passenger and freight service?

Mr. Holbrook: I think it runs nearly the same.

Mr. Lee: Have you any of these engines running in the pool freight service?

Mr. Holbrook: All of the freight engines are running in pool freight service.

Mr. Lee: First in and first out?

Mr. Holbrook: Yes, sir.

Mr. Lee: The same man does not run the same engine all the time, then?

Mr. Holbrook: No, sir.

Mr. Lee: In passenger service all engines are more or less assigned to men and runs?

Mr. Holbrook: Yes, sir; but we are not always able to hold them to their assignment.

Mr. Lee: Do you think the men, the firemen, on these automatic stokers work harder on runs on the passenger service than the freight?

Mr. Holbrook: How is that?

Mr. Lee: Do you think the firemen on the stoker engines work harder on the passenger runs than they do on the freight runs?

Mr. Holbrook: I would say not, no.

Mr. Lee: Would you say it is about the same?

Mr. Holbrook: It is the stoker proposition?

Mr. Lee: It is the stoker proposition, yes.

Mr. Holbrook: About the same thing.

Mr. Lee: Then you think the automatic stokers are just as much assistance to the freight firemen as to the passenger firemen?

Mr. Holbrook: Yes, sir.

Mr. Lee: How does the work of firemen on engines equipped with stokers compare with the work of firemen on engines that are hand fired?

Mr. Holbrook: Very much lighter.

Mr. Lee: Why?

Mr. Holbrook: Due to the fact that the stoker handles the coal.

Mr. Lee: Into the firebox?

Mr. Holbrook: Into the firebox, yes, sir.

Mr. Lee: What objections have you found to the use of the stoker?

Mr. Holbrook: I have not found any.

Mr. Lee: Is there any principal feature in connection with the working of the stoker that you have observed that happens once in a while?

Mr. Holbrook: The coal arches over the hopper in the bottom of the coal spaces, at times.

Mr. Lee: What do you mean by that, Mr. Holbrook, explain that.

Mr. Holbrook: Where you have a tank of large coal, that is lumps of large cubes, it gets to the bottom of the tank, it will corner at the different angles, and form an arch over this opening, and prevents the coal from feeding down into the conveyor.

Mr. Lee: What does the fireman do in that case?

Mr. Holbrook: To overcome that, you have to take a long bar and run through the top of the coal pile, immediately over this opening in the tank, and radiate the upper end of the bar, in order to move this large cube, so that the coal will fall down into the hopper.

Mr. Lee: You have to break the arch over the conveyor opening.

Mr. Holbrook: Yes, sir.

Mr. Lee: Does that arching occur very often?

Mr. Holbrook: It is only where you get the large coal; where you have the more uniform size of coal, smaller cubes, that very seldom happens. I might say in connection with that, Mr. Lee, that the coal used is coal which is not prepared in any way.

Mr. Lee: This automatic stoker, Mr. Holbrook, as I understand it has a small separate engine that runs that stoker?

Mr. Holbrook: Yes, sir.

Mr. Lee: Who operates that engine that runs the stoker?

Mr. Holbrook: The fireman. There is a throttle valve located on the left side of the boiler, within easy reach, which permits him to remain seated on the seat box, and have a good view of the right of way ahead.

Mr. Lee: Does that engine that operates the stoker require much attention?

Mr. Holbrook: Very little.

Mr. Lee: As far as the operation of the stoker itself is concerned, then the fireman sits on his seat box, and operates the valve from the seat box.

Mr. Holbrook: Yes, sir.

Mr. Lee: If the conveyor from the tank to the engine stops feeding, how is the coal gotten into the firebox?

Mr. Holbrook: Hand firing is resorted to, by taking coal from the tank and placing it in an open deck hopper, just ahead of the main plungers.

Mr. Lee: He does not have to open the fire door to get it in.

Mr. Holbrook: No, sir; not in that case.

Mr. Lee: Is the feeding of the hoppers as hard work as throwing open the fire door?

Mr. Holbrook: I would say not.

Mr. Lee: Now, what happens when the stoker breaks down entirely?

Mr. Holbrook: He has to resort to hand firing in that case.

Mr. Lee: Does the fireman have to fire the engine any differently than if the stoker had fired the engine?

Mr. Holbrook: Well, the fireman would fire then.

Mr. Lee: Does the fireman have to fire the engine any differently than if there had been no stoker on the engine?

Mr. Holbrook: No, sir.

Mr. Lee: Just about the same proposition.

Mr. Holbrook: The same thing exactly.

Mr. Lee: In your judgment, Mr. Holbrook, does the man firing an engine to-day, do any more work on the same class of engine than formerly.

Mr. Holbrook: On the same class of engine?

Mr. Lee: On the same class of engine than formerly.

Mr. Holbrook: No, sir, I should say not.

Mr. Lee: That is, take a light engine made in 1902 or in service in 1902, and the same engine in service in 1912, would that engine require any more work on the same line?

Mr. Holbrook: No, sir.

Mr. Lee: As a general proposition are those engines on the same runs to-day that they were in 1902?

Mr. Holbrook: No, sir, the light engines are all on the lighter runs.

Mr. Lee: And that of itself would make the work lighter on those engines to-day than it was in 1902?

Mr. Holbrook: Yes.

Mr. Lee: In your opinion it is harder to fire a large engine of to-day than it was to fire a small engine formerly?

Mr. Holbrook: No, sir; I think not.

The Chairman: Ask that question again, Mr. Lee.

Mr. Lee: I will ask that question again. I do not think the witness understood it entirely. In your opinion, Mr. Holbrook, is it harder to fire a large engine to-day—one of the big fellows—than it was to fire a small engine formerly? I will put that in terms that you will perhaps understand better, as to what I am getting at: Would you say on the same class of run to-day it is harder to fire and H-8-A engine in slow freight than it was formerly to fire a Class R engine in slow freight?

Mr. Holbrook: No, sir; I think not.

Mr. Lee: Is there not more coal shoveled?

Mr. Holbrook: Yes, there is more coal shoveled, but in my opinion that is overcome in other ways, by the difference in the construction of the engine. The larger engine of to-day is a freer steamer than the smaller engine; consequently it does not require much exact firing. You do not have to keep your fire in the nicety of condition with the large engine that you did with the small engine. You perhaps handle more coal.

Mr. Lee: That requires more physical labor, does it not?

Mr. Holbrook: It would in a way require more physical labor.

Mr. Lee: And there might be some runs where the large engine to-day is easier to fire, or as easy to fire as the small engine?

Mr. Holbrook: Yes.

Mr. Lee: And there might be some other runs where the large engine is a great deal harder to fire than the small engine formerly?

Mr. Holbrook: Yes.

Mr. Atterbury: For the information of the Commission, what is the weight on the drivers of those two engines you mentioned?

Mr. Lee: H-8-A.

Mr. Holbrook: I have here the weight of the H-8-C, which is 205,500. What I had in mind was H-3-C.

Mr. Lee: About 119,000 pounds I think.

Mr. Holbrook: The H-3-A weighs 113,000.

Mr. Lee: And the H-8-C?

Mr. Holbrook: 205,500.

Mr. Lee: If you had those two engines side by side to-day, that is the light engine of Class R and the heavy engine, the H-8 engine, in freight service, the Class R engine would probably fire a little bit easier than the H-8?

Mr. Holbrook: It would burn less coal perhaps.

Mr. Lee: Would you say that the measure of a fireman's work would be the amount of coal he handled?

Mr. Holbrook: No, sir.

Mr. Lee: Why is the modern engine as a general proposition easier to fire than the older engines?

Mr. Holbrook: They are more liberal with grate surface and heating surface.

Mr. Lee: Does that make the engine as a rule a freer steamer?

Mr. Holbrook: Yes.

Mr. Lee: With the larger engine the fireman puts more coal in the firebox than formerly?

Mr. Holbrook: Yes, I think so.

Mr. Lee: But you would say that he does not have to take so much care of it after he gets it in the firebox. Is that the point you make?

Mr. Holbrook: That is my opinion of it.

Mr. Lee: Are you familiar with the method of loading trains some years ago?

Mr. Holbrook: Yes.

Mr. Lee: How was that determined?

Mr. Holbrook: By the car load.

Mr. Lee: That is, they decided on a certain number of cars to hook behind an engine?

Mr. Holbrook: The number of cars to a train.

Mr. Lee: And then let her go?

Mr. Holbrook: Yes.

Mr. Lee: Regardless of the weight of those cars?

Mr. Holbrook: Regardless of what the lading might be.

Mr. Lee: And regardless of the weight of the cars?

Mr. Holbrook: Yes.

Mr. Lee: Just went out and cut off 50 or 60 cars and went?

Mr. Holbrook: Yes, sir.

Mr. Lee: What was the result of loading trains in that way?

Mr. Holbrook: Some trains were overloaded and others underloaded.

Mr. Lee: Would you say more were overloaded than underloaded?

Mr. Holbrook: Yes, sir; I would.

Mr. Lee: Some years ago, were there as many fast freight trains run as there are to-day?

Mr. Holbrook: No, sir; the proportion of fast freights, a number of years ago compared with to-day, would be very small.

Mr. Lee: Under the present practices, so far as your knowledge goes, is it the custom to load trains differently than by the car basis?

Mr. Holbrook: Yes, sir; they are rating them now on the tonnage basis.

Mr. Lee: That is, they are loaded more in accordance with the ability of the engine to handle them?

Mr. Holbrook: Yes, sir.

Mr. Lee: Does that result in engines seldom being overloaded?

Mr. Holbrook: Yes, sir; it is very seldom that we have that trouble.

Mr. Lee: Is there a different loading for fast freight trains than for slow freight trains?

Mr. Holbrook: Usually a reduction of from two to three hundred tons.

Mr. Lee: That is, fast freight trains have two or three hundred tons, at least, less than—

Mr. Holbrook: Less than the slow freight; yes, sir.

Mr. Lee: Then with the greater proportion of fast freight trains to-day than formerly, there is a greater proportion of lighter loaded trains than formerly?

Mr. Holbrook: Yes, sir; I would say so.

Mr. Lee: Does the H-8 engine weighing, what did you say?

Mr. Holbrook: 205,000 pounds.

Mr. Lee: 205,000 pounds on the drivers in fast freight service use any more coal or require any more work of the fireman than the H-6 engine weighing approximately 170,000 pounds on the drivers in slow freight service.

Mr. Holbrook: It does not consume so much coal.

Mr. Lee: Why is that?

Mr. Holbrook: Well, one is worked closer to her capacity; the H-6 engine is worked closer to her capacity while the H-8 in fast freight service is, you might say, underrated. Consequently, it does not have to be forced so hard.

Mr. Lee: From your knowledge of the work of the fireman, is there enough difference in the work in firing an H-6 engine weighing approximately 170,000 pounds on the drivers, and firing an H-8 engine weighing approximately 205,000 pounds on the drivers, to require at all times an additional man?

Mr. Holbrook: No, sir.

The Chairman: Well, is there a demand for an additional fireman on the 205,000 pound engines?

Mr. Lee: An additional man is requested on all engines weighing 200,000 pounds and over in through freight service. Is there sufficient work on an H-8 engine, or between the two types of engines, to require the services of two men at all times in through freight service?

Mr. Holbrook: No, sir; there is not.

Mr. Lee: Might there be some individual runs where the H-8 engine weighing approximately 205,000 pounds on the drivers is a great deal harder than the work on an H-6 engine in some other class of service?

Mr. Holbrook: Yes, sir.

Mr. Lee: Are there runs where an H-6 engine, the lighter engine, is used, are a great deal harder on the fireman than other runs where the larger, or H-8 engine, is used?

Mr. Holbrook: Yes, sir.

M. Lee: In other words, the type of the engine is not confined to any particular class of service?

Mr. Holbrook: No, sir.

Mr. Lee: And the work on the heavier engine may be harder on a certain trip than the work on another trip on a lighter engine?

Mr. Holbrook: Yes, sir.

Mr. Lee: And the work on a lighter engine may be harder on one trip than the work on a heavy engine on another trip?

Mr. Holbrook: Yes, sir.

Mr. Lee: That is, there is no relation between the work and the size of the engine?

Mr. Holbrook: No, sir.

Mr. Lee: In all cases?

Mr. Holbrook: Not in all cases.

The Chairman: Well, generally how is it?

Mr. Holbrook: Well, generally the heavier type of engines is kept in through freight service, which is the harder service, but when you would compare the heavier engine on a run in fast freight with reduced tonnage to a smaller engine with the full tonnage, why in that case the work would be lighter on the heavier engine, due to the fact that she is hauling that much less tonnage in proportion to her weight.

The Chairman: Well, although she may be hauling less tonnage, she is going at a higher rate of speed, isn't she?

Mr. Holbrook: That is true, but you are not forcing the engine to the point; in other words, you are working the engine with a shorter cut-off, and using steam expansively more so than you would in the other case.

Mr. Lee: That is the size of the engine does not necessarily measure the work done by the fireman in all cases?

Mr. Holbrook: No, sir.

Mr. Lee: From your experience, Mr. Holbrook, are firemen, as a general proposition, longer on the road to-day than they were formerly?

Mr. Holbrook: I would say not.

Mr. Lee: What brings you to that conclusion?

Mr. Holbrook: Well, the experience I have gone through in my own work.

Mr. Lee: Your own personal experience?

Mr. Holbrook: Yes, sir.

Mr. Lee: What changed that, largely?

Mr. Holbrook: The facilities largely, reduction of grades, and so forth, permit you to make the trips quicker than you formerly did.

Mr. Lee: Were there many cases of excessive hours of service before the 16 hour law went into effect, or about that time?

Mr. Holbrook: Your question was—

Mr. Lee: Were there many cases of excessive hours on duty before the 16 hour law went into effect, or about that time?

Mr. Holbrook: I did not notice much change on our division, from ahead of that, than since the 16 hour law went into effect.

Mr. Lee: There are some instances to-day where men are on the road a long number of hours?

Mr. Holbrook: Yes, sir.

Mr. Lee: And there were also corresponding cases where men were formerly on the road a long number of hours?

Mr. Holbrook: About the same time I think.

Mr. Lee: Were they more frequent formerly than at present?

Mr. Holbrook: I cannot say that they were.

Mr. Lee: Do you know anything about your rates paid to firemen on switch engines?

Mr. Holbrook: Yes, sir.

Mr. Lee: Are they uniform over the territory of your division?

Mr. Holbrook: We have two classes of rates, which in my opinion was brought about by the expense, and cost of living for one thing, and the establishment of a flat rate for all classes of power in switching service.

Mr. Lee: Well, you say you have more than one rate?

Mr. Holbrook: Yes, sir.

Mr. Lee: Are these rates the same for all engines in Pittsburg?

Mr. Holbrook: Yes, sir; the same.

Mr. Lee: The same for all engines in Dennison?

Mr. Holbrook: Yes, sir.

Mr. Lee: The same for all engines in Columbus?

Mr. Holbrook: Yes, sir.

Mr. Lee: But different for the different localities?

Mr. Holbrook: Yes, sir.

Mr. Lee: Your rates differ then, in different localities?

Mr. Holbrook: Yes, sir.

The Chairman: For the same work?

Mr. Lee: For the same weight of engine. Different weights of engines in Pittsburg would pay the same rate in Pittsburg, but a heavy engine in Pittsburg would not pay the same rate as it would in Dennison or Columbus. That is, their rates are divided by localities, and not on the weights of engines. Am I correct, Mr. Holbrook?

Mr. Holbrook: Yes, sir.

The Chairman: I understand you to say that is because it may cost a fireman more to live in Pittsburg than it does in Columbus?

Mr. Holbrook: That was one of the reasons; and then when this was established, it was at a conference between the men and the company, who established this flat rate; and it was supposed to take care of the heavier districts. The cost of living also was considered as a factor in it.

Mr. Lee: Was it more difficult to get men in Pittsburg than it was in Dennison or Columbus?

Mr. Holbrook: We never experienced that trouble; no, sir.

Mr. Lee: Do you have hostlers on your division?

Mr. Holbrook: We have, in charge of the engine house force, or roundhouse force.

Mr. Lee: They do not come under the road department at all?

Mr. Holbrook: No, they are carried on the shop rolls.

Mr. Lee: Do the firemen on your line negotiate the rates for hostlers?

Mr. Holbrook: Not to my knowledge.

Mr. Lee: Are the firemen worked as hard on mine runs, as on through freight runs?

Mr. Holbrook: Well, the amount of coal consumed is pretty close to the same, but the service on the mine runs in intermittent; there is more or less time that is not employed where they are shifting around the mines; and in through freight service it is a little different, it is a straight away run, and the work is a little harder during the time he is at it.

Mr. Lee: A mine run is sort of a combination of switching and through freight service?

Mr. Holbrook: Yes, sir.

Mr. Lee: It might be a little harder than switching but not quite so hard for the day's work as through freight service.

Mr. Holbrook: That would be my opinion of it.

Mr. Lee: How about work in wreck train service?

Mr. Holbrook: We have an established rate for that.

Mr. Lee: Is it pretty heavy work?

Mr. Holbrook: No, sir, it is very light work.

Mr. Lee: Why is that?

Mr. Holbrook: In work train service the amount of coal consumed is light compared with the other service, due to the fact that the train is standing still a large per cent. of the time. The same would apply to wreck train service.

Mr. Lee: Have you any suburban passenger service?

Mr. Holbrook: Yes, sir; quite a lot of it.

Mr. Lee: What is the difference between suburban service and through passenger service, Mr. Holbrook?

Mr. Holbrook: In the labor performed, Mr. Lee?

Mr. Lee: Yes, the work required of the firemen.

Mr. Holbrook. It is about on the same line as it is between the line run and the through freight; the through service is considered straightway work, and the suburban service is dead time through the day.

Mr. Lee: The fireman has frequent opportunities for relaxation and rest in suburban service?

Mr. Holbrook: Yes, sir.

Mr. Lee: The work, or the comparison of the work, between the two services is not very different, while the engine is running?

Mr. Holbrook: No, sir.

Mr. Lee: Are the men in suburban service saved the cost of living, while they are away from home, which they have in through service?

Mr. Holbrook: In our suburban service the majority of the crews get their three meals at home and their nights at home. There are some runs, however, on which they only get the two meals at home; in through service it means expense away from home for lodging and meals.

Mr. Lee: Just describe shortly a few of your suburban runs.

Mr. Holbrook: We have for instance out of Washington, Pa., which is the lay over point of the crew, leaving in the morning at five o'clock, for instance, which makes a round trip to Pittsburg, which would be a distance of 66 miles, and on a return trip there is enough dead time for a meal, and he makes that same round trip in the afternoon. The crews in that service at the lay-over point at Washington are home every night, and have their three meals at home.

Mr. Lee: About how long is he on duty altogether from the time he goes on? At least, how much of his time is taken up by the company from the time he goes on duty in the morning till he goes off duty in the night?

Mr. Holbrook: Run from 10 to 12 hours.

Mr. Lee: Are you familiar with the usual method of fixing rates for firemen?

Mr. Holbrook: Yes, sir.

Mr. Lee: Are they, or are they not generally based on the items of mileage and time?

Mr. Holbrook: Yes, sir; they are.

Mr. Lee: That is, if the men exceed the mileage, they are paid for the mileage; if they exceed the established time for this mileage, they are paid the additional time?

Mr. Holbrook: Yes, sir.

Mr. Lee: That is, if the men exceed their time on mileage, additional payments are made for such service?

Mr. Holbrook: Yes, sir.

Mr. Lee: Take a case such as a 100 mile run, and through service, if the time consumed in making that run exceeds 10 hours, the railroads are required to pay additional compensation, to be paid for the 100 miles?

Mr. Holbrook: Yes, sir.

Mr. Lee: But in case a man makes the 100 miles in less than 10 hours, there is no reduction in the mileage payments to the men?

Mr. Holbrook: No, sir.

The Chairman: Mr. Lee, if a run is 110 miles, and it takes some 11 hours to do it, he gets extra pay for the miles and the time, both?

Mr. Lee: No, sir; I think perhaps there is one road where he does, but if he runs 110 miles in 11 hours, he is paid for the 110 miles or the 11 hours; they pay the men the same if he runs 120 miles in 12 hours; he is paid 120 miles or 12 hours, both being the same. If he runs 120 miles in 8 hours, he is paid for 120 miles, although he has not consumed the 8 hours to do it. If he runs 100 miles in 7 hours he is paid the 100 miles. You see, he is paid the greater—he is paid miles or hours, whichever is the greater.

The Chairman: I understand that, but I do not know why, if the time and mileage both exceed the 10 hours and the 100 miles limit, they get paid for both.

Mr. Lee: There is only one case where that is done, one railroad. I think there is only one railroad or two railroads—there is only one that I am sure of, and I think there may be another one, where that is done.

Mr. Lee: If for any reason the company uses a fireman to make additional miles beyond the 100 miles, he is paid additional compensation?

Mr. Holbrook: Yes.

Mr. Lee: Although the whole service may be performed in less than ten hours?

Mr. Holbrook: Yes.

Mr. Lee: If any rule or regulation were made that would require items additional to these two for time or mileage, when neither of these two elements entered into this service, would that mean double pay?

Mr. Holbrook: Yes, sir, it would, in my opinion.

Mr. Lee: For instance at the present time you pay a man from the time he is required to report for duty until he is relieved from duty.

Mr. Holbrook: Yes.

Mr. Lee: And if the number of hours he is on duty, in through service, for instance, exceeds his mileage divided by ten, you pay him additional time?

Mr. Holbrook: Yes.

Mr. Lee: If you had a rule reading like this: "If the actual departure of any train is delayed to exceed one hour after a fireman is required to report for duty, the fireman will be paid an additional compensation for all such delays over one hour," would that mean double time?

Mr. Holbrook: Yes, sir, it would.

Mr. Lee: Double payment?

Mr. Holbrook: Yes.

Mr. Lee: Because he is already being paid from the time he comes on duty?

Mr. Holbrook: Yes.

Mr. Lee: For instance, if from the time a man reports until he is relieved he is on duty seven hours, on account of such a rule, if he is delayed 1½ hours at his initial terminal, he would be paid thirty minutes additional?

Mr. Holbrook: Yes.

Mr. Lee: In accordance with this rule?

Mr. Holbrook: Yes.

Mr. Lee: If he is delayed at his final terminal one hour, you would pay him also thirty minutes additional?

Mr. Holbrook: Yes.

Mr. Lee: That is, if he was on duty a total of 7 hours in all, yet you would pay him one hour additional over the ten, or pay him for eleven hours?

Mr. Holbrook: Yes.

Mr. Lee: Is that a pretty good proposition?

Mr. Holbrook: It does not look very good to me.

Mr. Lee: In what class of service would this initial delay be most frequent?

Mr. Holbrook: In the freight service.

Mr. Lee: Which freight service?

Mr. Holbrook: Through freight service.

Mr. Lee: Fast or slow?

Mr. Holbrook: In slow freight service.

Mr. Lee: More than in fast freight service?

Mr. Holbrook: Well, in the fast freight service, due to the fact that it is ordered far ahead in order to save delay to trains at terminals, it would probably enter into fast freight service more than it would into the slow freight service.

Mr. Lee: Then you think he would get it more often in the fast freight service than he would in the slow?

Mr. Holbrook: Yes.

Mr. Lee: He would get it more often in the service where he gets over the road in the shortest length of time."

Mr. Holbrook: More than likely.

Mr. Lee: Is that on account of the requirement of the service that you must have the engine with the crew ready to leave, about on the arrival time of the train from the adjoining division?

Mr. Holbrook: Yes, the fast freight service is handled about on the same lines as the passenger service is handled.

Mr. Lee: Of course, where a fast freight train had to be split up at the junction point, that would not occur.

Mr. Holbrook: That would be taken into consideration, and a later time for departure would be set.

Mr. Lee: I should like to have you give us just an example, from your own division, of how a fast freight train would be thrown into this initial, or terminal delay. For instance at Dennison.

Mr. Holbrook: At Dennison, for instance, the fast freight crews are ordered about two hours from the time the train is expected to reach the terminal, or two hours from the arriving time at the terminal. A short distance west of the terminal we have a momentum grade. Frequently slow trains are ahead of this fast freight train, which they expect to reach the terminal without delaying the fast freight. In some cases the slow freight trains are not able to get over that momentum grade, which of course would cause a serious delay to the fast freight train. That would mean that the departing time of the train would be much later than it was originally intended for it to depart.

Mr. Lee: That would be something that could not be foreseen.

Mr. Holbrook: No, sir. Another thing that would enter into this same thing would be hot boxes on this slow freight train. That would cause a delay.

Mr. Lee: Mr. Holbrook, you are familiar with the so-called federal 16 hour law that requires rest periods?

Mr. Holbrook: Yes, sir.

Mr. Lee: What are those rest periods?

Mr. Holbrook: Eight hours on duty less than sixteen hours, and ten hours on duty, sixteen hours or more.

Mr. Lee: Here is a rule No. 5, "Firemen held at other than

home terminal including rest period will be paid continuous time for all time so held after the expiration of fifteen hours from time relieved from previous duty at the rate per hour paid him for the last service performed, less than one hour not to be paid for." Held away from home terminal. How much time would that leave which you would have to return a crew if this rule went into effect.

Mr. Holbrook: Well, where he requires the eight hours' rest it would leave him seven hours; and where he required the ten hours, it would leave him five.

Mr. Lee: That is, the crew must be returned in this five or seven hours or the men will have to be paid additional money for no service performed.

Mr. Holbrook: Yes, sir.

Mr. Lee: Is it always possible to do that?

Mr. Holbrook: Not always, no, sir.

Mr. Lee: Why not?

Mr. Holbrook: Well, there are conditions existing that it is hard to overcome a longer period than that. For instance, our preference freight trains arrive at Pitcairn from midnight until six o'clock in the morning east bound. The west bound preference freight trains depart from Pitcairn from six o'clock in the evening up until about midnight, and it often means that we have to hold some of that power, that comes in in the early morning hours, to protect those preference trains going out in the evening. We have tried a number of schemes to get away from that, but so far we have not found a remedy for it.

Mr. Lee: And those men, that come in on those runs, would not be able to get their rest and go out until the next evening or next morning.

Mr. Holbrook: No, sir.

Mr. Lee: On account of the fluctuations in business.

Mr. Holbrook: Yes, sir.

Mr. Lee: Mr. Holbrook, do you consider filling lubricators dangerous work?

Mr. Holbrook: No, sir, I do not.

Mr. Lee: Why?

Mr. Holbrook: Not if the lubricator is properly handled.

Mr. Lee: Instructions are assumed in regard to them?

Mr. Holbrook: Instructions are issued and if the instruc-

tions are followed out I cannot see any reason for that operation becoming dangerous.

Mr. Lee: Do you find that your enginemen make more mileage in a month that the firemen?

Mr. Holbrook: No, sir, I do not.

Mr. Lee: That is from your actual knowledge?

Mr. Holbrook: Yes, sir.

Mr. Lee: Why? That is, it is your opinion that the firemen does follow the engineman?

Mr. Holbrook: Yes, sir.

Mr. Lee: And makes as much mileage as the engineman?

Mr. Holbrook: In fact in the majority of cases he will make more mileage than the engineman.

Mr. Lee: Why is that?

Mr. Holbrook: Well, one thing that enters into it, largely, is the age of the man; and another thing the labor performed by the fireman, while it requires more physical exertion, the man running the engine, his muscles are in action so much of the time, on account of his position, sitting still, that it is more wearisome on him. That has been my experience as both a fireman and an engineman.

Mr. Lee: Mr. Holbrook, in firing a stoker, is the fireman exposed to the heat at all of the fire box?

Mr. Holbrook: No, sir.

Mr. Lee: Only when the stoker should break down?

Mr. Holbrook: Only when using the fire hook to rake the fire.

Mr. Lee: That is all; cross examine.

CROSS EXAMINATION:

Mr. Carter: Did I understand you to say, Mr. Holbrook, that you considered it easier to fire the little engines, of ten years ago, than the big engines, of to-day?

Mr. Holbrook: I said that in that case the fireman would probably handle more coal but—

Mr. Carter: No, I did not ask that question. I asked for a yes or no. Didn't you say in the beginning of your testimony, in answer to the question, didn't you say yes, when you were asked the question if you believed that it was harder work to fire the small engines of ten years ago than to-day?

Mr. Holbrook: Yes, sir, I said that.

Mr. Carter: That is a theory of yours, is it not?

Mr. Holbrook: No, sir, it is from actual experience.

Mr. Carter: Well, presuming that the officials, of every railroad in the movement, that have expressed themselves on the subject, with perhaps the exception of the Pennsylvania officials, said that the labors of firemen have increased from year to year, and that the time has come when the firemen must have relief, and there were 100 officials of other railroads who expressed themselves that way to you, would that change your opinion?

Mr. Holbrook: I am basing my opinion, Mr. Carter, on the experience I have had on my own division; I do not know anything about the conditions that exist on the other railroads.

Mr. Carter: You still believe, then, that on the Pennsylvania road, so far as you have knowledge, the firemen ten years ago worked harder, on the little engines, than they do now on the bigger engines?

Mr. Holbrook: I do, yes, sir.

Mr. Carter: You also said that you did not believe that the firemen would be entitled to any increase in wages, or rather you said you were asked that question and you said No, if I remember rightly. You do not believe that the firemen should have an increase in wages.

Mr. Lee: I did not ask him that.

Mr. Carter: Well, it was something to that effect. Do you believe then the firemen should have increases in wages, because they are working less to-day than they were then?

Mr. Holbrook: That question, Mr. Carter, was asked in reference to two firemen, as I recollect it.

Mr. Carter: I understood you to say that you did not think there should be an increase in wages?

Mr. Holbrook: I did not say that.

Mr. Carter: Well, now what do you say about it?

Mr. Holbrook: I think our rates are very fair, and just, at the present time, speaking of course from our own conditions.

Mr. Carter: If it could be demonstrated to the Commission by an overwhelming preponderance of opinions of railroad officials that the labors of firemen have increased exceedingly, until something must be done to relieve the firemen, and thus, it were demonstrated that you were wrong on that one question. could it not be expected, perhaps, that you were wrong on everything you have said?

Mr. Holbrook: There might be sufficient evidence produced to me that would cause me to change my opinion on the subject, but—

Mr. Carter: You have not read then, what others have said upon this subject?

Mr. Holbrook: Not on this particular subject, no.

Mr. Carter: It will not be my purpose to examine the witness further upon that line of thought. It will be our purpose to show that he stands practically alone in the mechanical world of railway officials. Now, I understand you to say you do not believe it is necessary to furnish firemen any help on these big engines?

Mr. Holbrook: No, sir.

Mr. Carter: Because it is easier to fire them than it was the little engines ten years ago?

Mr. Holbrook: I do not see any necessity for any help.

Mr. Carter: If other officials believe that the reason mechanical stokers must be adopted is because the work of firing is beyond human endurance, then you will disagree with all those other officials; is that right?

Mr. Holbrook: Mr. Carter, along that line, while we have the big engines to-day, conditions do not permit us to load them, in tonnage, up to their full capacity.

Mr. Carter: The question I asked, Mr. Holbrook, in reply to your statement that you did not believe firemen needed any assistance on these larger engines was, that if practically all mechanical railway officials of all other roads, where they have expressed themselves for public consumption, if you like, disagree with you, would you still insist that you were right?

Mr. Holbrook: No, I do not maintain that I am absolutely right. There may be something that would cause me to change my opinion.

Mr. Carter: Then it is possible that all you have said here, being not in accord with the general concensus of opinion of other railway officials, you would probably change your opinion, would you not?

Mr. Holbrook: What I have said here on the stand relates entirely to the experience that has come under my own observation on my own division. I do not know what these other conditions are.

Mr. Carter: On account of the peculiar mental attitude of the witness, I would prefer not to ask many more questions; but I am going to ask some anyhow. You were speaking about the stoker. Have you had experience with this stoker on any other division except your own?

Mr. Holbrook: No, sir.

Mr. Carter: This stoker is a Pennsylvania stoker, is it not?

Mr. Holbrook: It is being developed by the Pennsylvania, yes, sir.

Mr. Carter: Did you ever know of any other railroad attempting to use this same stoker?

Mr. Holbrook: I have heard of one or two; I do not know as I can tell you which roads they were.

Mr. Carter: What roads were they?

Mr. Holbrook: I think the Norfolk & Western.

Mr. Carter: Are they using it now?

Mr. Holbrook: I could not tell you.

Mr. Carter: Suppose I should tell you they are not using it now, would you think it was because of a lack of efficiency of the firemen or the officials over there?

Mr. Holbrook: No, sir.

Mr. Carter: What other road tried to use the Crawford stoker?

Mr. Holbrook: I do not know as I can recall—the P. R. had I believe two or three in service.

Mr. Carter: Suppose the B & O tried it, and after trying it manfully, abandoned it; would you think it was because the mechanical officers over there did not have the proper information as to how to repair these stokers or something of that kind, or how to operate them?

Mr. Holbrook: No, I would not think so.

Mr. Carter: Well, presuming that most railroads, or many railroads, have spent thousands and thousands of dollars in trying to develop some stoker that will relieve firemen of their excessive duties, and at the same time be able to put more fire in the fire box than any one fireman can put in there, and many of these mechanical officials have had representatives on your road for the past three years, can you give any idea why they have not adopted that stoker, too?

Mr. Holbrook: Because they did not have the success with it, I suppose.

Mr. Carter: Did you ever hear of a mother thinking that her child was the prettiest baby in town?

Mr. Holbrook. I have.

Mr. Carter: She overlooks a great many of its short-comings when it cries and acts ugly, doesn't she?

Mr. Holbrook: Yes.

Mr. Carter: Perhaps that is the reason that this stoker has been such a success on your road and such a failure on other roads; is not that right?

Mr. Holbrook: I could not answer that.

Mr. Carter: I will not ask you that. I will ask somebody else on the other roads. You were speaking about men being set back. Why are men set back?

Mr. Holbrook: Usually it is brought about by depression in business.

Mr. Carter: Would it be an economic loss to firemen who had families and were working regularly, or making good time, to find that on account of depression in business, perhaps a third of them had been thrown out of employment?

Mr. Holbrook: It would, yes, sir.

Mr. Carter: I understood you to say it was the youngest men who were thrown out of employment?

Mr. Holbrook: That is true, as a general proposition.

Mr. Carter: That is because of the rules of seniority, is it not?

Mr. Holbrook: Yes, sir.

Mr. Carter: When did you fire an engine on the Pennsylvania Road?

Mr. Holbrook: In 1881, started in 1881.

Mr. Carter: Were there any seniority rules then?

Mr. Holbrook: No, sir.

Mr. Carter: When did you first begin to run an engine on that Pennsylvania road?

Mr. Holbrook: 1885, I think it was.

Mr. Carter: Were there any seniority rules for engineers?

Mr. Holbrook: I do not think so at that time.

Mr. Carter: How did these seniority rules come about?

Mr. Holbrook: At conference between the officials and the men.

Mr. Carter: What was the reason the men asked the seniority rules to be adopted?

Mr. Holbrook: I suppose it was on account of some men being run instead of others, for different causes.

Mr. Carter: The idea was that some rule would have to be adopted that would be just to all, is not that true?

Mr. Holbrook: That is true.

Mr. Carter: And then that is why the youngest men have been selected to lay off?

Mr. Holbrook: Yes, sir.

Mr. Carter: Not because of any favoritism to the men?

Mr. Holbrook: No.

Mr. Carter: You were running an engine in those days, were you not?

Mr. Holbrook: Yes, sir.

Mr. Carter: Didn't you welcome the seniority rule, where the favoritism would be no more, or were you a man that did not believe, with other engineers, that there should be a seniority rule?

Mr. Holbrook: I think it is a just proposition.

Mr. Carter: You think then that an engineer's work has greatly increased, but the fireman's has not?

Mr. Holbrook: I do not think so, no.

Mr. Carter: I understood you to say a while ago, the fireman's work had increased; you spoke about the nervous strain, that he could not make the miles, the fireman could not, and all that.

Mr. Lee: He said it had increased.

Mr. Carter: Didn't you say he could not make as many miles, as a fireman, because of the nature of his work?

Mr. Holbrook: I said the engineer, as a rule, did not make as many miles as the fireman.

Mr. Carter: You did not come here to testify during the engineers' proceeding, did you?

Mr. Holbrook: No, sir; I was not down here at all.

Mr. Carter: I thought so. With regard to this "first in and first out" clause, that is a part of the scheme of seniority too, is it not?

Mr. Holbrook: Yes, sir.

Mr. Carter: That is to keep some friend of a mechanical official from running his friend out and giving him more work than the other fellow?

Mr. Holbrook: My understanding was, or my opinion of it is, rather, it was done to equalize the fireman in the pool.

Mr. Carter: But this rule was adopted before men knew what pools were? You remember that we did not hear about pools.

Mr. Holbrook: Yes, sir.

Mr. Carter: They adopted a rule then, first in and first out, is not that true?

Mr. Holbrook: The engines at that time were running first in and first out.

Mr. Carter: Did you object at the time you were running an engine, to seniority?

Mr. Holbrook: No, sir.

Mr. Carter: First in and first out, it was all right.

Mr. Holbrook: Yes, sir.

Mr. Carter: If it was all right then, it is all right now.

Mr. Holbrook: Yes, sir.

Mr. Carter: When men were laid off and by virtue of these rules that were adopted to prevent favoritism, it falls on the younger men, does that greatly reduce the average compensation of the men, taken collectively?

Mr. Holbrook: With all of them, yes.

Mr. Carter: I mean to say, instead of laying off the youngest men, when the official had the authority to pick out the man he preferred to lay off for reasons best known to himself, it would greatly reduce the earnings of this fireman, would it not?

Mr. Holbrook: I do not believe I just catch your point.

Mr. Carter: Well, I mean to say that the laying off of men by any scheme, or any plan, results in great hardships to the men, taken collectively?

Mr. Holbrook: Yes.

Mr. Carter: Well, now, when men are laid off, say we pull off a lot of engine crews, engineers, and firemen, how does that affect the passenger fireman?

Mr. Holbrook: As a rule, it does not affect the passenger fireman.

Mr. Carter: Does not the young engineer come back and take a fireman's job?

Mr. Holbrook: It depends on how far you go with it.

Mr. Carter: Let us presume that there are plenty of passenger engines on your division, and because of a depression in business 28 of the youngest freight engineers are laid off. They would take firemen's jobs on the passenger runs?

Mr. Holbrook: The demoted engineer, of course, would take a passenger run as fireman.

Mr. Carter: Then so far as the real hardship is concerned in a depression, it does not fall on the engineer, but it falls on the fireman, because the engineer gets a job of firing a passenger locomotive, while the fireman walks the streets, does he not?

Mr. Holbrook: That is very true of the younger men in the service.

Mr. Carter: Then the fact remains that in depressions, when some men have to walk the plank, it is always the firemen who walk the plank, and not the engineers. Is not that true?

Mr. Holbrook: That is true as a rule, yes, sir.

Mr. Carter: I understood you to say that firemen were not responsible for low water. Is that right?

Mr. Holbrook: Under the conditions that Mr. Lee asked the question, yes, that is right.

Mr. Carter: Do you mean to tell me that when a fireman is left to watch an engine at a tie-up point, if the engineer is off for rest or any purpose, presuming that the fireman is left in charge, that he is not held responsible for low water?

Mr. Holbrook: The question was not asked in that way. The question was asked as a yard proposition, where the men are around there. A tie-up point was not mentioned.

Mr. Carter: We have a record here that fireman A. W. Perry was left in charge of a road engine at Logansport, and during the absence of the engineer it was presumed, only, that the crown sheet was damaged by low water, and the fireman was disciplined 60 days. Would that indicate that he had no responsibility for low water?

Mr. Lee: Is Logansport on your division?

Mr. Holbrook: I have nothing to do with the Logansport Division and am not familiar with that case. I do not know.

Mr. Carter: Suppose that occurred on the Logansport Division, would that indicate that your division was operated under a different set of rules than the Logansport Division.

Mr. Holbrook: It would, yes, sir; they are not all handled alike.

Mr. Carter: Do you have different rules on the different divisions?

Mr. Holbrook: In a great many cases, yes, in minor ways. They are not all handled in the same way.

Mr. Carter: Do you mean to say that the men under some Division superintendents, or road foremen of engines, can do things with impunity that could not be done under other similar officials on other divisions on the same road, the Pennsylvania Lines West?

Mr. Holbrook: The method of handling descipline is different on different divisions.

Mr. Carter: Then discipline is largely a personal matter on the Pennsylvania road, is it?

Mr. Holbrook: Not at all.

Mr. Carter. Then why would you not have the same discipline all over the road?

Mr. Holbrook: It is largely a matter of opinion.

Mr. Carter: Whose opinion?

Mr. Holbrook: The opinion of the ones who conduct the investigation.

Mr. Carter: Local officials?

Mr. Holbrook: The character of the man, his good or bad service, and so on, always enter into that.

Mr. Carter: The point is this: If firemen are held responsible for low water, or any other matter on one division of the Pennsylvania Lines West, under one general superintendent, and are not held responsible under another general superitendent, would that indicate that discipline on the Pennsylvania Lines West is a matter of personality rather than any fixed rule?

Mr. Holbrook: I would not think so.

Mr. Carter: Are there any uniform rules that would govern discipline on all divisions?

Mr. Holbrook: No, sir.

Mr. Carter: You believe it would be a mistake to have a standardization of rules on the Pennsylvania road, do you not, so far as responsibility is concerned?

Mr. Holbrook: In meting out discipline I would think each case ought to be governed by what developed.

Mr. Carter: I do not mean the case, I mean the rule. That is the policy of the Pennsylvania, is it not, that each general

superintendent is a little general manager of his own division? He has charge of his division, and the officials on the Pennsylvania are very much opposed to standardizing rules or anything of that kind, are they not, and rates of pay, and so on?

Mr. Holbrook: I could not answer that.

Mr. Carter: You would be, would you not?

Mr. Holbrook: Yes.

Mr. Carter: Would you like to see the same rules all over the Pennsylvania road, so that every employee would understand what the rules are?

Mr. Holbrook: In my opinion that is not fair to the men themselves, to make a standard proposition out of it, because different conditions exist at different points, and I think the conditions ought largely to govern the rate of pay.

Mr. Carter: Then I understand that the responsibility for signals, train orders, watches, low water, and other things should vary, in your opinion, on different divisions?

Mr. Holbrook: I did not say that.

Mr. Carter: You say that responsibility for low water varies?

Mr. Holbrook: You mentioned the case of a particular discipline, at some point, that I did not know anything about, and I would not want to answer as to that particular case.

Mr. Carter: I understand that if this case that occurred at Logansport had occurred under your supervision, and the engineer was away, and the fireman let the water get away from him and burn the crown sheet, you would not have disciplined him at all?

Mr. Holbrook: It would depend on the conditions at the time.

Mr. Carter: Suppose he had been in charge of the engine?

Mr. Holbrook: If it was a case where he was put in direct charge of that engine, then we would hold him responsible. If he was left in direct charge, that would be one thing. The other question which Mr. Lee asked did not refer to that at all.

Mr. Carter: I heard you say a while ago that the firemen would not be responsible, but that the hostlers and engineers would be responsible. Is that right?

Mr. Holbrook: That was a case where the engine was set out, and the crew came to take the engine.

Mr. Carter: Then you would hold the hostlers responsible for a good many things on your road?

Mr. Holbrook: That is that particular man's business, to see that the engine is left in proper condition for the crew.

Mr. Carter: He has charge of the machine, practically, after the engine crew leave it?

Mr. Holbrook: Yes.

Mr. Carter: So far as the care of the engine is concerned he is practically the same as an engineer. He has got to know his business?

Mr. Holbrook: He has got to know that part of his business, yes, sir.

Mr. Carter: Do you believe—I will not ask the question I was going to ask, because you are advanced in years. I was going to ask you if you would rather fire a big engine than a little engine, but I will not ask that, because I do not believe a man of your age—giving you credit of being younger than I am—could fire one of those large engines. I know I could not. I do not know whether you could or not. Let us go back. You are a mechanical man, are you not?

Mr. Holbrook: No, sir, I came up as a fireman.

Mr. Carter: Firemen are supposed to learn mechanics in these days. How was it in your day? Did they have to study all the time and learn mechanics and so forth?

Mr. Holbrook: We started in, at least I did, to educate myself along the line I expected to follow:

Mr. Carter: Did the company compel you to pass extensive examinations on books of rules, etc., when you were firing an engine?

Mr. Holbrook: Yes, sir; that is not those periodical—

Mr. Carter: Then you did acquire considerable knowledge of the locomotive while you were firing and running?

Mr Holbrook: Yes, sir.

Mr. Carter: Do you know anything about the factors that tend to increase the efficiency of locomotive boilers?

Mr. Holbrook: In a general way; I do not know anything much about the detail of it.

Mr. Carter: I heard you say a while ago that the reason that the larger engines of to-day are easier fired, is because they have larger heating surface and larger grate area?

Mr. Holbrook: Yes, sir.

Mr. Carter: Then you think that with a larger grate area the nozzles can be increased, the draught reduced, and get the same amount of combustion, a better state of combustion, do you not?

Mr. Holbrook: They are better conditions all around, yes.

Mr. Carter: Do you remember in the old days they had the big fire boxes?

Mr. Holbrook: Yes, sir.

Mr. Carter: They were not very large. Do you know the cause, in fact the necessity of changing the type of boiler so as to have large fire boxes mounted over the frames or drivers?

Mr. Holbrook: To get additional heating surface.

Mr. Carter: Well, also an additional grate area, is that not true?

Mr. Holbrook: Yes, sir; grate area and heating surface.

Mr. Carter: What would be the effect, as a mechanical man, if you would take some slabs of iron and throw into the fire box and reduce its grate area some one-third?

Mr. Holbrook: It would have quite an effect on it.

Mr. Carter: Wouldn't you have to reduce the nozzles in order to burn the same amount of coal on the reduced area?

Mr. Holbrook: You would have to overcome it in some way.

Mr. Carter: Well, what percentage of the grate area, as designed by the builders, does the Crawford stoker reduce?

Mr. Holbrook: I couldn't answer that.

Mr. Carter: One-third, I believe, it is said to be?

Mr. Holbrook: I couldn't answer.

Mr. Carter: In fact I believe I have here a statement of the inventor to that effect, it reduces the grate area about one-third. Now, if a fireman was firing a large locomotive with all of its grate area, and anything, whether it was, clinkers, slabs of iron or stokers, that reduced that grate area one-third, don't you think it would increase his labors?

Mr. Holbrook: Yes, sir; an engine in that condition would be a little harder to fire.

Mr. Carter: Harder to fire. That is, if the stoker stopped working at any time, it would increase his labors to keep the engine hot without the stoker?

Mr. Holbrook: He would have to exercise a whole lot more

care to keep his fire in condition and it would undoubtedly increase his labor some.

The Chairman: I thought you answered the question of Mr. Lee just the other way?

Mr. Lee: He put the coal into the fire the same as he would in moving it.

Mr. Holbrook: It is fired in the same manner, through the door.

The Chairman: But it would entail more work on his part to keep the engine going?

Mr. Holbrook: Yes, sir; it would.

Mr. Carter: Pardon a mechanical draftman's efforts. Presuming that this is a grate area, the troughs and mechanism of the under-feed stoker extends forward in two parallel lines or columns. I will say, if the stoker stops, even momentarily gets choked, don't the clinkers form easily over the top of those agitators?

Mr. Holbrook: Over the agitators.

Mr. Carter: Yes.

Mr. Holbrook: Why, if the length of time that the stoker is out of commission is too long, the coal will eventually burn down in there, of course.

Mr. Carter: Now, I won't ask you to repeat the question, but I think you agree with me that the designers of modern locomotives put every inch of grate area in there, did they not?

Mr. Holbrook: Yes, sir.

Mr. Carter: And anything, whether it is, clinkers, slabs, or iron, or stokers that reduces the grate area one-third, reduces the efficiency of that boiler to consume the same amount of coal without higher draft?

Mr. Holbrook: Yes, sir.

Mr. Carter: What would you do as a mechanical man if you found that you had to burn more coal on a reduced grate area in order to evaporate the water necessary to pull your train.

Mr. Holbrook: I would have to increase the draft on the fire-box.

Mr. Carter: And how would you increase the draft?

Mr. Holbrook: By making a change in the front end or a reduction of the nozzles.

Mr. Carter: A reduction of the nozzles. Now, wouldn't the reduction of the nozzles make it harder for the fireman to keep coal in the engine?

Mr. Holbrook: It would burn more coal, yes, sir.

Mr. Carter: And would it not decrease the efficiency of the cylinders, the engine, and the locomotive, on account of back pressure, small nozzles?

Mr. Holbrook: Yes, if you go too far with it, it would.

Mr. Carter: Well, isn't it a fact that perhaps the defects that might be incidental to the under-feed stoker have been recognized by nearly all of the roads and for that reason it has not been adopted?

Mr. Holbrook: I could not say why they did not adopt them on other roads.

Mr. Carter: I will withdraw that question because it is an unfair one to a Pennsylvania witness. I understood you to say that a reduction of grades made it easier work for a fireman, is that true?

Mr. Holbrook: I said it did with us, on the division with which I am connected.

Mr. Carter: How much less tonnage do the firemen have to pull since you reached the grade?

Mr. Holbrook: My idea in making that statement was this, for in answering that question, that due to our conditions that exist we cannot afford to load the engines up to their full tonnage rating on account of the length of time required to get over the road.

Mr. Carter: Suppose a certain division had a few humps in it like they used to have in the old days, and they had no pusher engines on the road like they didn't have in the old days, what would be the rating or how much would you put on a locomotive in order to get over those humps?

Mr. Holbrook: You would have to rate her according to the ruling hump.

Mr. Carter: What would the fireman be doing while he was rolling down the hump; would he be shoveling as much coal as after the hump was taken out?

Mr. Holbrook: No, it is an easier proposition, in my opinion, where the grade is rolling—

Mr. Carter: Then the proposition of grades has not been a God send to these firemen?

Mr. Holbrook: I am only speaking, Mr. Carter, from our own territory there.

Mr. Carter: Is it a fact that engines pull more tonnage and firemen work just as incessantly on a road after the grades have been reduced as they did before?

Mr. Holbrook: A division of that nature is harder to fire on.

Mr. Carter: But if they keep the trains the same as they did before they reduced the grades, why it would have been much easier for the firemen, would it not?

Mr. Holbrook: Yes, sir.

Mr. Carter: But they do not keep all trains the same, do they?

Mr. Holbrook: No, sir.

Mr. Carter: I understood you to say there were very few fast freight trains in the old days.

Mr. Holbrook: Yes.

Mr. Carter: Well, was it not a fact that practically all freight trains used to get over the road, so that the crews were often doubled out? Didn't you double on many a trip when you were running and firing?

Mr. Holbrook: Yes.

Mr. Carter: Do you think you could do much doubling under the present conditions?

Mr. Holbrook: I could, yes, sir.

Mr. Carter: How many hours do you think you could work if you worked 14 hours in one direction, and doubled back 14 hours, which would be 28 hours? About how many doubles do you think a man could make?

Mr. Holbrook: At the present time?

Mr. Carter: Yes.

Mr. Holbrook: He could go along about the same as he formerly did, that is, under the same conditions?

Mr. Carter: Do you mean to say the firemen could double on a 14-hour run like they used to on a ten hour run?

Mr. Holbrook: The conditions have changed from that time to the present.

Mr. Carter: How do you mean?

Mr. Holbrook: The facilities have increased, and in a good

many cases the day has become a little shorter, and the engines are heavier, and—

Mr. Carter: If it were not for the 16-hour law, you would double the men now as you used to?

Mr. Holbrook: I don't think so.

Mr. Carter: Why wouldn't you if the work is not any harder?

Mr. Holbrook: In talking to the men in a good many cases, they would double, if they could.

Mr. Carter: Do you know why the 16-hour law was adopted? Are you familiar with that?

Mr. Holbrook: Primarily, my opinion is that it was in order to ensure the men the proper amount of rest; that is what they were after.

Mr. Carter: Are you familiar with the testimony submitted to the Congressional hearings when they tried to get this law through?

Mr. Holbrook: No, sir.

Mr. Carter: If I were to tell you that practically all, or a large majority of the cases presented here, were because men were doubled out of their divisions, making two trips without rest, instead of being held a long while on the division, would you understand then, that there was a different practice then, from now? I will not ask you that question, but you do not understand why the 16-hour law was enacted?

Mr. Holbrook: Not in its entirety, no.

Mr. Carter: You do not understand that the reports of the Interstate Commerce Commission showed that railroads habitually doubled their men out on another trip without giving them rest?

Mr. Holbrook: At one stage of the game we doubled out at our own request.

Mr. Carter: Why did you do that?

Mr. Holbrook: In order to get our time at home, we doubled away from the home terminal, that is, from the opposite terminal back.

Mr. Carter: Would you take and double out now under present conditions?

Mr. Holbrook: Some of the men would like to have it that way yet.

Mr. Carter: Is that so?

Mr. Holbrook: Yes.

Mr. Carter: The engineers?

Mr. Holbrook: The engineers and firemen, both.

Mr. Carter: Suppose I told you that the firemen in this eastern country rebuked me because I refused to go before Congress and have their hours of labor reduced to 12 hours; would that indicate that the firemen wanted to work longer hours?

Mr. Holbrook: I do not mean to say that all the men would like that, but there are a number of men that talk about it in that way.

Mr. Carter: Those fellows have got the easy runs?

Mr. Holbrook: No, I cannot say that they have; it is in freight service.

Mr. Carter: Suppose it could be shown that the men all over this country are begging for rest, begging for a ten-hour day, if you like, or else help of a fireman so they can make a 14-hour day, they would not be like the men on your division, would they?

Mr. Holbrook: I would not think so, no.

Mr. Carter: You said a while ago the reason there were two classes of pay on your switch engines was because of the cost of living.

Mr. Holbrook: I said that was one of the factors. That was my understanding of it, that that was one of the factors that entered into that.

Mr. Carter: Do you believe that the cost of living is any cheaper, we will say, in Columbus or Pittsburg, is that your division, than it would be at some smaller town?

Mr. Holbrook: Is it any less, did you say?

Mr. Carter: Yes; do you think it would be any more than at some smaller town?

Mr. Holbrook: The cost of living would be more.

Mr. Carter: Do you believe the cost of living would be less at the smaller town than at the larger towns?

Mr. Holbrook: I would think so, yes, sir.

Mr. Carter: Did you read any of the testimony presented at the recent session of Congress against the introduction of the parcels post system?

Mr. Holbrook: No.

Mr. Carter: Suppose I were to tell you that the principal

objection of the country merchants to the adoption of the Parcels Post System was that it would permit their customers to send to the larger cities to buy their necessities and ship to the smaller towns, and do them up for business?

Mr. Holbrook: There may be some articles you can buy cheaper that way.

Mr. Carter: Suppose I told you the Merchants' Associations of the country used that as their principal reason, saying the big merchants in the big cities would put them out of business because they could sell cheaper, what would you think about that, would you think these country merchants were wrong about that?

Mr. Holbrook: It works the other way; the City people are using the Parcels Post to buy from the small towns too.

Mr. Carter: Is it not vice versa; for instance, I will not ask you about your town, but take the town of Peoria where I live; the town of Peoria is all wrought up because the citizens there are beginning to send to Chicago for a great amount of their necessities, provisions, clothing, and such as that. Would that indicate that the living in Peoria was cheaper than in Chicago?

Mr. Holbrook: No.

Mr. Carter: Suppose I tell you that a great many citizens of Peoria pay their fare to Chicago about once a month, and buy their month's supplies, and pay freight on them back, would not that indicate that living was more expensive in Peoria, than in Chicago?

Mr. Holbrook: I do not know.

Mr. Carter: Don't you know that is the practice, and that is what has built up the big mail order houses?

Mr. Holbrook: That is what has brought the business up.

Mr. Carter: Now, take the other tack. You say that the reason that certain runs, like turn arounds, and so forth, require less wages, or words to that effect, is because the men turn around and come back home. Now, if you are right in theory and it is so much cheaper to live at the other end of the road, it would pay them not to turn around and come back, would it not? Why should they come back if it is cheaper at the other end of the division?

Mr. Holbrook: Well, as a general proposition, on the Pittsburg territory, the increased cost is due largely to the cost of

rents, more than anything else; rents are much higher in the large cities than in the small ones.

Mr. Carter: Do you think the fireman pays much more for rent in a large city than he does in a small one?

Mr. Holbrook: He has to in the same proportion as the class of house he gets.

Mr. Carter: If you were a fireman and running out of a big city into a little city, and had been spending, we will say, $18.00 a month rent in a big city, and you went to a little city, would not you spend that $18.00 a month and get a little better house, maybe, or would you save on your house?

Mr. Holbrook: That is largely a matter for a fireman to decide himself.

Mr. Carter: Is not that a practice that a man is accustomed to spend so much and rather than to cut down his expenditure, he generally increases the returns?

Mr. Holbrook: That is usually the case, yes; when you get an increase, you give it to the other fellow.

Mr. Carter: You spoke about the reasons that wages should be cheaper at outlaying points because of the lower cost of living. The point I wish to bring out is that he says that the reason the switch engine wages are less at the outlying points, is because the cost of living is less there, and that the reason that switch engine wages in the larger cities are higher is because of the cost of living there. Now, suppose I tell you that the cost of living in New York City greatly exceeds the cost of living in some Missouri town, on the C. B. & Q., do you believe that the Pennsylvania road should pay more money than the C. B. & Q. now pays?

Mr. Holbrook: Mr. Carter, I said that the increased cost of living was one of the factors.

Mr. Carter: We will take your factor that switch engine firemen should work for less at the smaller towns, because of the increased cost of living; now, I am not going to agree with you that is true, but, just for the sake of the argument, we will say that it costs a fireman more to fire a switch engine in a small town than it does in a large town, and therefore there should be that discrepancy in wages. Now, I say, basing our theory—our social economy—upon that idea—the tendency, if you like—if it can be shown that in a small town on the C. B. & Q. railroad, they pay $3.50 a day for firing an engine, and that it costs more

for a fireman to fire the same class of engine out of New York, on the Pennsylvania road, then you believe the Pennsylvania road, according to that theory, should pay more money than the C. B. & Q. road, is not that true?

Mr. Holbrook: Yes, sir.

Mr. Carter: When I tell you the Pennsylvania road is not paying as much as the C. B. & Q., there is a screw loose in our theory, is not there?

Mr. Holbrook: It looks like it.

Mr. Carter: We will have to have that theory repaired; I am afraid you have got theorists as well as we have.

The Chairman: Is that a fact, Mr. Carter, that a fireman out in the small town in Missouri on the C. B. & Q. is making more money than the fireman on the Pennsylvania Railroad?

Mr. Carter: Refer to our Exhibit No. 1.

The Chairman: Is it a fact that a fireman out there is making more money, for the same work, than the Pennsylvania fireman who lives in New York?

Mr. Carter: It was with that idea in view that we prepared our Exhibit No. 1, to show that the eastern roads are not paying nearly the wages that the western roads are.

The Chairman: Did not you claim at the arbitration in Chicago that the western firemen ought to have more than the eastern?

Mr. Carter: Not me; if anybody did, I would like to differ with him. If anybody did, why, I want to say to you that I disagree with him, because my study of this situation, which has been quite extensive, shows that the cost of living is uniform throughout the country. There are places in all sections of the country where eggs may be cheap, because hens are plentiful, but take it all in all, you will find that the cost of living in the east is about what it is in the west, practically the same. I said, taking the low cost place in the west—I said, some Missouri town —presuming that they had hens all around there, and a grist mill on the edge of the town, presuming that it costs less for the firemen to live there, and he is getting $3.50 a day for firing a certain engine, then, according to this school of economy, the Pennsylvania road should pay $3.75 a day for that same engine, because it costs more to live in New York; that was the idea.

Mr. Lee: Where firemen are plentiful and eggs are cheap, firemen ought to be cheap?

Mr. Carter: I do not agree with this theory at all, I am only trying to elucidate the theory of the witness.

Mr. Lee: Oh, I see.

Mr. Carter: A little while ago you said that you did not believe that a fireman should receive double the time, or we might say a punitive overtime for any purpose, is that true?

Mr. Holbrook: Yes, sir.

Mr. Carter: Does the Pennsylvania Railroad pay their machinists time and a half, for overtime, after they work a day?

Mr. Holbrook: I could not answer that, Mr. Carter, I am not familiar.

Mr. Carter: You are not acquainted with shop practice?

Mr. Holbrook: I am not.

Mr. Carter: I want to ask you, or I will ask somebody that does know. You were speaking about the hours—

The Chairman: Suppose the other side does not put up anybody that you can cross-examine upon that point.

Mr. Lee: I think we will have somebody that he can cross-examine.

The Chairman: I want to anticipate that.

Mr. Lee: If he does not, we will be very glad to put somebody on.

Mr. Carter: A little while ago you spoke about the 16 hour law giving a man 8 hours' rest, is that true?

Mr. Holbrook: Ten hours.

Mr. Carter: Or ten hours' rest, is that true?

Mr. Holbrook: After sixteen hours.

Mr. Carter: How is that?

Mr. Holbrook: Ten hours off duty.

Mr Carter: Off duty—what is the difference between off duty and rest?

Mr. Holbrook: It depends upon how soon a man gets to bed.

Mr. Carter: Supposing a man had eight hours off duty, and had a vacancy in his stomach, and he knew he was going out at the end of the eight hours, when would he be considered off duty? When he registered in?

Mr. Holbrook: When he arrives at the terminus.

Mr. Carter: In your judgment, as an old fireman, and an old engineer, about how much time would it take him to change

his clothes, wash up, and get something to eat, and go to his room and get to sleep?

Mr. Holbrook: Well, I should say the best he could possibly do would be an hour.

Mr. Carter: An hour; how long would you call that fireman before the departure of the train, presuming he had to have something to eat?

Mr. Holbrook: Two hours.

Mr. Carter: That would reduce it to five hours. Now, then in practice, while the 16 hour law relieves a man from duty for eight hours, or ten hours, if he has been sixteen consecutive hours on duty, in fact, his rest is perhaps three hours less than understood by the law?

Mr. Holbrook: Ordinarily, yes.

Mr. Carter: With regard to this terminal delay, supposing a man is delayed at a foreign terminal, and has a wife and a family at the home terminal, suppose he is delayed for fifteen hours or more, does that not reduce his earning capacity, the delay at the other end of the road? You spoke about delay at terminals, a while ago. I would not ask you any question about things you did not speak of.

Mr. Holbrook: Yes, the longer the time at either his home terminal, the time he takes there will reduce the number of days he can make per month.

Mr. Carter: The amount of his earnings?

Mr. Holbrook: Yes.

Mr. Carter: Now, would it not also increase his expense.

Mr. Holbrook: The longer the length of time he is away from home, yes.

Mr. Carter: Well then, if firemen were doubled back to their home terminal, or started back within fifteen hours, it would be of great benefit to them, would it not?

Mr. Holbrook: It would, yes.

Mr. Carter: In regard to the lubricators being dangerous, you say that if the firemen followed the instructions of the company, no accidents would occur?

Mr. Holbrook: Oh, I do not mean to say that.

Mr. Carter: It would be practically eliminated, but that applies to every danger; besides, does not the company instruct him to avoid danger?

Mr. Holbrook: It applies to all company employees, I would say.

Mr. Carter: The purpose of the company is to prevent accidents, is that not true?

Mr. Holbrook: Yes.

Mr. Carter: They would not hurt a man purposely?

Mr. Holbrook: No, sir.

Mr. Carter: We would not contend so, but the peculiarity of the service results in many accidents, is that not true?

Mr. Holbrook: Yes, sir.

Mr. Carter: Then, is that not true that the instructions of the company do not entirely prevent accidents?

Mr. Holbrook: Yes, that is true.

Mr. Carter: Then, if I should tell you that one-half of the firemen, members of this organization, who die at all, die from accident, then what would you think about the instructions of the company? They would have no effect, would they?

Mr. Holbrook: If a man did not pay any attention to them it would not have any effect.

Mr. Carter: Then from that answer I understand you think these men commit suicide?

Mr. Holbrook: Not at all.

Mr. Carter: Then do you not think these accidents are inevitable to this line of employment?

Mr. Holbrook: I think along that line that a man ought to use ordinary caution to protect himself.

Mr. Carter: I have a great many questions here that I might ask, but I will not ask any more except this one. I want to ask you again, if it is shown here by a preponderance of railway officials' evidence that the labors of firemen have greatly increased during the past ten years, then you will agree that your theory perhaps is wrong, is not that true?

Mr. Holbrook: As a general proposition, yes, if all the railroad officials agree that the labors of firemen have greatly increased.

Mr. Carter: And if you are mistaken in your belief that the labors of firemen have not increased, then you may be mistaken in everything else you have said; is not that true?

Mr. Holbrook: I would not say that.

Mr. Carter: That is all.

Mr. Lee: Mr. Holbrook, regulation No. 43 reads as follows:

"The proper amount of rest will be allowed. However, employees unable to work on account of sickness or other disability, must give ample notice to that effect to the proper officers."

Is that the reading of your article 43 in the schedule of the firemen?

Mr. Holbrook: Yes.

Mr. Lee: Firemen have the right to ask for additional rest over that required by the "Hours of Service Law," have they not?

Mr. Holbrook: Yes.

Mr. Lee: That is generally given when requested?

Mr. Holbrook: Yes.

Mr. Lee: Unless the work will prevent?

Mr. Holbrook: If it is any way possible that we can give a man the rest, if he requires it we always do it.

Mr. Lee: In your answer to my question, you were speaking, as I remember it, of your own division only?

Mr. Holbrook: Yes.

Mr. Lee: Anything outside of your own division is merely a matter of opinion?

Mr. Holbrook: Yes.

Mr. Lee: That is all.

Mr. Atterbury: I should like to ask this question, because I do not think either one of you brought out the facts here. In 1902, what was your standard freight engine, Mr. Holbrook?

Mr. Holbrook: Our power was made up largely of H-6, I think.

Mr. Atterbury: In 1902?

Mr. Holbrook: H-4's and H-6's.

Mr. Atterbury: In 1902?

Mr. Holbrook: That is the best of my recollection.

Mr. Atterbury: I should have supposed that the H-3 engine was your standard in 1902?

Mr. Holbrook: The only way I had to get the information was out of the statistics compiled as to the time the engine was built. I do not know just what time in the year 1902 the H-6's were received.

Mr. Atterbury: For the H-3 engine on a through run in 1902, what did you pay?

Mr. Holbrook: I cannot answer that question.

Mr. Atterbury: Did you have any initial time in 1902?

Mr. Holbrook: Do you mean initial preparatory time?

Mr. Atterbury: Yes.

Mr. Holbrook: No, I believe not.

Mr. Atterbury: Did you have any terminal time?

Mr. Holbrook: No, sir.

Mr. Atterbury: Were you paid overtime?

Mr. Holbrook: I think not.

Mr. Atterbury: Did you do any cleaning?

Mr. Holbrook: My recollection is that at that time the firemen were required to wipe outside above the running-board.

Mr. Atterbury: Was the class R engine a comfortable engine to fire, and a comfortable engine to ride on?

Mr. Holbrook: Yes, sir, it was.

Mr. Atterbury: Was it a closed cab, or a half deck cab?

Mr. Holbrook: A closed cab, full deck.

Mr. Atterbury: You do not know then, what the fireman got for all that in 1902?

Mr. Holbrook: No, sir, I could not say.

Mr. Atterbury: Nor how long it took him?

Mr. Holbrook: No, sir.

Mr. Atterbury: Were his hours long or short in 1902 on a through freight train?

Mr. Holbrook: As I remember it, it would run anywhere from ten to fourteen hours on different trips.

Mr. Atterbury: What I should like to get Mr. Carter and Mr. Lee to do if they can, is to take sample instances, like the one in question, and take the situation exactly as it existed in 1902 with all the surroundings that accompanied the work at that time, and take a similar situation as of to-day, and have the corresponding facts as of 1902 and of to-day. Then, it seems to me the Commission would have something to base its conclusions on In the absence of definite information on that, it is going to be difficult, I should think.

The Chairman: You do know, Mr. Holbrook, just what the conditions are to-day?

Mr. Holbrook: Yes.

The Chairman: How can you compare the conditions of to-day with the conditions that existed in 1902, when you do not know exactly what the 1902 conditions were?

Mr. Holbrook: It is only from my recollection at that time. I have no data to show.

Mr. Lee: I think he did not mention the particular year, but he said "formerly."

The Chairman: I noticed that in your answers you said, "formerly" instead of "1902."

Mr. Lee: Yes.

The Chairman: And "formerly" might have meant anywhere from 1895 to 1905; so that the witness had an oscillating or vibrating period to base his opinion on. What we have been doing heretofore, Mr. Holbrook—and you have been in the room most of the time—is to have comparative tables, and theories elaborated covering the years 1902-1912. That is the reason why we should like just what Mr. Atterbury asked for, if we could get it.

Mr. Holbrook: I would not feel like making statements like that under oath, because they would have to come entirely from memory. I would have to look it up in order to state definitely.

The Chairman: But you do make the statement, and stand to it, that a man did more work on a small engine formerly than he does on a large engine now?

Mr. Holbrook: There are lots of conditions that enter into that. I said merely in answer to Mr. Lee's question, that comparing the larger type of engine with the smaller, they had to be more exact in firing the smaller engine. But I said the fireman did have to handle more coal on the larger engine, but he had to exercise more care with the smaller amount.

The Chairman: You would say then that a man could handle ten tons of coal on a small engine formerly, and do more work than he does to-day in handling 20 tons. Would you say that?

Mr. Holbrook: Not in that ratio, no, sir. I do not say there is that much difference between the small engine and the large engine. I was comparing the H-6 with the H-8, the H-8 with the 205,000 pounds, I think it is.

The Chairman: How much coal would a fireman handle on a 113,000 pound engine, and another fireman running over the same division to-day, the trains following each other, we will say, the other one firing a 205,000-pound engine? Take the case of one firing a 205,000-pound engine and one a 113,000-pound engine.

Mr. Holbroook: Do you mean the difference in the amount of coal consumed?

The Chairman: Yes, each train loaded to the capacity of that sized engine.

Mr. Holbrook: Over a division, say—

The Chairman: Not pulling the same sized load, but pulling their tonnage?

Mr. Holbrook: Pulling their tonnage that they had at that time?

The Chairman: Yes.

Mr. Holbrook: Well, we used to burn from 14,000 to 16,000 on the smaller engines, about 16,000 I would say from memory, and it runs into 20,000, 21,000 and 22,000.

Mr. Lee: We would be very glad, if you please, to furnish all this exact information on this particular division, which is a hundred mile division between Columbus and Dennison.

Mr. Atterbury: The point I make is that conditions have materially changed in that ten year period. Conditions of all sorts have changed; wages have changed, locomotives have changed, and everything has changed; the physical conditions of the divisions. Now, cannot you get some facts that will relate the work of the fireman to-day with the work of the fireman of 1902?

Mr. Lee: I think so, sir. I will be very glad to get it for you.

The Chairman: Well, Mr. Holbrook, you may stand aside.

(Witness excused.)

Mr. Lee: Mr. DeSalis.

JOSEPH H. DESALIS, called as a witness, being duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your position?

Mr. DeSalis: Chief Road Foreman of Engines, New York Central & Hudson River Railroad, Western District.

Mr. Lee: Between what points?

Mr. DeSalis: Syracuse and Buffalo.

Mr. Lee: How long have you been in that position?

Mr. DeSalis: About one year.

Mr. Lee: What were you previous to that?

Mr. DeSalis: Road Foreman of Engines.

Mr. Lee: Where?

Mr. DeSalis: Located at East Syracuse, N. Y.

Mr. Lee: Previous to that?

Mr. DeSalis: Locomotive engineer.

Mr. Lee: Previous to that?

Mr. DeSalis: Locomotive fireman.

Mr. Lee: What are your duties, Mr. DeSalis?

Mr. DeSalis: I have supervision over the territory handled by eight road foremen of engines.

Mr. Lee: Do your duties require you to be on the road much of the time?

Mr. DeSalis: They do.

Mr. Lee: Are you familiar with the duties of a fireman and engineman?

Mr. DeSalis: Yes, sir.

Mr. Lee: Where do you generally ride when you are on the road?

Mr. DeSalis: Part of the time in the train and part of the time on the engine.

Mr. Lee: Can you tell whether or not a fireman is doing his work properly?

Mr. DeSalis: Yes, sir.

Mr. Lee: You are familiar with the conditions surrounding the work of a fireman?

Mr. DeSalis: I am.

Mr. Lee: What was the date of your last schedule for firemen?

Mr. DeSalis: 1910, May.

Mr. Lee: Has anything arisen to require any change since then?

Mr. DeSalis: Yes, sir.

Mr. Lee: What?

Mr. DeSalis: Additional pay granted to men on Mallet compounds.

Mr. Lee: Why was that?

Mr. DeSalis: What is that?

Mr. Lee: Why was that change made?

Mr. DeSalis: I understand it was at the request of the firemen's committee.

Mr. Lee: Are you familiar with local freight service?

Mr. DeSalis: Yes, sir.

Mr. Lee: Is it considered a preferred service?

Mr. DeSalis: It is generally asked for by men older than those working in the pool.

Mr. Lee: That is, the oldest men ask for the local freight service?

Mr. DeSalis: Yes.

Mr. Lee: Would that lead you to believe that the older men prefer the local freight service?

Mr. DeSalis: In most cases they do.

Mr. Lee: Has the work of a fireman on the same class of engine increased to-day over what it was in 1902?

Mr. DeSalis: No, sir; it has not.

Mr. Lee: He works about the same to-day as he did in 1902, on the same class of engines?

Mr. DeSalis: In some particulars his duties are reduced.

Mr. Lee: In what way?

Mr. DeSalis: Well, the abolishing of cleaning, maintaining the brick arches in fire boxes, improved front end and draught appliances.

Mr. Lee: What other things Mr. DeSalis, quite a bunch of them I think you spoke of?

Mr. DeSalis: Coal shovelers are maintained at several points for their assistance. Lunch rooms are established, wash and bunk rooms. Do you wish the pay question brought in?

Mr. Lee: Yes, anything that makes it better.

Mr. DeSalis: The day's pay for extra trips after making a trip which consumes 100 miles or 10 hours. Constructed mileage. Privileged to-day of having hostler jobs, positions as traveling firemen and engine despatchers they are considered for in their agreement. Paying for every point of cut-out in place of taking out of service on account of hours of service lost to home terminal. When attending investigations they are paid for it; also when acting as witnesses they are paid.

Mr. Lee: Witnesses in court?

Mr. DeSalis: Yes, sir; and in passenger service, men in

regular extra passenger service are returned home under pay when not wanted within a reasonable length of time, and to-day he is paid the time for preparing the engine.

Mr. Lee: That is in 1902, he was not paid for preparatory time?

Mr. DeSalis: No, sir; he was not.

Mr. Lee: These things you think make the conditions better for the firemen?

Mr. DeSalis: They are considered better.

Mr. Lee: In your judgment is the amount of coal burned by an engine the only measure of work done by a fireman?

Mr. DeSalis: No, sir.

Mr. Lee: Why not?

Mr. DeSalis: Because he has other duties to perform.

Mr. Lee: What are those, Mr. DeSalis?

Mr. DeSalis: Well, they have been reduced to a minimum under the present agreement, but as an explanation, an engine may fire harder that is burning a comparatively small amount of coal than one which is burning considerable coal due to the manner in which the coal has to be placed on the fire; on the engine that is burning a small amount, it has to be placed there with much more care and exactness than an engine that would take care of it herself, or not need to be raked, and the fire worked and forced.

Mr. Lee: That is, the design of the engine has something to do with the work of the fireman?

Mr. DeSalis: The design of the draught appliance and design of the engine, yes, sir.

Mr. Lee: So that the amount of coal shoveled by itself is not the only measure which should be used in measuring the work of a fireman?

Mr. DeSalis: It is only one of the items.

Mr. Lee: Are you familiar with the method of loading trains some years ago, say in I think 1902 perhaps or previous to that, was it?

Mr. DeSalis: Why I do not know that I could give you all of the tonnage schedule, but I know that it was by the car, either loaded or empty, so many loads and so many empties.

Mr. Lee: Regardless of the weight of the car or the weight of the lading?

Mr. DeSalis: I think so. I won't say positively whether we had the tonnage rating in that day or not.

Mr. Lee: Well, it used to be done that way, anyway?

Mr. DeSalis: Yes, years ago, but I cannot say just the dividing line.

Mr. Lee: They are loaded how, now?

Mr. DeSalis: By a tonnage rating, and an allowance is made for the shorter train.

Mr. Lee: They are not so apt to be overloaded to-day as they were formerly?

Mr. DeSalis: No, sir; it is a more accurate manner.

Mr. Lee: Have your fast freight trains increased since 1902?

Mr. DeSalis: We have some additional fast freight runs, yes, sir.

Mr. Lee: Are they easier to run than the slow freight trains?

Mr. DeSalis: Why, they make a greater mileage for the number of hours in service.

Mr. Lee: Mr. DeSalis, you have some large freight engines, in road service, on the Pennsylvania Division?

Mr. DeSalis: We have.

Mr. Lee: What type of engine?

Mr. DeSalis: Commonly called, the Mallet articulated compound.

Mr. Lee: You give assistance to the firemen on those engines at certain times of the year?

Mr. DeSalis: We do, yes, sir.

Mr. Lee: What time?

Mr. DeSalis: During the severe hot weather.

Mr. Lee: How do you give that assistance?

Mr. DeSalis: The method that is used, is by supplying traveling firemen.

Mr. Lee: How are those men worked?

Mr. DeSalis: Why they arrange to not follow the engine, but to get them over the hardest pulls on the division and assist the firemen.

Mr. Lee: Over a heavy grade or something of that sort?

Mr. DeSalis: Yes, sir, instances where the engine has to be worked to simple.

Mr. Lee: From your knowledge Mr. DeSalis, men in 1902, were they on the road a longer or a shorter time, as a general proposition, than the men to-day?

Mr. DeSalis: A longer time generally.

Mr. Lee: Have you any idea how long they were on the road formerly, on your road, from your experience?

Mr. DeSalis: Why we have had a great many trips consuming thirty hours without rest.

Mr. Lee: There are numbers of cases to-day, a good many cases to-day, where the men are on the road a long time?

Mr. DeSalis: Well our firemen are not on the road but a comparatively short time compared with 1902.

Mr. Lee: What I mean is, there are some individual cases where the men are on the road perhaps a long time, I would not say thirty hours, but they are on duty 16 and perhaps 18 hours on account of wreck or something of that sort, or a washout?

Mr. DeSalis: Well, wrecks and washouts might cause it, but it is not the every day practice.

Mr. Lee: But there would be cases in 1902 where they were on the road just as long, or longer?

Mr. DeSalis: Yes, sir.

Mr. Lee: Mr. DeSalis, you have road hostlers on your division?

Mr. DeSalis: We do, yes, sir.

Mr. Lee: Who negotiates the schedule for those road hostlers, the rates of pay?

Mr. DeSalis: You mean the engineer hostlers or firemen hostlers?

Mr. Lee: Well, he is called in here the road hostler, he is the engineer man.

Mr. DeSalis: The engineers.

Mr. Lee: The engineers do?

Mr. DeSalis: Yes, sir.

Mr. Lee: The firemen do negotiate rates on your road for some hostlers?

Mr. DeSalis: Yes, sir.

Mr. Lee: Is a fireman's work as hard on a wreck or work train as it is on a through freight train?

Mr. DeSalis: Not usually.

Mr. Lee: It might be so on a ballast train?

Mr. DeSalis: Yes.

Mr. Lee: But not on an ordinary work train?

Mr. DeSalis: No.

Mr. Lee: Or a wreck train?

Mr. DeSalis: No.

Mr. Lee: A heavy ballast train, it might be as hard?

Mr. DeSalis: It might, yes.

Mr. Lee: Depending on various circumstances. Mr. DeSalis, you have what are called split runs for firemen on your slow freight service?

Mr. DeSalis: We have.

Mr. Lee: Will you describe that to the Board please?

Mr. DeSalis: A man leaving Dewitt, which is virtually East Syracuse, goes a distance of about 75 miles in slow freight service where the fireman is given relief. He gets off and remains at that point, taking his rest, and is used when his rest is up for another east bound trip back to his home terminal, making him a division of about 75 miles, while the engineer continues on through for the 152 miles. Each engineer having two firemen over the division of 152 miles in slow freight service, slow moving freight.

Mr. Lee: That is, the engineer runs with one fireman in slow freight service from Dewitt to Waynesport, and then another one from Waynesport to Buffalo?

Mr. DeSalis: Yes, sir.

Mr. Lee: Why was that done?

Mr. DeSalis: Why I cannot give you any definite answer other than I believe it was at the request of the Committee. It was a thing that was granted to them in their agreement.

Mr. Lee: Wasn't it thought perhaps that that work was too hard for one man on a slow freight drag all the way through?

Mr. DeSalis: Well, we have men that are passing there on tonnage trains in order to get to the other end of the terminal and return on preferred freight.

Mr. Lee: As I understand it, it was done for relief for the men; it is to the adavntage of the men?

Mr. DeSalis: Yes, it is to the advantage of the men; it is a nicer position and gives them an opportunity to turn and get home more.

Mr. Lee: What do you pay the firemen now, for running

from DeWitt to Buffalo, that is, from DeWitt to Waynesport, rather?

Mr. DeSalis: Ten hours, $2.95, or under ten hours.

Mr. Lee: $2.95?

Mr. DeSalis: Yes, sir.

Mr. Lee: Then you would pay two firemen, you would pay one fireman from DeWitt to Waynesport, and another from Waynesport to Buffalo?

Mr. DeSalis: We do.

Mr. Lee: That would be twice $2.95?

Mr. DeSalis: $5.90.

Mr. Atterbury: What is the mileage on that run?

Mr. Lee: What is the mileage, Mr. DeSalis?

Mr. DeSalis: About 152 miles.

Mr. Atterbury: Then you pay five dollars and what for 152 miles?

Mr. DeSalis: $5.90.

The Chairman: Suppose the fireman went straight on without stopping, what would be his pay?

Mr. DeSalis: 150 miles.

Mr. Lee: This is in slow freight service only that this is done, not in the through time freight service.

The Chairman: But if a fireman stops at this 75 mile point, and a new fireman gets on, he gets the pay for two days, just the same as two firemen for a day?

Mr. Lee: What he gets, Judge, is that the fireman runs 75 miles and gets paid 100 miles, for that 75 miles, and the second man gets 100 miles for the second 75 miles.

Mr. DeSalis: Not on the westbound trip, but on the eastbound. The man coming east gets 100 miles from Buffalo to Waynesport, but the man going west gets 80 miles.

Mr. Lee: What is the total mileage of the trip?

Mr. DeSalis: 152 miles.

Mr. Lee: That is actual mileage?

Mr. DeSalis: Yes, sir.

Mr. Lee: Now, going west from DeWitt to Waynesport, how much is that man paid, 100 miles?

Mr. DeSalis: 100 miles.

Mr. Lee: And the second man from Waynesport to Buffalo?

Mr. DeSalis: 80 miles.

Mr. Lee: That is, they are paid for 180 miles.

Mr. DeSalis: Yes, sir.

Mr. Lee: Instead of 200?

Mr. DeSalis: Yes, sir, but the man coming east gets the day, both of them. The man from Buffalo to Waynesport, and from Waynesport to DeWitt, they each get 100 miles.

Mr. Lee: They each get 100 miles?

Mr. DeSalis: Yes, sir.

Mr. Lee: That is, coming east you pay a higher rate; that is, it cost more for firemen on that train coming east than going west?

Mr. DeSalis: It does, yes, sir.

Mr. Lee: Now, take this $5.90, because it is easier to divide—

Mr. DeSalis: That would be the eastbound trip. I was in error, there. There is that little catch of 20 miles there.

Mr. Lee: Eastbound you would pay $5.90 for the firemen on that run now between Buffalo and DeWitt?

Mr. DeSalis: That is for two men.

Mr. Lee: That is what you would pay for firemen?

Mr. DeSalis: Yes.

Mr. Lee: What would you pay if this schedule went into effect and you ran those men through from Buffalo to DeWitt?

Mr. DeSalis: $10.05.

The Chairman: Which schedule are you talking about?

Mr. Lee: These demands, these requests of the firemen.

The Chairman: Instead of paying $5.90 you would pay $10.00?

Mr. DeSalis: $10.05.

The Chairman: Let us figure that out now.

Mr. Lee: Figure it out for the Judge.

Mr. DeSalis: It would require two men on the engine, at $3.35 a day, the engines weighing over 200,000 pounds on drivers, and each man would receive a day and a half, or a total of three days, which would be three times $3.35, which is $10.05.

Mr. Lee: If this clause No. 9—

The Chairman. This increase then is due largely to the two men on the engine instead of one?

Mr. Lee: Yes.

Mr. DeSalis: The actual increase, per mile or per hour, per

man would be from $2.95 to $3.35 or 40 cents a day; but that is not strictly in accordance with the request, as Article 9 would not permit us to run them through. We would still have to change them at Waynesport.

Mr. Lee: Article 9 reads: "Conditions and practices now in effect on any railroad, party to this agreement, will not be changed for the purpose of offsetting increases in wages and improved working conditions secured through this agreement." That is Mr. DeSalis's reading of this proposition.

Mr. Carter: You are mistaken.

Mr. Lee: I am glad to hear it. We will get you on record in a minute. If that Article 9 were adopted, Mr. DeSalis feels, from his experience, that the New York Central Railroad would not be permitted to run those men through but they would have to run two men from DeWitt to Waynesport and two more from Waynesport to Buffalo. Am I correct, Mr. DeSalis?

Mr. DeSalis: That is the way I understand it, Mr. Lee.

Mr. Lee: Now, Mr. Carter, do you want to say something right there.

Mr. Carter: I will say to you that there is no such intent. The intent of that saving clause is that if the men on that division believe that those conditions are better than are granted by this Commission, then the situation will remain the same. On the other hand, if they want to exchange those conditions for the conditions granted by this Commission, then they will have to choose between the two. They cannot have both.

Mr. Lee: I did not understand the gentleman exactly.

The Chairman: Without even having the subject mentioned, much less discussed, I must say that I had put the same construction on it that Mr. Carter now gives to you.

Mr. Lee: Do I understand from Mr. Carter that they will accept the award as a whole, or none of it.

The Chairman: I did not understand him to say that.

Mr. Lee: I am trying to get at what he does mean.

The Chairman: State it over again, Mr. Carter.

Mr. Carter: The saving clause is to protect conditions that are better than we are now asking, or better than this Commission grants. Now, if those firemen on that division of the New York Central believe these conditions are better than this Commission permits—for instance let us presume this Commission

allows two firemen on these engines as we have asked—then those firemen can take two firemen on these engines, as we ask, under the conditions for which we ask them, or else they can retain what they have; but I say that under no circumstances would we ask that two firemen go on for seventy miles and then two other firemen take their places. It is an alternative. They can keep what they have, or they can take what they get, so far as this two firemen proposition is concerned.

Mr. Lee: Does that apply to all the other conditions that may be granted by this Board?

Mr. Carter: If there is any existing condition that is better than the one granted, why, I shall tell the men to keep it.

Mr. Lee: Here is the point, sir: It may seem a little strange to you, but we are often up against this very thing. Here is a case where they are asking for two firemen on all engines weighing over 200,000 pounds on drivers in through freight service. Then, they come along and say working conditions or rates of pay that are better, will not be changed. I think it is something of that sort, or worse than that. I will quote it exactly again.

"Conditions and practices now in effect on any roilroad, party to this agreement, will not be changed for the purpose of off-setting increases in wages and improved working conditions secured through this agreement."

If the request for two firemen on an engine weighing over 200,000 pounds on the drivers is granted, there is nothing in here, unless this Board so states—there is nothing in this request—that would prevent the men asking to retain the runs that are in existence at the point that Mr. DaSalis speaks of, requiring you to put two men on those engines, and run them in the same way that they are run to-day.

Worse claims than that have been made, sir. I say it is absolutely unjust and improper. I bring this out at this time to show what a literal application of these rules would mean. These managers have been up against a good many of these things before, and I say they are not altogether clear. If we had Mr. Carter to deal with at all times, we might not have those serious troubles, because he apparently is in a very liberal mood this morning; but unfortunately we do not have him, or we do not always catch him in this mood. But these things, sir, are what the railroads are up against in the consideration of these regula-

tions. A regulation in itself may look very simple, and it may look as though it did not mean very much, but, when taken in combination with some other regulations, it means a whole lot.

That is why I want to bring it out from Mr. De Salis; I asked him what was his understanding of this run, in connection with Article 9, and that is what he says is his understanding from his past experience in these matters, and the way the schedules have been made.

Mr. Carter: Gentlemen of the Commission, I believe it is due to you that reasons for this saving clause, Article 9, should be stated. In the west, we secured a rate of $3.75 on all locomotives with cylinders 24 inches and over. Many of the roads paid it without question. Some of the roads put a half-inch bushing in the cylinders, and raised the steam pressure, and saved about 30 or 40 cents a day. I understand that where good rules have been secured, in passenger service, for overtime, after a five-hour day, and it amounted to a great deal in local service, to the engine crews on that run, that after the agreement was made and signed, they cut the runs, and made them turn runs. In fact, I think it is the practice adopted by some people, not all; I am glad to say not all; our experience in the west shows us the exception; but the exceptional railway officer believes it is incumbent upon him, after a schedule has been agreed upon, to change these conditions, so that it does not cost the company anything. It is against that practice that Rule No. 9 has been included. Now, here comes a question that I think should have been settled at the time we agreed to arbitrate. I am willing to agree with Mr. Lee right now, that any question that arises under the application of any award reached here, if we cannot agree to it between ourselves, we will refer it back to the Commission, and be bound by what they say. Is not that fair? Then, in case that comes up, that you do not agree with your men, we will have it understood that when we cannot agree to the intent of the award, we are to refer it back to the Commission, and be bound by what the Commission says. That should eliminate all objections to No. 9.

Mr. Lee: You see the point I wanted to bring out—

The Chairman: You make that proposition, a ten year proposition, and attach a salary to the officers of the Commission.

Mr. Carter: We will agree to pay half, whatever it costs.

The Chairman: I want more pay than I am getting now.

Mr. Lee: I think you would deserve it, sir. The point I wanted to bring out, sir, is that on many of the roads certain practices have grown up, and regulations have been granted to cover certain existing conditions, where the managers did not feel that the compensation was enough, or the conditions were good enough for certain particular runs; that is, the general regulations were not good enough. Certain practices have grown up, and regulations have been put in to cover those particular and and specific instances. Then a regulation comes along changing the general conditions; with this saving clause in it—the saving clause attached to it—you must not change anything; it has all got to stand the same way. Now, those practices have grown up and been permitted, and the regulations have been granted to cover old conditions; the old conditions are changed by the granting of these new regulations, and by the granting of the new regulations it is not necessary for these special practices or special regulations to exist, but we cannot cut them off as long as this saving clause is in there. That is the thing that we object to in that clause; it is too sweeping; it is too broad; it keeps the high spots where they are, and brings up the low spots. It is rather one sided; that is our objection to it.

Mr. Carter: The only purpose of that, gentlemen, was to protect the men from abuses; it was not to abuse a privilege. If the men did not abuse the privilege, if the subordinate officials of the company did not attempt to abuse the privilege, no contentions would arise. I recognize that somebody must adjust these differences and I remember that, while the award in the western arbitration appeared to be plainly written, we found that by certain interpretations of the companies and certain interpretations of our men (and I am not going to say that the blame lay on one side), it was necessary to beg the Commission to reconvene in the City of Chicago in the following November, after June 4, when the award was made, and there pass upon, I think, 27 disputes as to what the award meant. I have never heard of any fireman objection to that method of settling a dispute. Now, it may be, we will get the worst of it in some of these deals, but after having gone on record as being in favor of the settlement of these disputes by arbitration, we are going to take our medicine, and we think

the companies should take theirs. Now, if at any time, the men at Little Falls, I believe that is the place—

Mr. Lee: Waynesport and Little Falls.

Mr. Carter: (Continuing)—at that place, or the New York Central, contend that they should have two firemen for the 75 miles, and then two firemen for the other 75 or 80 miles, whatever it is, I would consider that the company would be justified in protesting against such interpretation of this award. If the men and the company could not agree, and each held to their side, I do not think it would take this Commission very long to agree.

Now, next you refer to the expense. Sometimes I believe that expense is a very proper feature of law suits. If it were not for expense, we could not get judges and juries enough, perhaps, to decide law suits. And I suspect that if it does cost a little to interpret what the award is, the railroad officials and the men will get together on more disputes. And I say, for one, that I believe the next time the Erdman Act is modified, it should contain a specific provision for the arbitration by the same Board of all disputes arising out of the award. Now, I have said that and I believe it is true. We do hold, however, that where the firemen believe that their conditions are better than granted here, those firemen should be permitted to keep those conditions, and I think that is a rule granted in practically all movements of this kind.

The Chairman: We will adjourn now until 2 o'clock.

(Whereupon at 12:25 P. M., a recess was taken until 2 o'clock P. M.)

After Recess, 2.10 P. M.

JOSEPH H. DESALIS, resumed:

Mr. Lee: Mr. DeSalis, at the termination of the morning session we had not quite gotten through with that question of what it would be necessary for you to pay these men, if your interpretation of these articles was carried out. How much was that total cost?

Mr. DeSalis: Using the four firemen?

Mr. Lee: Using the two firemen from Buffalo to Waynesport, and two more from Waynesport to DeWitt.

Mr. DeSalis: A total of $6.70 for each two firemen, a total of $13.40 for all four.

Mr. Lee: That would be, then, in the neighborhood of what additional amount over the two firemen going all the way.

Mr. DeSalis: $10.05 for the going through, and $13.40 for the change at Waynesport.

Mr. Lee: That would be $3.35 additional?

Mr. DeSalis: Yes.

Mr. Lee: If your interpretation of these articles was carried out?

Mr. DeSalis: Yes, sir.

The Chairman: As against $5.90 now?

Mr. DeSalis: Yes, sir.

Mr. Lee: What devices have been introduced that tend to benefit the firemen on your road?

Mr. DeSalis: As applied to the modern locomotive, we have—

The Chairman: Now, are you confining it between certain dates?

Mr. DeSalis: Well, I will say within about the last ten years; I may be a few months previous to 1902 in a few cases, but it is about that time. Superheaters applied to locomotives, brick arches maintained in the fire boxes—

The Chairman: It would suit me a little better if, as you name these things, you will tell just what the superheater accomplishes, and then as you go along, describe each one.

Mr. DeSalis: Yes, sir. The superheater reheats the steam to a higher degree than it is in its saturated form, or to try to make it plain, it rings the moisture from the steam and raises the degree of temperature.

The Chairman: Well, we understood that from some other witness. How does that help the fireman?

Mr. DeSalis: It decreases the amount of water that has to be evaporated for a given horse power.

The Chairman: How many less tons of coal would the fireman have to handle in making his day's run of 100 miles, immediately after the superheater was inaugurated or installed?

Mr. DeSalis: Well, from tests it shows an economy of about 20 per cent., one-fifth.

Mr. Lee: In that connection, Mr. DeSalis, the coal consumption on your Mikado engines, as compared with your Consolidated G-6 engines, being only a difference of perhaps five or ten thousand pounds on the drivers, the Mikado hauling more tonnage, how does the coal consumption compare?

Mr. DeSalis: The Mikado burns considerably less.

Mr. Lee: That is, the Mikado is the engine with the superheater which you say burns about 20 per cent. less.

Mr. DeSalis: About one-fifth; it will average that in general service.

The Chairman: Now the next?

Mr. DeSalis: The brick arch in the firebox.

Mr. Lee: How does that benefit the fireman, Mr. DeSalis?

Mr. DeSalis: It holds the gases longer in the firebox and permits of a more perfect combustion; also holds back particles of coal into the fire which formerly would be taken out through the flues with the forced draft of the engine. This arch is made of fire brick and is suspended on water tubes in this form (indicating) partially covering the fire.

The Chairman: What coal consumption does that have?

Mr. DeSalis: I cannot give you any accurate figures on that; but with a very fine grade of coal, that is a coal which is in fine particles similar to that which we use, it shows considerable economy, and lightens the work of the fireman considerably. The firemen are much in favor of it, and if there is anything wrong with the arch, they will always let us know, if they want it repaired.

The Chairman: What do you estimate the saving?

Mr. DeSalis: Well, I should say ten per cent., just an estimate, Judge; I cannot give you actual figures on it.

The Chairman: Go on.

Mr. DeSalis: The pneumatic fire door, or the fire door which is operated by air with a foot pedal. The man, in place of pulling the door open with a chain, as he formerly had to, puts his foot on a lever and air pumped by the engine through a mechanical appliance, opens the door.

The Chairman: That does not affect the coal consumption?

Mr. DeSalis: Why not materially. It is considered a sort of a safety device as, when they are closed they are positively closed; in case anything should happen in the fire box, it would

protect the engineer and fireman. That is what is claimed for the door.

The Chairman: It is a better condition that you think saves some work?

Mr. DeSalis: Well, not exactly saves work, but it is a protection. I am not claiming that all of these articles save work, Judge; I am saying better conditions.

The Chairman: You can go on.

Mr. DeSalis: The wider type of shaking grate. Our grates in 1902 were about four inches narrower than the grate we use to-day, and consequently they required more of a movement to get the cinders from under the fire than the present grate used requires.

The hopper doors on ash pans: On our older type of engine it was necessary for the fireman to get under the engine and use a hose, we called it, to dig the cinders and ashes out of the ash pan. To-day we have a movable door at the bottom of the pan which, open, allows the cinders to fall out.

My company has installed on nearly all engines, and will be all engines, very shortly, what is known as the improved bull's-eye lubricators. Where we used to have a tubular blast to indicate the amount of oil being fed, we now have a bull's-eye glass which is a much safer arrangement. It is a heavy thick glass, and there is very little liability of it breaking, where the others used to give us considerable trouble, and were dangerous.

They have also moved our lubricators on all modern engines to the right hand side of the cab, to give the engineer an opportunity to have it handy, and be able to oil his own engines, and oil his own cylinders and steam chests, where formerly, on the old type of engine, it was on the left hand side of the cab generally, and consequently the engineer imposed that duty on the fireman, although we had no rule which specified that he was responsible for it.

We have a hopper bottom or sloping tender now, for coal which assists somewhat in bringing the coal within reach of the fireman; that is, it is an improvement on the older type of tender or coal space.

The Chairman: What do you call that?

Mr. DeSalis: A hopper tender, a hopper bottom tender, a hopper coal space in the tender.

Mr. Lee: Sloping.

Mr. DeSalis: We have an improved front end or draft appliance. The smoke box in the engine, that is the portion in the boilers, perhaps you would think, out in front, which the smokestack sets down on, that is the extreme front part, there is an arrangement of draft appliances in there which regulates the forced draft on the fire. Through experiments they have developed a front end, as we call it, or draft appliance which is more efficient and does not have to be cleaned along the road, of cinders, like our old types used to have to. It used to be necessary for the fireman to go out there, sometimes at several different points along the trip, and clean the cinders from this smoke box or smoke arch on the front end.

The Chairman: That has been in use a long time, hasn't it?

Mr. DeSalis: It has come since 1902, this improved one that we have.

And we have an air attachment on to our water scoops in scooping water. That is, where we take water without stopping. In 1902 and previously, it was necessary for a man to operate lever located on the side of a tender to lower that scoop into the water when running, and raise it again after scooping water. To-day we operate that with air pressure, requiring really no exertion at all on the fireman's part, merely the handling of a little valve. That is all the appliances we have that I can think of.

Mr. Lee: These appliances all of them, may not save work for the fireman?

Mr. DeSalis: Not necessarily, no.

Mr. Lee: But they are a benefit to him?

Mr. DeSalis: They are.

The Chairman: What about this stoker we have heard so much of?

Mr. DeSalis: We haven't any stokers in service, Judge.

The Chairman: Right in this connection could you tell us why?

Mr. DeSalis: Well, our company has tried out two or three different forms of stokers, and I have not been consulted on the matter, and cannot say just why they did not adopt them, but we haven't any. The stokers spoken of this morning, and I am not asked the question, but I volunteer to say that it has never been tried on our road, to my knowledge.

The Chairman: That is the Pennsylvania stoker itself, isn't it?

Mr. DeSalis: Why, I cannot say positively, although I have understood that the Pennsylvania Lines manufacture it themselves, although I cannot say positively. That is my understanding of it. I do not know whether it is a company, or whether it is themselves that do it.

Mr. Lee: Mr. DeSalis, you have what is called a G-2 engine weighing 166,000 pounds on the drivers, and another engine that is called the H-5 engine weighing 215,000 pounds on the drivers?

Mr. DeSalis: Yes, sir.

Mr. Lee: In your judgment, how does the work on those two engines compare as far as the fireman is concerned?

Mr. DeSalis: There is very little difference.

Mr. Lee: Why is that?

Mr. DeSalis: Well one is a more modern design of engine which permits of the use of a brick arch, and has a more liberal capacity for steaming.

Mr. Lee: Under these requests, then, the G-2 engine weighing 166,000 pounds on the drivers would have one fireman in through freight service?

Mr. DeSalis: As I understand it.

Mr. Lee: And the H-5 weighing 215,000 pounds on the drivers would have two firemen in through freight service?

Mr. DeSalis: It would.

Mr. Lee: And in your judgment the work of the fireman is about the same on each?

Mr. DeSalis: About the same on each.

Mr. Lee: On account of the construction of the engine?

Mr. DeSalis: The modernizing of the heavier engine.

Mr. Lee: From your experience, Mr. DeSalis, does the work of the fireman depend on the weight of an engine on drivers?

Mr. DeSalis: Not altogether.

Mr. Lee: Has the service in which that engine is engaged anything to do with it?

Mr. DeSalis: That is a factor.

Mr. Lee: How about the conditions surrounding the work of the engine?

Mr. DeSalis: That is something else to be considered.

Mr. Lee: Has not the service in which the engine is engaged

and the conditions under which the engine is working to be considered as the main features in governing the work of the fireman?

Mr. DeSalis: They are very largely the features.

Mr. Lee: And not the size of the engine?

Mr. DeSalis: Not altogether.

Mr. Lee: Has the actual space on your tenders been increased since 1902?

Mr. DeSalis: Two tons increased capacity.

Mr. Lee: Have any additional coaling stations been put in, intermediate?

Mr. DeSalis: They have stopped taking coal at Rochester and now get it at Waynesport instead. That is an additional coaling plant, because Rochester has not been abandoned but it is not a main line coaling point any more.

Mr. Lee: That is, the engines that coal at Waynesport do not get coal at Rochester?

Mr. DeSalis: That is the idea.

Mr. Lee: Has the grate area of your freight engines increased?

Mr. DeSalis: Since 1902 it has increased about six square feet.

Mr. Lee: I will read to you Article 4 on Terminal Delay: "When the actual departure of any train is delayed to exceed one hour after a fireman is required to report for duty, or when a train has reached its final terminal limits and is then delayed from any cause so that the fireman is not relieved from duty within thirty minutes after having reached the final terminal limits, the fireman will be paid an additional compensation for all such delays over one hour at the initial terminal, and for all such delays over thirty minutes at the final terminal. In computing this additional compensation each six minutes of delay will be considered as one mile. Initial and final delay will be paid for in addition to overtime if any overtime is made."

What would that mean to the firemen if this request were granted on the New York Central?

Mr. DeSalis: On the initial and terminal time it would mean that if a man was over one hour from the time he registered or reported ready for duty until the time that he actually departed, he would receive double pay for that time.

Mr. Lee: And it would mean the same on the other end of the line?

Mr. DeSalis: It would, sir.

Mr. Lee: If he was over thirty minutes from the time he entered the terminal limits?

Mr. DeSalis: It would. If he was on overtime at the final terminal, he would receive his hours for overtime, and he would likewise receive his hours or minutes for terminal time; and if he was not on overtime, but receiving mileage he would get paid for the miles made and also be paid for the terminal overtime in addition.

Mr. Lee: How would that affect short runs, where engines handled a number of different trains during a day's work?

Mr. DeSalis: It appears to me that there would be an opportunity for them to make considerable of this time.

Mr. Lee: Without the company getting any additional benefit from it?

Mr. DeSalis: No additional benefit.

Mr. Lee: How many minutes are your men now allowed for preparatory time?

Mr. DeSalis: Preparing their locomotives?

Mr. Lee: Yes.

Mr. DeSalis: Thirty minutes in most terminals.

Mr. Lee: They are paid for that?

Mr. DeSalis: They are.

Mr. Lee: And they register on duty at the beginning of that thirty minutes?

Mr. DeSalis: Yes.

Mr. Lee: And their time begins at that time?

Mr. DeSalis: At that time.

Mr. Lee: Are they supposed to be on duty thirty minutes before the engine leaves the roundhouse?

Mr. DeSalis: About that. They sometimes leave a little ahead of that, and sometimes forty minutes after. Their time begins then, whether they leave or not.

Mr. Lee: And that would only allow thirty minutes altogether? If they were thirty minutes on duty before they left the engine house, that would only allow them thirty minutes to get from the engine house to the train, get on the train, pump up the train and get started?

Mr. DeSalis: Yes.

Mr. Lee: From your knowledge of the operating conditions of the New York Central in your territory is it a practical proposition to do that in thirty minutes?

Mr. DeSalis: No, they could not do it in most cases.

Mr. Lee: In some cases they might?

Mr. DeSalis: They might do it in rare cases.

Mr. Lee: As a usual proposition it takes them more than thirty minutes.

Mr. DeSalis: There is usually sufficient congestion to delay them more than that.

Mr. Lee: The same thing would apply to your passenger service largely?

Mr. DeSalis: It would.

Mr. Lee: What objectionable feature, what other objectionable feature do you see in this request? Would this act as a premium for being delayed in the terminal?

Mr. DeSalis: It does not look as if a man would make much effort to beat himself out of 67 cents overtime.

Mr. Lee: That is about what it would amount to. That is all.

CROSS EXAMINATION:

Mr. Carter: Mr. DeSalis, did I understand you to say that you did not believe the work of a fireman was any harder now on the big engines than formerly on the little engines.

Mr. DeSalis: No, sir, you did not understand me to say any such thing.

Mr. Carter: You do not believe that?

Mr. DeSalis: I believe it depends on a certain size of engine.

Mr. Carter: No, I asked you the question if you believed that the work was harder on the little engine of eleven years ago than the big engine now?

Mr. DeSalis: It is no harder on our engine of 1902 than on our engine of 1912.

Mr. Carter: Then you do believe that the labors of firemen have increased on account of the big engine?

Mr. DeSalis: Previous to 1902, that was.

Mr. Carter: Now, I will ask that question again: Do you

believe that the labors of firemen have increased since 1911, because of the substitution of large engines for little engines?

Mr. DeSalis: Since 1911?

Mr. Carter: 1902 to 1912, I say.

Mr. DeSalis: Give me that question again please.

Mr. Carter: Do you believe that it was harder for a fireman to fire a little engine in 1902, than a big engine in 1912?

Mr. DeSalis: It depends on what size of engine. What do you specify as a small engine? I am perfectly frank to admit—

Mr. Carter: I ask you again; do you believe that it was harder to fire the little engines in use in 1902 than the big engines in use in 1912, yes or no?

Mr. DeSalis: Yes.

Mr. Carter: You think it was harder to fire those engines?

Mr. DeSalis: Harder to fire the new engine than the small engine in 1902.

Mr. Carter: It is harder on the big engine than the little engine then?

Mr. DeSalis: That is, the engines up to a certain degree; we have engines of 25 square feet of grate surface.

Mr. Carter: Do you believe it was harder to fire the little engines of 1902 than to fire the big engines of 1912, yes or no; or, don't you know?

Mr. DeSalis: Why, yes, I fired an engine previous to 1902; fired a small engine.

Mr. Carter: You think it was harder to fire these small engines in 1902, than to fire these big engines of the New York Central?

Mr. DeSalis: No, sir, it was not.

Mr. Carter: You think it was harder to fire the big engines?

Mr. DeSalis: Than the small engine.

Mr. Carter: Then you do not agree with the witness from the Pennsylvania Railway when he said it was harder to fire the engine of 1902 than the big engines of 1912?

Mr. DeSalis: I do not know anything about the witness from the Pennsylvania: I came in late this morning.

Mr. Carter: Well, you missed something, don't you believe that the labor of firing the locomotive has approached the limit of human endurance?

Mr. DeSalis: Why, no, not going along every day.

Mr. Carter: Then you think it is not a very hard job to fire these big modern engines that you have got on the New York Central?

Mr. DeSalis: It is not, sir.

Mr. Carter: Do you know Mr. Gills, or Mr. C. H. Hogan.

Mr. DeSalis: C. H. Hogan, yes, sir, I do.

Mr. Carter: What is his official position?

Mr. DeSalis: Assistant superintendent of locomotive power.

Mr. Carter: You are working under him?

Mr. DeSalis: Indirectly.

Mr. Carter: Now, suppose he differed with you generally as to what you have just said, do you think that with his vast experience it might place him in a position to be a better judge than you are?

Mr. DeSalis: I do not think he has more experience with modern engines than I have.

Mr. Carter: Let us see what Mr. Hogan says: "It was almost beyond human endurance for a fireman to work on a locomotive, particularly a freight locomotive and maintain the maximum pressure on a division of 150 miles. The object of all railways at the present time is to build locomotives with the greatest capacity possible, and in order to get the efficiency from these locomotives, I believe we must have mechanical stokers." Do you agree with him; do you think he was mistaken about this question.

Mr. DeSalis: He is specifying a 150 mile division; I am talking about our actual divisions, of 75 miles.

Mr. Carter: I will ask you about the 150 mile division.

Mr. DeSalis: Yes, sir.

Mr. Carter: You said all, except the slow drag went through.

Mr. DeSalis: Yes, sir.

Mr. Carter: That is 152 miles, is it not?

Mr. DeSalis: Yes, sir.

Mr. Carter: Well, do you believe that Mr. Hogan has been so long out of active service that he really does not know?

Mr. DeSalis: I am not directly connected with Mr. Hogan any more; he is on a separate division from me.

Mr. Carter: Would not you have a kind of regard for his expert opinion?

Mr. DeSalis: Mr. Hogan is a very capable man.

Mr. Carter: Don't you think he rides high in the mechanical world today?

Mr. DeSalis: One of the highest.

Mr. Carter: Then, if he said that, you would not think he was just guessing at it, would you?

Mr. DeSalis: I have not talked with him on the matter.

Mr. Carter: I ask you, if he said that, you would not think he was mistaken, would you?

Mr. DeSalis: It is possible.

Mr. Carter: You simply differ.

Mr. DeSalis: At what time did he make that statement, please?

Mr. Carter: He made that in June, in the 1912 convention of the American Master Mechanics Association.

Mr. DeSalis: The superheater was in its infancy.

Mr. Carter: Infancy in 1912?

Mr. DeSalis: So far as we are concerned, in June.

Mr. Carter: Well, suppose I tell you that it is reported that on the New York Central in 1912 the superhearters increased the tonnage so much that they have actually reduced operating expenses, and that a leading official says it has more than offset all the last wage increase, what would you say about that?

Mr. DeSalis: They have shown a big economy.

Mr. Carter: If they did that in 1912, did they not have them in use?

Mr. DeSalis: We had some.

Mr. Carter: If they had enough in 1912 for the New York Central to show that by the use of superheaters in 1912 it increased the tonnage, and thereby reduced the expense per ton mile to the extent—I will use the exact language—to more than offset the last increase of wages of man in train service, what would you think?

Mr. DeSalis: The last half of 1912 we received two or three superheaters in a week in the line of new power, right on our district, and that is in June that that statement was made.

Mr. Carter: Well, I guess I will have to introduce the gentleman I am quoting, because I don't think this witness and Mr. Hogan agree at all. Do you know Mr. Dan McBain?

Mr. DeSalis: I do.

Mr. Carter: Suppose he told you that the firing of these locomotives had passed human endurance, what would you say about that?

Mr. DeSalis: I know better.

Mr. Carter: That would be a difference between you and Mr. McBain?

Mr. DeSalis: Yes.

Mr. Carter: Now, I imagine a man close to the road like you are, ought to know better than the superintendent of motive power, because he is so far removed from the actual practice; is not that true? Don't you think a road foreman of engines ought to know more than the superintendent of motive power about such things.

Mr. DeSalis: No.

Mr. Carter: He is right on the job. If they differ, who do you think would know the most?

Mr. DeSalis: That is a matter of opinion.

Mr. Carter: You would not like to confess that you did not. For instance, if Mr. Hogan or Mr. McBain disagree with you, you would still insist that you were right?

Mr. DeSalis: Yes, sir; they would want me to.

Mr. Carter: All right, because you came here?

Mr. DeSalis: No, sir; they have always respected my opinion.

Mr. Carter: You do not think they would want you to come here and say a thing that you would not say anywhere else, do you?

Mr. DeSalis: No.

Mr. Carter: I know Mr. Hogan and Mr. McVane, and I know they would expect you to say the same thing here you would anywhere else. I know they would.

Mr. DeSalis: Yes.

Mr. Carter: Why did they abolish cleaning on the New York Central?

Mr. DeSalis: My only understanding was that the firemen requested it.

Mr. Carter: Do you think they would give it to them just on their request, if they did not have some good reasons?

Mr. DeSalis: I was not either on the committee, or on the official staff that granted it; consequently I cannot tell.

Mr. Carter: Were you firing or running at that time?

Mr. DeSalis: I was running.

Mr. Carter: Did you not hear the fireman say, on account

of the increased labor, it was impossible to do any more cleaning, and that is the reason the company let them off?

Mr. DeSalis: No, I did not hear them say it.

Mr. Carter: You do not think that is true then?

Mr. DeSalis: I have never given it consideration. It was their agreement, and I took it for granted that—

Mr. Carter: You think they relieved them of the cleaning for fun?

Mr. DeSalis: Because they requested it.

Mr. Carter: If the New York Central found it advisable from whatever cause to relieve the firemen from cleaning, do you think the New York Central made a serious mistake, knowing the situation as you do?

Mr. DeSalis: It is not for me to judge the action of my managers.

Mr. Carter: Suppose we ask about some other matters. Do you believe the New York Central having relieved the firemen from cleaning, that the other railroads should do the same thing?

Mr. DeSalis: I know nothing whatever of their conditions.

Mr. Carter: You are a good witness for the other side.

Mr. DeSalis: Thank you.

Mr. Lee: That is why we put him on.

Mr. Carter: He does not know anything against the other side.

Mr. Lee: I think he has admitted some things.

Mr. Carter: That is all right; I want to congratulate you upon your selection.

Mr. Lee: Thank you.

Mr. Carter: Then you do not think that relieving the firemen of cleaning was anything except—I know what good men the New York Central officials are, and I am not roasting them, and am not joking about it.

Mr. DeSalis: I do too.

Mr. Carter: But do you believe they just gave these firemen relief from cleaning to give them a holiday present or do you believe they ought to have been relieved?

Mr. DeSalis: They gave them some other things that are just as reasonable as presents.

Mr. Carter: Well, you will not answer that question, and I cannot make you.

Mr. Lee: He does not know.

Mr. Carter: We will say he does not know. Then you would not say that all the nice privileges that you have referred to, that the New York Central has given their firemen, should not be applied anywhere else?

Mr. DeSalis: I do not know the conditions anywhere else.

Mr. Carter: You think then that the firemen on the New York Central probably are entitled to more than the firemen on any other road.

Mr. DeSalis: They are in some cases, and they do not get as much as some others do.

Mr. Carter: They have got relief from a great many things, you said.

Mr. DeSalis: They have.

Mr. Carter: Well, suppose they have not on other roads, then what?

Mr. DeSalis: I do not know the conditions on the other roads, Mr. Carter.

Mr. Carter: Let me ask you something else then. While these firemen were being relieved from the cleaning and so forth, did you notice any change in responsibility on account of density of traffic, on account of block signals becoming more numerous, and many other things?

Mr. DeSalis: We have territory that has more block signals than it formerly had, and have other territory that really has less.

Mr. Carter: How about on this division where you are?

Mr. DeSalis: For the freight service we have a double track route which is used almost exclusively for slow freight service which has recently been developed.

Mr. Carter: You were speaking about different classes of engines, the G-X and the Y-B, etc., or something of that kind. As a practical man haven't you noticed a great difference between two engines almost identically alike, one will steam free and the other will not?

Mr. DeSalis: We have not had as much trouble in late years as we had in former years with conditions of that kind.

Mr. Carter: Well, I will take it for granted that everything on your division on the New York Central is perfect, but, now

let us take on some division where it is not perfect. Don't you conceive of the possibility of two locomotives of exactly the same dimensions, one out of the shop within the last week or two and the other with an eighth of an inch of scale on the flues, her valves blowing so it sounds like a saw mill, don't you think that there would be a great difference in firing those two engines even though they were the same type?

Mr. DeSalis: Engines not in proper condition will fire harder than one that is in condition.

Mr. Carter: Well, do you believe there should be two different rates of wages because of their condition?

Mr. DeSalis: Why, we try hard to keep them all in condition.

Mr. Carter: You did not answer my question. I asked you, if engines of exactly the same weight and type, one is in bad condition and very much more difficult to fire than the other, which is just out of the shop, do you believe there should be a difference in the wages on those two engines because of those different conditions?

Mr. DeSalis: No, sir, I do not see how you could divide them.

Mr. Carter: Do you believe there is any basis of fixing firemen's wages, than to specify certain locomotives, regardless of their mechanical condition and the men will take the bitter with the sweet, would you change that now?

Mr. DeSalis: I cannot see any better way than the method that has been adopted by us; the general arrangement between the management of the committees.

Mr. Carter: You are opposed to this movement then? If you had charge of the New York Central you would not have come into this movement, would you?

Mr. DeSalis: You are asking me a big question.

Mr. Carter: You just now said that you believed it should be done by your road and the committee and not this way?

Mr. DeSalis: It has been successful the way we have done, and I have not given the matter any further consideration as to coming into this movement.

Mr. Carter: I am glad you are not General Manager, because they have a General Manager there that very kindly came into this movement. You were speaking about the long time on service, etc. When you were a fireman and an engineer—well, we will go back, how long since you began running an engine?

Mr. DeSalis: Between 1903 and 1904.

Mr. Carter. We will go back to the last freight you fired, your last firing, didn't you in those days sometimes during rushes of business double at the terminal, and go over the road twice in 24 hours?

Mr. DeSalis: I have done such things.

Mr. Carter: Don't you think that would account largely for the excessive hours of service?

Mr. DeSalis: Not always.

Mr. Carter: Do you think that if you were 16 hours going over the road or 15 hours, then you would have done much doubling out?

Mr. DeSalis: I have.

Mr. Carter: How many hours?

Mr. DeSalis: Oh, I can't go back and give just the exact number of hours.

Mr. Carter: Well, twice 14, 28 hours?

Mr. DeSalis: Yes.

Mr. Carter: About how much coal did you shovel per hour?

Mr. DeSalis: Well, you are wanting me to make some—

Mr. Carter: I am saying to you that you could not do it if the work was as hard as it is now, that is what I mean; could a man double the road now with these 14 hour heavy tonnage trains?

Mr. DeSalis: You are going back previous to the period which we are talking about, 1902.

Mr. Carter: Well, we will drop that too. You spoke of the hostlers a while ago, you called them engineer hostlers?

Mr. DeSalis: We have such men, yes, sir.

Mr. Carter: Don't they call them road hostlers?

Mr. DeSalis: Engineer road hostlers.

Mr. Carter: Is that what they are called in this schedule?

Mr. DeSalis: I cannot specify the schedule but they are on the engineer's payroll.

Mr. Carter: Haven't you invented that word "engineer" right here for the first time; did you ever use it back on the road?

Mr. DeSalis: Yes, sir.

Mr. Carter: Isn't the usual term back on the New York Central, road hostlers?

Mr. DeSalis: We have a road hostler fireman, and road hostler engineer.

Mr. Carter: Yes, sir; and road hostler engineer.

Mr. DeSalis: A road hostler engineer has a road hostler fireman.

Mr. Carter: What does that road hostler engineer do?

Mr. DeSalis : He is under the dirtction of the roundhouse foreman usually, taking engines from one point to another, one terminal to another.

Mr. Carter:What does he get?

Mr. DeSalis: $3.75 for ten hours.

Mr. Carter: Do you think that is too much, on the New York Central, I mean?

Mr. DeSalis: Our management are satisfied with it.

Mr. Carter: Therefore it is presumably an equitable compensation for a responsible service?

Mr. DeSalis: Yes.

Mr. Carter: Now I am going to ask you your opinion—I know you will not answer me, but I will ask you—if the same coondition of affairs existed on other roads where men do exactly the same work, do you believe they would be entitled to just as much money.

Mr. DeSalis: I do not know their conditions, Mr. Carter.

Mr. Carter: I did not think you would answer it. You spoke about the reason that $3.75 was given them was because the P. & L. E. got it for them. It that right?

Mr. DeSalis: I cannot say positively that the P. & L. E. got it, but I understand that the engineers' committee legislate for the engineers.

Mr. Carter: Do they legislate for the hostlers?

Mr. DeSalis: These hostlers are engineers.

Mr. Carter: Would they be engineers on any other road, if they did exactly the same work?

Mr. DeSalis: I do not know.

Mr. Carter: Then it would be a case of one thing on the New York Central and possibly another thing on another road?

Mr. DeSalis: That is very often the case.

Mr. Carter: Then if another road said that the men who ran the engines, were not engineers, but were drivers, and only

entitled to half pay, you would think probably that might be all right on some other road?

Mr. DeSalis: I would not want to express an opinion until I investigated to find out their conditions.

Mr. Carter: Presuming that the engineers' committee did get this $3.75 a day for these men doing this class of work, and the company gave it to them, you would think it was right, and just, and equitable, would you not?

Mr. De Salis: Yes, our company is satisfied.

Mr. Carter: And if this Commission does the same thing on other roads for the same people, it would not be unjust, would it?

Mr. DeSalis: It is not for me to judge the Commission.

Mr. Carter: You were speaking about relieving the firemen; why were they relieved?

Mr. DeSalis: It was a request of the Committee which was granted.

Mr. Carter: Why did the Committee ask it?

Mr. DeSalis: You will have to ask the Committee.

Mr. Carter: Do you think there was a good fishing hole some place where they wanted to stop off?

Mr. DeSalis: They get the benefit of a return home quicker.

Mr. Carter: Do you not think it was because of a long heavy drag over 152 miles that they asked for relief.

Mr. DeSalis: You are wanting me to suppose, now.

Mr. Carter: You do not know anything about the New York Central, except what you came here to answer, do you? All right, I will not press that question. Here is the P. & L. E. engineers' schedule, and it says "Road hostlers shall receive $3.75 per day of ten hours." There is nothing in that about engineers. Now, I am going to say to you that the New York Central has been a pretty good road.

Mr. DeSalis: I know it, Mr. Carter.

Mr. Carter: And when these firemen went up there and pleaded for relief, they gave them that kind of relief. I will answer for you.

Mr. DeSalis: All right.

Mr. Carter: Do you believe that it would be practical to relieve firemen in the middle of divisions, in order did you say, to go fishing, or to give them any relief? You do not know what

they gave them relief for. There is no use asking you any questions about the New York Central because you do not know anything except what Mr. Lee asked you, and I will not ask you that. You were speaking about these grates, that they have got on the New York Central. What about those grates, are they different from other people's grates?

Mr. DeSalis: I cannot say. They are different from what we formerly used.

Mr. Carter: Do you think they are an advantage?

Mr. DeSalis: We find them so.

Mr. Carter: About how much coal do they have?

Mr. DeSalis: I will not say that they save any.

Mr. Carter: Then they do not save the firemen shoveling coal?

Mr. DeSalis: Not necessarily, no.

Mr. Carter: I thought that was introduced as one of the reasons why firemen do not have to work so hard.

Mr. DeSalis: You misunderstood me. I did not advance that as a reason.

Mr. Carter: I beg your pardon. I am liable to misunderstand people. In regard to these hopper ash pans, are they practicable?

Mr. DeSalis: Yes.

Mr. Carter: Then you think the ash pans that have been introduced on the New York Central within recent years are practical, do you?

Mr. DeSalis: What is that question, please?

Mr. Carter: Do you think these dumping ash pans that have been introduced on the New York Central road are practicable?

Mr. DeSalis: The company introduced them.

Mr. Carter: They have been introduced.

Mr. DeSalis: Yes, we have a good pan.

Mr. Carter: When were they introduced?

Mr. DeSalis: At various times. I cannot give all the dates when they have been applied.

Mr. Carter: Then you do not agree with a prominent official of the New York Central who went before a congressional committee and said they were impracticable when the ash pan law was up for enactment? When the hearings were on, certain railroad officials said it would be impossible to do anything with

them, that they would freeze up and get warped, and everything of that kind, that the railroads could never equip their engines with them. You differ with the officials on that question, do you not?

Mr. DeSalis: The fact that we are so equipped with them contradicts it, does it not?

Mr. Carter: I think so. Do you not think that sometimes these dangers that we imagine are really worse than the actual dangers after we really get up to them.

Mr. DeSalis: What dangers do you refer to?

Mr. Carter: I do say that when the ash pan bill was before Congress, not only the New York Central, but many other prominent officials said it would be utterly impractical to equip their locomotives with ash pans that could dump the ashes because they would freeze up in winter and they would warp, and the slide could not be pulled. Now, you say they are a success and a great benefit to the firemen.

Mr. DeSalis: We are doing very nicely with them.

Mr. Carter: If they were mistaken as to the deplorable conditions that the ash pan law would bring about, do you not think they might be mistaken as to the deplorable conditions that some of the things we are asking for here will bring about?

Mr. DeSalis: I presume we are all liable to be mistaken.

Mr. Carter: I know I am. You spoke about a lubricator you have there.

Mr. DeSalis: Yes.

Mr. Carter: You say it is a safe lubricator.

Mr. DeSalis: What lubricator?

Mr. Carter: You said it was safer. I believe you said, the others were dangerous.

Mr. DeSalis: They were not as desirable as this lubricator, for many reasons.

Mr. Carter: Did you use the words, that the others were dangerous?

Mr. DeSalis: I will not say that I said exactly that.

Mr. Carter: I think that was your language.

Mr. DeSalis: Possibly. The others used to break the glasses, and these do not.

Mr. Carter: When they broke the glasses, the glass was liable to get into a man's eye.

Mr. DeSalis: We have had cases.

Mr. Carter: Is there much danger in filling a lubricator on an engine with a full head of steam, particularly, when the throttle leading to the lubricator is grinding in there, or is there more danger than to fill it while it is in the roundhouse when the pressure is lower and perhaps there is no steam on at all? I will not insist upon that question either, because you do not know. Do I understand, the New York Central have concluded to have their engineers fill their lubricators?

Mr. DeSalis: I never knew of any other rule.

Mr. Carter: I ask you, do I understand the New York Central have now concluded to have their engineers fill the lubricators?

Mr. DeSalis: I never knew of any other rule, Mr. Carter; engineers have always had to do that.

Mr. Carter: Then, why was it any benefit to the firemen to change the lubricator over on the engineer's side?

Mr. DeSalis: The engineer operates the lubricator, in oiling the engine, from the right hand side.

Mr. Carter: Is that it?

Mr. DeSalis: That is the idea. He takes care of the lubrication of his valves and cylinders himself.

Mr. Carter: These hopper tanks you were talking about; does all the coal in the tank come forward when they are used?

Mr. DeSalis: No.

Mr. Carter: About how much does the tank hold?

Mr. DeSalis: On our modern engines it holds 12 tons.

Mr. Carter: What do they hold 12 tons for? On the old engine they did not hold but six, in 1902.

Mr. DeSalis: We had some with less than that.

Mr. Carter: Do they carry coal just for the sake of carrying it?

Mr. DeSalis: I beg your pardon, in 1902 our engine tanks held ten tons.

Mr. Carter: Only two tons increase then?

Mr. DeSalis: That is all, sir.

Mr. Carter: You had big tanks then?

Mr. DeSalis: Yes.

Mr. Carter: How close are your coal chutes together?

Mr. DeSalis: 75 miles. Hold on, they will average 50 miles.

Mr. Carter: Do you take coal at every chute?

Mr. DeSalis: No, sir.

Mr. Carter: You would rather have the fireman go back and shovel it down?

Mr. DeSalis: Our coal chutes are not arranged so that we can get coal every fifty miles.

Mr. Carter: Could they not be arranged so that when the firemen could not reach any more coal, instead of shoveling it down and then shoveling it in, coal could be taken on? That is, when the coal recedes so far back, that the fireman cannot reach it.

Mr. DeSalis: It is only in extreme—

Mr Carter: You do not know. I will not ask you that. Now, in regard to these front ends; have not the front ends been experimented with for a long, long while?

Mr. DeSalis: Yes, they have, to my knowledge.

Mr. Carter: When you were firing, did they not have pretty good steamers? Dont' you remember that little white feather you used to have, when you were firing an engine, and how proud you were, when they told you you were not wasting coal any more.

Mr. DeSalis: I never had the experience to which you refer.

Mr. Carter: You were never told that the engine dropped then?

Mr. DeSalis: I have been, yes, sir; occasionally.

Mr. Carter: Didn't they have pretty good front ends in 1902, on the New York Central?

Mr. DeSalis: Not as good as they have to-day.

Mr. Carter: They did make time on the old 999s?

Mr. DsSalis: Not with the same tonnage they haul to-day.

Mr. Carter: They did not have the tonnage to haul. You say the responsibility is no greater. Is that right?

Mr. DeSalis: No, sir.

Mr. Carter: Is it greater?

Mr. DeSalis: No, it is not any greater.

Mr. Carter: Just the same?

Mr. DeSalis: It is less.

Mr. Carter: Less?

Mr. DeSalis: Yes.

Mr. Carter: Less responsibility?

Mr. DeSalis: Yes.

Mr. Carter: There is not another official on your road will say so.

Mr. DeSalis: All right.

Mr. Carter: Why haven't you got these stokers that are saving all the work of the firemen?

Mr. DeSalist: I am unable to say. That is a matter for the management.

Mr. Carter: I know you will not say, and I will not ask you. Do you not think that if these stokers were practicable, the New York Central would be one of the first roads to adopt them? I will not ask you that question. You do not know. You were asked the question if you thought it would be fair to place two firemen on a locomotive—

The Chairman: Do you think these questions are quite fair to the witness?

Mr. Carter: He will not answer the questions.

The Chairman: But when you know he is not going to answer them, it is not quite fair—

Mr. Carter: Then I do not believe I had better ask them. I do not believe he will answer any of them.

The Chairman: It is not quite fair to the witness to criticize the management of the road, although he holds a responsible position.

Mr. Carter: I will not ask him to criticize the management, except where the management agrees with us. If the management have tesetified that the work of firemen is excessive, I think it is a criticism of that management on that part for him to disagree with them.

The Chairman: You may ask him for his opinion as to how these different things operate on the divisions that he is over. I think that will be fair.

Mr. Lee: I want to give as much latitude as possible, but I do not think it is fair to ask him as to a subject upon which he is not familiar.

The Chairman: If the witness approached the condition where the Board thought he was not free, candid and open, or was reserving anything which it was his duty to tell, we would admonish the witness that he must answer the question.

Mr. Lee: It does not seem to me that this witness has anywhere near reached that stage, sir.

Mr. Carter: I have asked him many of the simplest questions.

The Chairman: I think he could have answered some of the questions.

Mr. Carter: I want to apologize if I have shown some discourtesy to the witness, but I really thought when the witness went on the stand, he would answer any questions that he could, and I know that some of the questions which have been asked him could have been answered by the call boy.

Mr. Lee: I cannot altogether agree with you.

The Chairman: The witness is under oath, and he is not going to say anything that he does not know.

Mr. Carter: You said a while ago that one of the modern improvements of locomotives was because the grate area was extended, you said, about six feet more. Is that true?

Mr. DeSalis: We have about six feet more grate area.

Mr. Carter: Do you believe that was beneficial to the firemen?

Mr. DeSalis: A small amount; I do not think it was.

Mr. Carter: Do you believe any increase in grate area makes it possible to burn more coal than a larger nozzle?

Mr. DeSalis: A proper grate area for a given horse power, and a proper sized cylinder is beneficial.

Mr. Carter: Then you think the increase in grate area was beneficial to you?

Mr. DeSalis: I wont' say was beneficial.

Mr. Carter: That was the question Mr. Lee asked.

Mr. Lee: I asked him if the grate area had been increased on engines.

Mr. DeSalis: I said six square feet.

Mr. Lee: It was not with the idea that it was of benefit to the fireman; he did not answer that it was a benefit to the fireman.

Mr. DeSalis: No, sir.

Mr. Carter: I thought that was the purpose of the question.

The Chairman: I thought the same thing.

Md. Carter: That was not the purpose; the grate area has not helped the firemen.

Mr. DeSalis: No, sir.

Mr. Lee: The larger the grate area, I think, the more coal is burned; is that a fact?

Mr. DeSalis: Not necessarily.

Mr. Carter: The larger the nozzle, with the same amount of coal burned?

Mr. DeSalis: What is that?

Mr. Carter: If you extend the grate area, you are burning a larger quantity of coal, or rather you can burn the same quantity of coal with an increased grate area with a large nozzle.

Mr. DeSalis: You can; it will permit slower combustion.

Mr. Carter: That is what I mean; don't you know that the grate area would interfere with the steaming of the engine?

Mr. DeSalis: It would assist in the steaming of the engine.

Mr. Carter: I said reduction, would that prevent engine steaming?

Mr. DeSalis: Drawing it down too low would.

Mr. Carter: Suppose it was reduced one third on a properly constructed engine.

Mr. DeSalis: I never saw the thing tried out.

Mr. Carter: Then you would not want to express your opinion?

Mr. DeSalis: No, sir.

Mr. Carter: You never saw a clinker cover one-third of the grate?

Mr. DeSalis: I have.

Mr. Carter: What is the effect of that?

Mr. DeSalis: We pulled the clinker out.

Mr. Carter: Why?

Mr. DeSalis: Because it was dirting the fire.

Mr. Carter: What effect did it have there?

Mr. DeSalis: It stopped draft and combustion.

Mr. Carter: Did it make it harder to keep the engine hot?

Mr. DeSalis: It did.

Mr. Carter: Suppose it was a slab of iron instead of the clinker. It would practically have the same effect?

Mr. DeSalis: If it was large enough.

Mr. Carter: Suppose you had an underfeed stoker that reduced the grate area one-third, would it have the same effect?

Mr. DeSalis: Do you wish me to comment? I know nothing about it.

Mr. Carter: I do not want him to criticize any man's stoker. You speak of the fireman getting double overtime, if you called him an hour before he was wanted? Do you know why firemen are called more than an hour before leaving time?

Mr. DeSalis: We allow them 30 minutes preparatory.

Mr. Carter: Yes, but that rule says if he is called more than an hour, that if the train is delayed more than an hour, after the time set for leaving, do you know why a fireman should be called two hours before the train actually leaves?

Mr. DeSalis: Why, there might be conditions that require it.

Mr. Carter: Suppose a case, suppose there was a case in the Buffalo yard, of a first-class high grade passenger train, and the fireman had already been called in Buffalo, why that would be a condition of affairs that probably the company could not overcome; is not that true?

Mr. DeSalis: Just give me that again, please.

Mr. Carter: If after calling a man in the City of Buffalo, a wreck occurred in the yard, of a train coming in from the West, the company could not have anticipated that, could they?

Mr. DeSalis: No, sir.

Mr. Carter: Do you think they could have anticipated at the other end, the next passenger division, notwithstanding this great delay, they had called firemen down from another division and kept them there for hours and hours, do you think that could have been prevented? I am presuming, but, never mind.

Mr. Lee: Make it plain, and the witness will understand the question; make it plain to him; he does not understand.

Mr. Carter: I won't ask him any more; I want to congratulate you on being a most excellent witness.

Mr. DeSalis: Thank you.

The Chairman: Are you through?

Mr. Carter: I am going to ask him one more question.

The Chairman: I thought you would.

Mr. Carter: Are you acquainted with the Philadelphia Division; you talked about it?

Mr. DeSalis: No, sir; I did not.

Mr. Carter: Was it you talked about the Pennsylvania Division?

Mr. DeSalis: Of the New York Central?

Mr. Carter: Yes.

Mr. DeSalis: Yes.

Mr. Carter: How many Mallets have you on slow freight now over there?

Mr. DeSalis: 27.

Mr. Carter: Do you know how many engines they displaced?

Mr. DeSalis: No, I cannot tell you exactly.

Mr. Carter: Does a Mallet do any more work than an H-8-A?

Mr. DeSalis: Yes, sir.

Mr. Carter: About how much more work?

Mr. DeSalis: About one and a half times.

The Chairman: That is 50% more then?

Mr. DeSalis: Well, hardly 50%. It will not be half quite.

Mr. Carter: Let me read to you something. Here is a statement from the Railway Age Gazette, taken from reports of officials: "26 Mallets replace 60 Consolidation, New York Central & Hudson River Railroad." Now that is an advertisement of the American Locomotive Company published in the Railway Age Gazette of May 24th, 1912, 26 Mallets replaced 60 Consolidations. Is that true?

Mr. DeSalis: I dont' know.

Mr. Carter: Is not that where you live, don't you work there?

Mr. DeSalis: Yes, sir; but it is not where I live. I was not on that district at the time of the installation of the Mallets. I have been in this position one year, and for the benefit of the Commission I would state that the Mallet engine does the work of one engine and one smaller engine.

Mr. Carter: I don't know, probably it is useless to show this, but I will tell you what it shows—

Mr. Lee: He is reading from an advertisement,

Mr. Carter: It is taken from the reports of the officials.

Mr. Lee: Go on.

Mr. Carter: I will state this to the witness. These Mallets that replaced 60 Consolidations, so the American Locomotive Works says, increased the operating capacity of the single track division 40%; reduced the overtime expense of the company 80%; reduced the consumption of coal per ton mile 35% and increased the ton miles per ton of coal 54%.

Mr. DeSalis: I knew they were a very nice engine.

Mr. Carter: That is, they are hauling 54% more tonnage with an increase of 35% of coal. That is, the reduction in coal per ton mile is 35% but the increase in ton miles per ton of coal is 54%. Well, as you have not been there very long, you cannot answer any other question along the same line, about big engines taking the place of the others. I am through.

RE-DIRECT EXAMINATION:

Mr. Lee: Were these Mallet's introduced before you had charge of that division?

Mr. DeSalis: They were, yes, sir.

Mr. Lee: About how many years, have you any idea, how long a time?

Mr. DeSalis: I should say about 18 months. Now, that is only an estimate on my part.

Mr. Lee: But quite a while before you had charge of that division?

Mr. DeSalis: Yes, sir.

Mr. Lee: How long have these split runs between Dewitt and Buffalo beein in existence?

Mr. DeSalis: We split the division since the introduction of Compounds, it was around 1902.

Mr. Lee: The division was split at that time?

Mr. DeSalis: Yes, sir.

Mr. Lee: Were you on the committe that negotiated that?

Mr. DeSalis: I was not; no, sir.

Mr. Lee: Do you know any of the arguments that were used?

Mr. DeSalis: I do not.

Mr Lee: To get those runs split?

Mr. DeSalis: No, sir; I cannot say.

Mr. Lee: Did you ever ask anybody about what the argument was?

Mr. DeSalis: No, I have not.

Mr. Lee: In some instances is it required that engine crews shall be on hand one hour before leaving time, Buffalo for instance?

Mr. DeSalis: Yes, we have more time allowed there.

Mr. Lee: Why is that?

Mr. DeSalis: Further to the yard from the engine house.

Mr. Lee: And it takes about that time to get the engine from the engine house and order the train ready to leave?

Mr. DeSalis: Yes, sir; it does; it takes all of that time.

Mr. Lee: And does that hour include the preparatory time, or is that in addition to the preparatory time?

Mr. DeSalis: It is in addition to preparatory time at Buffalo.

Mr. Lee: Then those crews on every trip under these regulations as asked for, would get 30 minutes overtime every trip before they started?

Mr. DeSalis: They only allow for time—yes, 30 minutes is right.

Mr. Lee: Thirty minutes preparatory time, and one hour for going, they would get that anyway before they started?

Mr. DeSalis: Yes.

Mr. Lee: That is on account of the local conditions at that point.

Mr. DeSalis: It is.

Mr. Lee: That is all.

The Chairman: Mr. DeSalis, did you hear the testimony of Mr. Holbrook?

Mr. DeSalis: The very latter part of it.

The Chirman: Did you hear his comparison of the work of the engineer and the fireman?

Mr. DeSalis: I can't say that I did, Judge. He spoke very low, and I was over there getting my notes ready; I expected to be called some time to-day or to-morrow.

The Chairman: I would like to get your views. He said that the work of an engineer on one of these modern engines was harder than that of the fireman's?

Mr. DeSalis: Well, I cannot quite agree with that; that is, his physical labor; his mental labor is difficult. It is a different class of labor, Judge, as I understand it, from both my experience in running and firing.

The Chairman: He described it as sitting in one position for a long time?

Mr. DeSalis: Yes, sir.

The Chairman: And the strain on the nerves?

Mr. DeSalis: There is a responsibility resting on him; there is thousands of dollars worth of property on his hands, and also has many lives at stake.

The Chairman: You have been a fireman as well as an engineer?

Mr. DeSalis: Yes, sir, I have.

The Chairman: Is not the responsibility of the engineer shared with the fireman?

Mr. DeSalis: To a small extent.

The Chairman: A small extent?

Mr. DeSalis: Yes, sir.

The Chairman: Some of these firemen who have testified here have not claimed that they had equal responsibility, but they have claimed it was not small?

Mr. DeSalis: Well, they have certain responsibilities. With our road it is small compared with that of the engineer.

The Chairman: You think that an engineer can work longer hours without injury to his usefulness to the railroad than a fireman?

Mr. DeSalis: No, I would not say that he should.

The Chairman: I mean in continuous service, that an engineer can work longer hours than a fireman?

Mr. DeSalis: No, I won't say that he should, and be a useful man.

The Chairman: Why is it you split this run for the firemen, and do not for the engineers?

Mr. DeSalis: That was a matter, Judge, as I stated in Mr. Carter's cross questioning, that was adjusted between the firemen's committee and the management, something that I know nothing of.

The Chairman: Then if the engineers had asked for a split run, you believe they would have gotten it, too?

Mr. DeSalis: I cannot say, and I do not know whether they asked or not. The engineers have what is known—

The Chairman: Give us your opinion about it now; can the engineer make that run with less strain on his physical energy than a fireman?

Mr. DeSalis: Up to within a certain limit of hours.

The Chairman: I mean this run between Syracuse and Buffalo, of 152 miles, where for some reason the firemen requested a split run, and you gave it to them, and the engineers continued to run through.

Mr. DeSalis: The contention of the engineer, as I understand it, merely from hearsay, is that they have what is known as a calendar date which they did not want to give up, and there was a time years ago, when the engineers were being changed at Rochester on the Company's own idea, and finally they were put on regularly manned engines, or regularly crewed engines and sent through, and the engineer holds his own engine, and pre-

fers to have his own engine—while the firemen work in a pool, not having the same engine.

Mr. Lee: As I understand it, these firemen that are in this split run, gave up the calendar day regulation?

Mr. DeSalis: That is, according to the agreement they did.

Mr. Lee: The engineers did not care to give up?

Mr. DeSalis: No, sir.

Mr. Lee: Or they might not have cared to give up, and, therefore did not ask for a split run?

Mr. DeSalis: Well, I cannot say whether they asked or not; they might have asked; I do not know.

Mr. Lee: I do not.

Mr. DeSalis: I do not either.

Mr. Lee: But the fact remains that the fireman in getting this split run, did you give up one of the regulations that was in effect before. Now, the engineers on this through run still have this regulation, and they would have to give it up. Just what bearing that has on the matter, sir, I personally do not know, but it is a fact, and it must have some bearing there, because the firemen did give up this regulation when they got the split run. Where is that regulation? Just describe that a little bit, Mr. DeSalis.

Mr. DeSalis: "A day's run to be 100 miles or less, 10 hours or less, time and mileage to be computed and carried out separately for each calendar day's work, unless otherwise agreed by the General Committee."

Mr. Atterbury: What does that mean? Work out an example there for that, will you?

Mr. DeSalis: If a crew was called for six o'clock in the evening, and returned to a terminal, either returned or went to a terminal, consuming six hours in doing it, or 6, 7, or 8—

Mr. Atterbury: Supposing you take 7.

Mr. DeSalis: Seven hours, that would be one o'clock they would arrive there, they would be entitled to 100 miles or 10 hours for that service, even though they only made 50 miles.

Mr. Atterbury: 100 miles or 10 hours.

Mr. DeSalis: That was used considerably, yes, sir, on our intermediate terminal, Rochester, which is about eighty miles from DeWitt.

Mr. Atterbury: Is that what you call a calendar day?

Mr. DeSalis: Yes, sir, the calendar gave him that other three hours; he was seven hours on duty; it gave him the three hours or the 100 miles' pay.

Mr. Atterbury: Now what haven't the firemen got; how did the arrangement that the firemen have, differ from that?

Mr. DeSalis: It is about 75 miles from DeWitt to Wayneport, and they gave them 100 miles each way, regardless of the calendar date; so they get 25 miles additional more than the actual mileage within those limits, on through slow freight service only, not fast freight.

Mr. Atterbury: What is the number of hours on which they would get overtime?

Mr. DeSalis: 10 hours—after 10.

Mr. Atterbury: I do not see the difference.

The Chairman: I am very glad you said so, because you are a railroad man. I do not see the difference.

Mr. Atterbury: Your first case is 100 miles or less, isn't it, constitute a day?

Mr. DeSalis: Well, Mr. Atterbury, if the firemen had retained the calendar day, and had not been granted the constructed mileage, if he was called for 2 o'clock in the morning, he would go to Wayneport for 75 miles, and he could get his rest and return back on the same calendar date, and only make 150 miles?

Mr. Atterbury: The express calendar date is a new one to me; I have never heard it before.

Mr. DeSalis: It has been in existence on the New York Central for many years.

The Chairman: But by this arrangement now I understand that the fireman gets paid for two days instead of for 50 miles excess mileage; is that it?

Mr. DeSalis: He gets two days for the round trip, Judge, where he would only get a day and a half under the old arrangement, provided he completed the round trip within the same date.

The Chairman: He would get only a day and a half because going there and back was 150 miles, and 100 miles was a day.

Mr. DeSalis: Yes, sir.

Mr. Phillips: Then I would just like to get clear on this, because the calendar date is not so common. That would be another advantage to the fireman, wouldn't it?

Mr. DeSalis: What is that, the calendar date?

Mr. Phillips: Why, yes.

Mr. DeSalis: Well, you see he is getting better than the calendar date now; they have eliminated—

Mr. Phillips: That is what I say, that is another advantage to the fireman.

Mr. DeSalis: Yes.

Mr. Phillips: In addition to cutting out; then that would not be a reason for the engineers not wanting that, would it?

Mr. DeSalis: Why no, it would not.

Mr. Phillips: I should think that would be a reason why they should like it.

Mr. DeSalis: Well, there are other jobs, you know, that if they lost their calendar date on, why they would have to work for fractions of days.

The Chairman: It seems to me if the engineer gave up the calendar date, he would benefit by the arrangement just as the fireman does.

Mr. DeSalis: He would have to give up his regular engine also, Judge.

The Chairman: Well, he would get used to another engine.

Mr. DeSalis: Well, we find the men requesting engines and wanting them.

Mr. Atterbury: The fireman gets then two days for what the engineer gets a day and a half?

Mr. DeSalis: Yes, sir.

The Chairman: And the engineer is willing to sacrifice that for the sentiment of staying with his engine?

Mr. DeSalis: I am not positive of that, I am slmply advancing that as one of the reasons; I have not been on the Engineers' Committee in many years, and I do not know what their arrangements were, nor what their requests were.

The Chairman: This relief then, to the fireman, had nothing to do with delivering him from the long pull of 152 miles?

Mr. DeSalis: It gives him much nicer hours, and gives him a relay, and gives him an oportunity not to be away from home so long. Of course it is easier to work eight hours than it is to work sixteen.

The Chairman: But all those things would apply to the

engineer; I suppose the engineer enjoys being home with his wife nights as well as the fireman?

Mr. DeSalis: I think so.

The Chairman: I did not quite get the idea what is was. Well, I am going to venture to ask you a few questions, that will necessitate an expression of opinion by you. Don't you think that this concession, this arrangement, has been entered into because you thought the work was too heavy on the firemen for that long run?

Mr. DeSalis: Now, let me explain a little bit before I answer. We also have an article inserted in the firemens' agreement with the management that they will be permitted to turn, that is, without rest, at the intermediate terminal, for a return trip home, providing they have not been on duty over seven hours.

The Chairman: Have you any more questions?

Mr. Lee: Mr. DeSalis, you say you are not familiar with the arguments used by the committee to get this split run?

Mr. DeSalis: I am not, no, sir.

Mr. Lee: Might not one of the arguments been that the run was too hard for the firemen. Might not that have been used as one of the arguments?

Mr. DeSalis: It is possible.

Mr. Lee: You just don't know?

Mr. DeSalis: I cannot testify on something that I have no knowledge of, Mr. Lee.

Mr. Lee: But that might have been one of the arguments?

Mr. DeSalis: It is possible, yes, sir.

The Chairman: Mr. Carter.

Mr. Carter: That is all.

(Witness excused.)

E. MERKLE was called as a witness, and having been duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your position, Mr. Merkle?

Mr. Merkle: Assistant Road Fireman on the East end, Cumberland Division of the Baltimore & Ohio Railway.

The Chairman: Speak up, everybody wants to hear what you say.

Mr. Lee: What were you previous to that?

Mr. Merkle: Engineer.

Mr. Lee: Passenger and freight?

Mr. Merkle: No, sir; freight alone.

Mr. Lee: What did you do previous to becoming a freight engineer?

Mr. Merkle: Firing.

Mr. Lee: In freight service only?

Mr. Merkle: Yes, sir.

Mr. Lee: Do you have charge of the firemen in your district in freight service?

Mr. Merkle: Yes, sir; part of it.

Mr. Lee: Do you know what are the duties of a fireman?

Mr. Merkle: Yes, sir.

Mr. Lee: Do you know what a fireman is supposed to do?

Mr. Merkle: Yes, sir.

Mr. Lee: You can tell a good fireman when you see one, by his work?

Mr. Merkle: Yes, sir.

Mr. Lee: Are there any engines equipped with automatic stokers on your district?

Mr. Merkle: Yes, sir, fifty of them.

Mr. Lee: What type of engine are those that are equipped with stokers?

Mr. Merkle: The Mikado type.

Mr. Lee: Are they new engines?

Mr. Merkle: Yes, sir.

Mr. Lee: How long have you had them?

Mr. Merkle: About, between six and seven months.

Mr Lee: How do they work?

Mr. Merkle: Well, they work good.

Mr. Lee: Do you have any failures with these stokers?

Mr. Merkle: Not at present, no sir; we had some few at first.

Mr. Lee: You did have some trouble with the stokers at first?

Mr. Merkle: Yes, sir, owing to the fact that the coal gets in: the parts were not properly designed; they were set out

over the conveyor trough, and we use coal which they had not turned down, or culled over; we were supposed to have screened coal, and the holes in the gates were so small that you could not get to it; in case a lump as big as your hand got over the meshes, the screen is some 3 inches or 3½ inches mesh, for the coal to go through, and it would block that. After we got the gates set back, we did not have any further trouble along that line.

Mr. Lee: What other troubles did you have with the stoker?

Mr. Merkle: Well, we did not have trouble with them with the exception of getting them in and getting familiar with them; outside of that, they were fine.

Mr. Lee: Why did you have any trouble with the grates on the first stokers?

Mr. Merkle: Oh, yes, we had finger grates with too much opening, and they put in a different set of grates for the grates; that helped them a good bit; we had a good bit of trouble with grates burning out first off.

Mr. Lee: That was because the fire went down?

Mr. Merkle: Too much opening between the fingers of the grates.

Mr. Lee: You had trouble with the stokers sometimes because the men did not understand how to work them?

Mr. Merkle: Yes, sir, quite frequently.

Mr. Lee: But after a man gets accustomed to the stoker, does he have much trouble with it?

Mr. Merkle: No, sir.

Mr. Lee: Now, does the trouble that you have with the stokers now, compare with the trouble you had when you first got them?

Mr. Merkle: Oh, we have not by any means got 10% of the trouble we had at first.

Mr. Lee: They are working more successfully every day?

Mr. Merkle: Yes, sir.

Mr. Lee: Do you have much trouble fixing the stokers so that they work properly?

Mr. Merkle: Not any, at all, if you understand them. There is nothing to be fixed on them. They are already fixed; all you have to do is to turn them on and keep the coal to the conveyor and the stoker does the balance.

Mr. Lee: Were you an engineer at the time these stoker engines were assigned to the Cumberland division?

Mr. Merkle: Yes, sir; I took the first engine out on which the stoker was put in service.

Mr. Lee: Had you had any experience with stoker engines?

Mr. Merkle: Some little, on an engine that the stoker was put on for the purpose of testing it, I suppose, or trying it out.

Mr. Lee: You had some experience with that engine?

Mr. Merkle: Yes, sir.

Mr. Lee: How long were you on that engine?

Mr. Merkle: About two or three weeks.

Mr. Lee: Had you made a study of the stoker before that time?

Mr. Merkle: No, sir.

Mr. Lee: Had you read any literature, any papers in regard to the use of the stoker?

Mr. Merkle: Not up until that time; no, sir.

Mr. Lee: Is there any reason why other men could not become familiar with stokers and successfully operate them as you did?

Mr. Merkle: No, sir.

Mr. Lee: What particular duties have the firemen in connection with the operation of the stoker?

Mr. Merkle: Well, they have no particular duty, only to turn them on when they get ready to start out on their trip. Of course, they build the fires in all the engines by hand. The hostler generally has a good bit of green coal, and it is necessary to burn the fire to get it burning all over the grates alike before you apply the stoker on it, because the stoker distributes the same amount of coal all over the fire box, and if you did not have it all burning true, the stoker would pile it up in places.

Mr. Lee: He builds the fire before he leaves the terminal?

Mr. Merkle: Yes, sir.

Mr. Lee: Then what does he do after he leaves the terminal, if the stoker is working alright?

Mr. Merkle: He turns his valve on, and sometimes, if the engine is a single engine, you have to catch the balance wheel and turn it off the cylinder to get it in motion, and then open the slides and throw the conveyor lever in, and let them apply the coal to the fire box.

Mr. Lee: Is this lever he has to turn, on the fireman's side?

Mr. Merkle: Yes, sir.

Mr. Lee: On these stoker engines that you have is the fireman required to shovel much coal into the fire box, to any extent?

Mr. Merkle: No, but very little.

Mr. Lee: Just to get the fire started?

Mr. Merkle: Just to build the fire, and sometimes there might be a hole in the corner of the back grate which would require a couple of shovels full every 10 or 15 miles, may be, it depends how the coal was when you put it in there, or how hot the fire was. Sometimes you get a hot fire in this corner and it burns it out faster.

Mr. Lee: After the firemen takes charge of the engine, how much coal does he have to put in before he starts?

Mr. Merkle: Probably 200 to 300 pounds, sometimes probably not so much.

Mr. Lee: What work is required of a firemen when he reports to take out his engine?

Nr. Merkle: Well, he is required to report 20 minutes before leaving time, but his pay starts at the time he was called for or reports. He looks to see if the lights are filled, or is supposed to, and whether the right amount of tools is on the engine; but he does not have any of these to get or any lights to fill or any oil to get. It is all brought to the engine, all the supplies.

Mr. Lee: In what service are the stoker fired Mikado engines used?

Mr. Merkle: In through freight service.

Mr. Lee: How long is the division on which they are used?

Mr. Merkle: 118 miles.

Mr. Lee: What portion of the fireman's time is consumed in breaking coal to the proper size?

Mr. Merkle: Well, out of Cumberland, at the present time, none of his time is required; they are using prepared coal. But out of Keyser, and Brunswick, and Sir Johns Run they use the "run-of-mine" soft coal. I suppose, may be, one-fifth of his time on an ordinary load of coal; sometimes, if you happen to get an extraordinary bunch of lumps, it requires a little more time than that.

Mr. Lee: I believe you stated a considerable portion of the trouble with these stokers, originally, was due to the fact that the coal was not of the proper size, "run-of-mine" coal and big lumps?

Mr. Merkle: Well, yes, not—

Mr. Lee: Originally when you first got them.

Mr. Merkle: No, owing to the coal gate setting forward, you could not get to the lumps, in case there was a lump got over this screen, to break it. And then we set them back 18 inches and made it so we could hit them in case one got over there.

Mr. Lee: The coal that is furnished now will pass through the screen without any trouble?

Mr. Merkle: That is, out of Cumberland?

Mr. Lee: Out of Cumberland, yes.

Mr. Merkle: But they are not using it at all points.

Mr. Lee: Does the fireman check his tools, against any list, to see if the tools are short?

Mr. Merkle: No, sir.

Mr. Lee: If the fireman finds that tools are missing, he tells the tool boy, who brings the tools that are needed?

Mr. Merkle: Yes, sir.

Mr. Lee: Has it been your experience that tools are usually short?

Mr. Merkle: Often, yes, sir.

Mr. Lee: What happens?

Mr. Merkle: You just stay until the tool boy comes around, and tell him what is gone, and let him go and get them, although if there is a delay it is just the same, it is not only the fireman, but the engineer too, is the same way.

Mr. Lee: Is the tool boy usually on hand to do this work?

Mr. Merkle: Usually, yes, sir.

Mr. Lee: On the east end of the Cumberland Division is it necessary for the fireman to clean fires?

Mr. Merkle: No, sir.

Mr. Lee: Are there any facilities for cleaning fires on this division?

Mr. Merkle: They did have some time ago. They had hostlers at a place called Sir Johns Run, a coaling station, and an ash pit there. But so far as my personal view is concerned, I recommended, while I was running an engine, that it be closed up. I didn't believe in it, because several times the men came in the ash pit and knocked the fire off the grates and it had to be relit with wood, and it created a delay of from thirty minutes to an hour and a half; the fire failed between that and the next telegraph office, with a clean fire.

Mr. Lee: When did you make that recommendation, before you were an assistant foreman?

Mr. Merkle: Yes, sir, while I was running the 4177.

Mr. Lee: When you were an engineer?

Mr. Merkle: Yes, sir.

Mr. Lee: How much coal is consumed in making a run from Brunswick to Keyser?

Mr. Merkle: I could not say exactly, the tanks hold 16 tons, I think, and I have gone through several times with one tank of coal Often I could not have gone through. It probably would burn 18 tons on an average, may be a little more.

Mr. Lee: On an average trip how much coal is in the tender when the train arrives at Sir John's Run tipple?

Mr Merkle: Nearly half of it.

Mr. Lee: Then they get another tank full?

Mr. Merkle: Yes, sir; I never measured it exactly.

Mr. Lee: You usually fill the tender at Sir John's Run?

Mr. Merkle: Yes, sir, and at each end of the road.

Mr. Lee: How much is usually remaining in the tender at the end of the run?

Mr. Merkle: Sometimes half of it and sometimes more than half and maybe not so much; it depends on the trip.

Mr. Lee: It will average about half?

Mr. Merkle: On an average, I would think half, yes, sir.

Mr. Lee: How much do these tenders hold?

Mr. Merkle: 16 tons.

Mr. Lee: Have you in your experience as an engineer in going over the road between Brunswick and Keyser, known an engine to consume 32 tons?

Mr. Merkle: No, I never did.

Mr. Lee: How long ago were you promoted to an engineer?

Mr. Merkle: On June 4th, 1904.

Mr. Lee: That was before the 16 hour law became effective?

Mr. Merkle: Yes, sir.

Mr. Lee: What has been your experience since the law became effective, in regard to the time on the road?

Mr. Merkle: Well, I don't see any difference in the length of time, so far as that is concerned, only that you are relieved

now in 16 hours, and it used to be if you were out over 16 hours, or your trip called for more than 16 hours, you were not relieved. That is, as a usual thing you are relieved now, sometimes there is an exception when they do not relieve you.

Mr. Lee: Are any of your engines equipped with superheaters?

Mr. Merkle: Yes, sir, 70 of them.

Mr. Lee: What has been the practice in regard to increasing the tonnage of superheater engines?

Mr. Merkle: Well, they increase it.

Mr. Lee: There has been more tonnage added?

Mr. Merkle: Yes, sir, I think the Q-1-B hauls 250 tons more than the Q-1, and the Q-1-A hauls about 100 or 150 tons more than the Q-1, owing to the superheater.

Mr. Lee: How does the coal consumption on a superheater engine compare with the coal consumption on a saturated steam engine?

Mr. Merkle: To my knowledge of superheaters and my experience, they do not burn as much.

Mr. Lee: They do not burn as much?

Mr. Merkle: No.

Mr. Lee: How much less would you think?

Mr. Merkle: Probably a ton, or may be two tons; there is a difference in the trips but on an estimate I expect a ton.

Mr. Lee: When these stoked engines were first assigned to the Cumberland Division, were they also assigned to the engineers?

Mr. Merkle: Yes, sir, they were given away, and there was a distinction made amongst those engines; the road foreman did not put them on in seniority as he usually does; he put on them, the men who had the most success with them. There was such a bunch of them, that came altogether, that it nearly tied up the road, owing to not having experience with the stokers, and he put the men on who could operate them, and then they were thrown in the pool afterwards.

Mr. Lee: They were afterwards placed in the pool?

Mr. Merkle: Yes, sir; for a short period of time; and for some reason or other they regular crewed them again, and he then picked out the crews—I don't say that he picked them, but he made a restriction amongst some men; I don't know why,

probably from handling the engines, or why it was I don't know; and then they gave the rest of the engines away. The engines that did not have stokers, at the same time, they gave 81 or 82 engines away.

Mr. Lee: By giving away engines you mean they were assigned to certain men?

Mr. Merkle: Yes, that is what I mean by that, assigned to a certain engineer and fireman.

Mr. Lee: Did this result in some of the younger men getting the stoker engines?

Mr. Merkle: It did for a while; yes, sir.

Mr. Lee: What changed it?

Mr. Merkle: The seniority of firemen would not stand for it; they simply came to the road fireman and told him, either a stoker engine or an order for their time, that they did not intend to allow some younger man in seniority to hold a preferred engine; that is, in his mind, I suppose he called it a preferred engine rather than the other.

Mr. Lee: Did you hear him say that?

Mr. Merkle: Yes, sir; I heard three of them come in the office at one time.

Mr. Lee: Do you think he really meant to quit if he did not get a stoker engine?

Mr. Merkle: Undoubtedly, in my mind, he really meant to quit; yes, sir.

Mr. Lee: You think he did?

Mr. Merkle: Yes, sir; and he was a good man, too.

Mr. Lee: Did they get the stoker engines?

Mr. Merkle: Yes, sir; he is firing one to-day.

Mr. Lee: Were you Assistant Road Foreman of the Cumberland Division last January?

Mr. Merkle: Yes, sir.

Mr. Lee: Did you have any experience with surplus men at that time?

Mr. Merkle: No, we were rather short in men of all kinds; in fact we put a lot of new engineers to running; we hired a lot of firemen from some agency of some kind, I don't know where they came from, and hired a lot of men and sent them in there as experiecned firemen, and some were barbers and some were elevator boys, and just any class you wanted you could get out of that

bunch. The consequence was they only stayed—some of them learned the road and some did not.

Mr. Lee: Were there other shortages of labor in the train service at that time?

Mr. Merkle: Oh, yes, brakemen—

Mr. Lee: Were you short of brakemen too?

Mr. Merkle: Yes, sir; we hired six engineers.

Mr. Lee: You had to hire six engineers?

Mr. Merkle: Yes, sir.

Mr. Lee: Why was that?

Mr. Merkle: Owing to the shortage of men.

Mr. Lee: You did not have enough men to promote, is that it?

Mr. Merkle: Well, we had some to promote that would do for promotion, so far as that was concerned, but we did not have firemen to promote, on account of needing the firemen too.

Mr. Lee: Well, is that an unusual condition on the Cumberland Division?

Mr. Merkle: That is nearly every winter. Of course, we do not hire engineers every winter, but there has not a year passed, that I know of, but what there has been a bunch promoted.

Mr. Lee: Were you transferred to the Cumberland Division on account of shortage, when you were an engineer?

Mr. Merkle: Yes, sir, in January, 1906.

Mr. Lee: Where from?

Mr. Merkle: From the Wheeling Division.

Mr. Lee: In 1906, you said?

Mr. Merkle: Yes, sir.

Mr. Lee: Has this condition existed on the Cumberland Division ever since you have been there?

Mr. Merkle: Yes, sir, that is business always picked up in the fall of the year, and during the winter we always were short of men or never had any surplus. Now I do not say we were always short, but we never had any surplus.

Mr. Lee: How many engines have you in through freight service, on the Cumberland Division?

Mr. Merkle: About 82, I think.

Mr. Lee: And 50 of those 82 are equipped with stokers?

Mr. Merkle: Yes, sir.

Mr. Lee: All right; go ahead.

Mr. Carter: I understand you to say, Mr. Merkle, that with the use of these stokers and soft coal, that you had to build up your fire before leaving terminals?

Mr. Merkle: Oh, yes; you have to do that with any engine; you have to do that on all engines.

Mr. Carter: Does not that make a lot of black smoke round the terminal?

Mr. Merkle: Yes; but black smoke is not considered much.

r. Carter: Suppose you are using these stokers in a section of the country where black smoke means heavy penalties on the road, the firemen could not do it, could they?

Mr. Merkle: So far as these stokers are concerned, that has nothing to do with building the fire.

Mr Carter: Does it not make a lot of black smoke in trying to build your fire that way?

Mr. Merkle: No more on a stocker engine than on a scoop engine; you cannot build a fire on any engine without black smoke.

Mr. Lee: The witness speaks of a hand fired engine as a scoop engine, where they have to scoop the coal, with a scoop.

The Chairman: Yes, I understand.

Mr. Carter: Do I understand you to say that you had some of this coal prepared?

Mr. Merkle: Yes, sir.

Mr. Carter: About how many tons would one of these locomotives burn, over in your division?

Mr. Merkle: I should judge—are you speaking of the stoker engine or hand fired?

Mr. Carter: Stoker engine.

Mr. Merkle: I should judge 18, about 18.

Mr. Carter: Do you know the difference between the price of screened coal and run of mine coal?

Mr. Merkle: That is not a matter of price, Mr. Carter; they do this with a screen, with a tipple that runs over; they use lump coal to shovel engines, and the coal that goes through the screen with the stoker engines; the company makes the separation themselves.

Mr. Carter: Separates the coal?

Mr. Merkle: Yes, sir.

Mr. Carter: On a hand fired engine do the men have to break up all the lumps?

Mr. Merkle: They prefer the lumps on the hand fired engine.

Mr. Carter: How big are the lumps?

Mr. Merkle: So far as lumps are concerned in soft coal, they do not run much bigger any time than ten inches square.

Mr. Carter: Do not firemen ask that the coal be cracked, as long back as I can remember, they have always asked that the coal be cracked or broken.

Mr. Merkle: That may be in the case of the coal regions, but not in soft coal.

Mr. Carter: Does the B. & O. place supplies with tools on engines?

Mr. Merkle: Yes, sir, and fill the lubricator.

Mr. Carter: Who does that work?

Mr. Merkle: A man at the shop hired for that purposes.

Mr. Carter: Is he a man?

Mr. Merkle: Well, some are men and some boys.

Mr. Carter: One man or one boy can take care of a great number of engines, can he not?

Mr. Merkle: Oh, yes, a great many of them.

Mr. Carter: You spoke about taking on more coal about half way over the division, when the coal got back a little.

Mr. Merkle: Yes.

Mr. Carter: That helped the stoker out a good deal, didn't it, kept him from shoveling down the coal?

Mr. Merkle: It does not help in the stoker a particle.

Mr. Carter: I mean it prevents the fireman shoveling down coal for the stoker.

Mr. Merkle: No, the stoker engine has an 8 foot conveyor in the bed of the tank. It will naturally run down that all the time, but it does help out the hand fired or scoop engine.

Mr. Carter: Do they take coal every time the coal gets out of reach of the hand fired engine?

Mr. Merkle: Not every time, no.

Mr. Carter: They favor the stoker a little bit then?

Mr. Merkle: There is no favoring about it. There is just one coal tipple in the middle of the division, and all engines are filled there when they get there.

Mr. Carter: How about other divisions? Do they take coal whenever the coal gets out of reach of the fireman?

Mr. Merkle: I do not know anything about any other division.

Mr. Carter: In regard to the trouble you have in keeping firemen there? You say that is rather chronic.

Mr. Merkle: Yes, we have had trouble. That is in certain times of the year. In the summer time, when the business falls off, then they have been furloughed.

Mr. Carter: Do you have any trouble in getting firemen to come from other roads, or districts, where they do not have these stokers and superheaters?

Mr. Merkle: I do not know as to whether we have any trouble or not to get them from other divisions. As a general thing, about that time the eastern divisions are all busy, but this year we have borrowed some passenger firemen from the Baltimore division, and not only firemen, but conductors, and have put flagmen on the pilots on trains of all kinds, owing to the great increase in business that they had there this winter, in order to get the freight through.

Mr. Carter: Are you on a division where the company very kindly—and I am not criticising the company for it—allowed the firemen from other divisions $1.00 a day expense money to come up there?

Mr. Merkle: I do not know whether they did or not.

Mr. Carter: Mr. Merkle, if these stokers and superheaters have relieved the work of the firemen to a great extent, would you not think the firemen would leave all the roads where they do not have stokers and superheaters, and come up there, if they did not have much seniority, I mean?

Mr. Merkle: Well, that is a matter yet to be seen. It has not been long enough to tell that part of it, Mr. Carter. It may be.

Mr. Carter: When these men were transferred from Baltimore, you could hardly get any firemen at all, could you?

Mr. Merkle: There were none transferred with the exception of some passenger firemen; but of course they had a better job on a passenger run, and could make two days in the period of six hours, where if they were on other divisions, they would have to put in ten hours for the same amount of pay.

Mr. Carter: I am not criticizing the B. & O. for doing that, because I think every man on the B. & O. appreciates the fact

that it shows a disposition on the part of the B. & O. people to treat their men all right. The point I want to bring out is this, that notwithstanding these stokers and superheaters, you have a very hard time keeping firemen there.

Mr. Merkle: No, not any more than other places.

Mr. Carter: All over the B. & O. that way.

Mr. Merkle: On the Wheeling Division, I can speak for that division, and the Cumberland Division. Those are the only two divisions I was on, but I know in Lake time when the business would pick up, they would hire men right along until the lakes closed again. I know that would often happen, on the east end, along that same line.

Mr. Carter: As I understand, you have to hire engineers because you could not promote the firemen, or you would have no firemen left?

Mr. Merkle: Well, I suppose that they would have promoted them; at least they have got a bunch up now, if they could have been without them firing right at that time, but we put about some thirty engineers, that were back firing, to running at that time.

Mr. Carter: Then if the law of supply and demand was applied there, the supply did not equal the demand; you could not get men to do the work unless they would pay them a dollar a day extra.

Mr. Merkle: Oh, yes, I wouldnt' say that, that it required a dollar a day extra, but we done that to induce them in order to get experienced men from other divisions that they knew could fire there instead of learning firemen that didn't have any experience, and didn't have to furlough them as quick as business fell off.

Mr. Carter: Then it was not much of an inducement to come up there and fire the stokers with the superheater without the dollar.

Mr. Merkle: It was not much inducement?

Mr. Carter: I mean to say, the advantages of the stokers and superheaters of themselves was not a big inducement to attract the men from the other divisions that did not have stokers and did not have superheaters?

Mr. Merkle: Well, if they did not understand the stoker, of course it would be no inducement to come, but if they did understand the stoker, it would be a good inducement.

Mr. Carter: You think then that you will have no more trouble hereafter?

Mr. Merkle: Well, I do not think so, no; after we get all our men familiar with the stokers, I do not think we will have a bit of trouble with them.

Mr. Carter: Do you think that the firemen as a rule prefer these stoker engines?

Mr. Merkle: I certainly do, yes, sir.

RE-DIRECT EXAMINATION:

Mr. Lee: I do not think anybody got the impression, Mr. Merkle, but I want to make certain of it. Your firemen are not intentionally doing anything to these stokers.

Mr. Merkle: Oh, no; no, sir.

Mr. Lee: That is what I thought.

Mr. Merkle: Just because they do not understand them is the trouble.

Mr. Lee: Just a question of not knowing the working of the machine.

Mr. Merkle: That is all.

The Chairman: Mr. Merkle, what were you doing in 1902?

Mr, Merkle: In 1902 I was firing on the Wheeling Division.

The Chairman: And you were promoted to an engineer in 1906?

Mr. Merkle: 1904.

The Chairman: And then how long did you serve as an engineer?

Mr. Merkle: I served on the Wheeling Division two years and was transferred on the 6th day of January, 1906 to the East end of the Cumberland Division and have up to the 4th of December run an engine all that time.

The Chairman: Do you retain your membership in the Brotherhood?

Mr. Merkle: Yes, sir; that is—

The Chairman: A fireman or engineer?

Mr. Merkle: No, I withdrew from the firemen when I joined the engineers.

The Chairman: There are some men who keep their membership in the Firemen's Brotherhood although they are engineers?

Mr. Merkle: Well, at that time, the time I joined the engineers, there seemed to be some clause in it, that when you joined you had to withdraw from other labor organizations.

The Chairman: That is what they call double heading?

Mr. Merkle: Yes, sir.

The Chairman: You were an engineer then about eight years before you were promoted to your present position?

Mr. Merkle: Yes, sir.

The Chairman: How long were you a fireman?

Mr. Merkle: I was a fireman from December, 1900, until the 4th of January, 1904.

The Chairman: You got your promotion in four years' service?

Mr. Merkle: Yes, sir.

The Chairman: What is the average length of time that a fireman from the time he begins his service, on the Baltimore & Ohio Railroad, until he gets to be an engineer.

Mr. Merkle: Well, I do not know exactly, but on an average I would say three or four years; it may run a little longer, but at that time there were plenty of men that only fired three years promoted on the Wheeling Division.

The Chairman: What size engine did you fire in 1902?

Mr. Merkle: Well, I do not know exactly the weight of them, but I can tell you. 153,700 pounds on drivers.

The Chairman: 153,000?

Mr. Merkle: Yes, sir, that is the first one I fired. Then I fired an engine of 173.000 pounds.

The Chairman: And what division was that?

Mr. Merkle: On the Wheeling Division.

The Chairman: How long was it?

Mr. Merkle: About 100 miles.

The Chairman: And how much coal now did you handle or shovel on those runs?

Mr. Merkle: Well, I do not know exactly how much:; it is a good while ago; but the tanks, as I remember, were the same size tanks they are now using, or nearly, on the modern engine to-day. They held 7,000 gallons of water and fifteen tons of coat, and we would take coal once on the division; sometimes we would be half out and sometimes a little more.

The Chairman: Were your hours of service the same then as now?

Mr. Merkle: Yes, sir, but the 1,600 was a good deal harder to fire than the larger engine. When the larger engines came we all jumped at the larger engine because they practically fired better; they might have consumed a little more coal, but not a great deal, and fired a great deal better and handier to fire.

The Chairman: What duty was a fireman required to perform then, that he has been relieved of since then?

Mr. Merkle: Well, you had to get the oil at that time and get your own tools and fill your own lights and clean them up at that time, which you don't have to do now, and we had a turn around on that division at a place called Fairmont. We had to clean our own fires there at that time, before doubling back, if we cleaned them. Lots of us did not clean them because we could get back without doing it. Now, the hostlers look after them.

The Chairman: Is a fireman's position more or less desirable now, than in 1902, I mean, for the same pay, supposing he is getting the same pay?

Mr. Merkle: Well, I cannot see that there is much difference in it, because there are so many different duties taken off of him in the period of time since 1902, up until the present date, that really it makes him work about equal.

The Chairman: You think the duties of which he has been relieved are sufficient compensation for the increased work that he has to do now?

Mr. Merkle: Nearly so, yes, sir. There isn't much difference. I wouldn't turn my hand either way. I would just as soon, if I was the same age to-day as I was at that date, I would just as soon fire one of our engines to-day, speaking of a shovel engine, as I would one of those.

The Chairman: Although you were hauling a good deal heavier tonnage?

Mr. Merkle: To-day, than we were then.

The Chairman: Yes.

Mr. Merkle: Not in comparison with the size of the engine. The engines of that same type, we have some engines that we were using in 1902, that we are using to-day and they are not hauling a bit more tonnage to-day than they were in 1902, over the same division.

The Chairman: The extra tonnage is given for the bigger engine?

Mr. Merkle: Yes, sir.

The Chairman: And you would rather fire one of these new heavy engines, although it consumed more tons of coal a day, or you would just as soon do it?

Mr. Merkle: Yes, sir, I would just as soon fire one of our Mikado engines, and one of the reasons why is that the engines are more properly rated to-day than at that date.

The Chairman: You have some of those same engines in use now?

Mr. Merkle: Yes, sir.

The Chairman: But not pulling more tonnage than it did then?

Mr. Merkle: The same tonnage on the same division as at that time.

The Chairman: Are they in good condition, those engines?

Mr. Merkle: In comparison, as good as they were at that date.

The Chairman: Have the firemen any preference now, as to which engines they would work on at the same price?

Mr. Merkle: Well, I do not know that the price makes any difference, or not, Mr. Chambers. There is a little difference in the prices. The Mikado pays ten cents more, but if you set three of them side by side, 2800 class, and 4000 saturated class, and the superheated class, which holds more tonnage and three crews, and give the preference to a crew, they would take the greater engine.

The Chairman: At the same pay?

Mr. Merkle: No, I do not think at the same pay; they pay ten cents more, but I do not know that that would make the difference, or whether he prefers the engine, because it is a better engine in all ways, better put up.

The Chairman: And, in your opinion, as a practical fireman and engineer, if they pay the same for those three engines, which would you rather operate?

Mr. Merkle: I would rather operate the late engine.

The Chairman: The big engine?

Mr. Merkle: Because it has more modern improvements, and more advantages, on that engine, in every way.

Mr. Atterbury: Mr. Merkle, how much more difficult is it to build up a fire on the stoker engine then on the simple engine?

Mr. Merkle: None at all.

Mr. Atterbury: No more difficult at all?

Mr. Merkle: No, sir.

Mr. Atterbury: How much coal does it take to build up a fire?

Mr. Merkle: To build up a fire? Well, of course, I am not counting, but generally—

Mr. Atterbury: You take the engine on the engine track, and it is not any more difficult to build up a stoker fire, than it is to build up an ordinary fire?

Mr. Merkle: No, sir.

Mr. Atterbury: How much coal does it take to build that fire up?

Mr. Merkle: Two or three hundred pounds; it varies a little; it depends on the hostler as to the fire.

Mr. Atterbury: What is the total coal consumption from the time you take an engine at the engine pit, until you deliver it at the end of the run, what is your total coal consumption?

Mr. Merkle: Well, I would consider not over 18 tons, it varies a little either way.

Mr. Atterbury: 18 tons?

Mr. Merkle: Yes, that is on an ordinary trip. There have been lots of times when we have been over the division with one tank of coal, and then there have been other trips when we could not; that is, with the same tonnage.

Mr. Atterbury: What percentage of that 18 tons do you suppose you had to fire by hand, in order to either fix the fire while the stoker was working, or to fire altogether when the stoker was out of order?

Mr. Merkle: What per cent. of it is put in by hand?

Mr. Atterbury: Yes; when you are on the road.

Mr. Merkle: Not over five per cent. of it; hardly that.

Mr. Atterbury: Is that a fair average of week in and week out run, that only five per cent. of the coal is fired by hand, because of the defects in the stoker?

Mr. Merkle: Yes, as far as defects in the stoker are concerned, it is not necessary to fire any by hand if you build your fire right in leaving; but not all the firemen are familiar with how to build a fire in the stoker engines. In the back corner, as I mentioned a while ago, they would burn out. The stoker does not put as much coal in the extreme rear corners as it does in other

places in the fire box, and it is necessary to add a couple of shovefulls every ten or fifteen miles, in those corners, in order to keep the grate area covered up so that the air does not get in over the fire to form clinkers underneath.

Mr. Atterbury: You spoke about hiring a promoted man. Suppose you hired an engineer, and he was at the bottom of the list, and bad times came, and you had to throw out a lot of firemen and put a lot of engineers back to firing, what would become of that promoted man that you hired?

difference, or not, Mr. Chambers. There is a little difference in

Mr. Merkle: He is furloughed; he has to go elsewhere and look for a job, until such time comes as it is his turn to run again on our trips.

Mr. Atterbury: Then, if there is an engineer senior to him whom you have promoted on your own road, the man whom you hire as an engineer is furloughed, but the engineer who has been promoted from your own road is put back to firing in accordance with his seniority?

Mr Merkle: Yes; he is put back, I think, under certain conditions. After so long a time he does not hold his senior run. He has to go back on slow freight. I do not know how long that is, but I think a couple of years. After two years he has to go back on slow freight.

The Chairman: Any other questions, Mr. Lee?

RE-DIRECT EXAMINATION:

Mr. Lee: The fireman's work on an engine depends largely on the service in which that engine is engaged?

Mr. Merkle: Yes.

Mr. Lee: That is, one class of service for the same engine would be very much harder than another class?

Mr. Merkle: Well, yes. That is, if the service is harder that the engine is engaged in, of course the firing will be harder.

Mr. Lee: Yes. Well, that condition exists, does it not?

Mr. Merkle: Yes.

Mr. Lee: Then the measure of the work of the fireman, or the amount of the work of the fireman, depends on the service in which the engine is engaged?

Mr. Merkle: Yes.

Mr. Lee: On the conditions surrounding that work?

Mr. Merkle: Yes.

Mr. Lee: That is all.

RE-CROSS EXAMINATION:

Mr. Carter: You say you were in the employment of the B. & O. road in 1900?

Mr. Merkle: Yes.

Mr. Carter: Do you know the percentage of the smaller engines that they had in service at that time?

Mr. Merkle: No, I do not know; do you mean of the kind that they had in then that they have in now?

Mr. Carter: For instance, I have here a record that in 1900 they had 1,077 engines weighing less than 150,000 pounds on drivers, or 82 per cent. of all the locomotives the B. & O. had, weighed less than 150,000 pounds on drivers. Now, in 1912, that had dropped from 82 per cent. to 47 per cent. You are not in possession of those figures?

Mr. Merkle: No, sir.

Mr. Carter: Is it a fact that some very large engines have been put in service since then?

Mr. Markle: Oh, yes.

Mr. Carter: Do they not haul a greater tonnage with the big engines than they did with the little ones?

Mr. Merkle: Yes.

Mr. Carter: Do they not burn more coal?

Mr. Merkle: I suppose some of them do.

Mr. Carter: Are the tanks on the big Mikados bigger than the tanks on the Consols?

Mr. Merkle: The water space is bigger.

Mr. Carter: The coal space.

Mr. Merkle: No; hold on—

Mr. Carter: Is it not a great deal harder to reach back and move the coal on these Mikados than on the Consols?

Mr. Merkle: No, sir, that part of it is just the same. If anything, it is more convenient to-day than it was at that time.

Mr. Carter: Then you do not think an engine that weighs 300,000 pounds or 200,000 pounds on the drivers is any harder to fire than the smaller engine?

Mr. Merkle: I would not make any difference in that.

Mr. Carter: That is all.

Mr. Lee: There is a different rate of pay for these larger engines, is there?

Mr. Merkle: Yes, ten cents.

Mr. Lee: Ten cents, over 173,000?

Mr. Merkle: Yes, ten cents difference between the Mikado type and the smaller ones. I do not know exactly.

Mr. Lee: But, there is a lower rate still for the smaller engine, is there not?

Mr. Merkle: There are only two rates.

Mr. Lee: That is on the Cumberland Division?

Mr. Merkle: Yes, two rates in the through freight service, and a different rate for the yards.

Mr. Lee: Did the firemen on the B. & O., in 1902, receive pay for preparatory time?

Mr. Merkle: No, sir.

Mr. Lee: That has all come about since 1902?

Mr. Merkle: Yes.

Br. Carter: Do the B. & O. pay for preparatory time?

Mr. Merkle: Do they now?

Mr. Carter: Yes.

Mr. Merkle: Yes, they pay for 20 minutes to get the engine in; from that time until you get the engine ready, they allow you 20 minutes to get the engine ready, and pay you for it.

Mr. Carter: They can get the engine ready in 20 minutes, after all the supplies and tools are put on the engine. But if they had to put on their supplies and tools as they formerly did, they could not do it.

Mr. Merkle: They do not do that. In case it does not get done, the engine is left late.

Mr. Carter: You do not know how expensive it is to the B. & O. Company to have the boy put on these tools and supplies and fill these lubricators?

Mr. Merkle: No, sir, I do not.

Mr. Lee: Shall we call our next witness?

The Chairman: It is too late to call another witness now, and we will adjourn until 9 o'clock to-morrow morning.

(Whereupon, at 4:14 o'clock P. M., an adjournment was taken to Saturday, March 22nd, 1913, at 9 o'clock A. M.)

PROCEEDINGS.

ARBITRATION

between the

EASTERN RAILROADS

and

THE BROTHERHOOD OF LOCOMOTIVE FIREMEN AND ENGINEMEN

Submitted to Arbitration, under the Erdman Act,
By Agreement Dated Feb. 18, 1913

AT WALDORF ASTORIA HOTEL
New York

March 22, 1913.

HULSE & ALLEN, Official Reporters,
115 Broadway,
New York.

New York, March 22, 1913.

Met pursuant to adjournment at 9:05 A. M.

Present—Parties as before.

W. A. CAVEY, called as a witness, being duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee What is your position?

Mr. Cavey: Supervisor of Locomotive Operations on the Philadelphia, Baltimore and Shenandoah Divisions of the Baltimore & Ohio Railroad.

Mr. Lee: How long have you been in that position?

Mr. Cavey: About 21 months.

Mr. Lee: You have general supervision of locomotive service?

Mr. Cavey: Yes, sir.

Mr. Lee: On those divisions?

Mr. Cavey: Yes, sir.

Mr. Lee: Do your duties cover fuel economy?

Mr. Cavey: Yes, sir.

Mr. Lee: If a certain type of engine on a certain division is burning more coal than it should, it is your duty to look into the matter?

Mr. Cavey: Yes, sir.

Mr. Lee: And examine into it and find out why it is so?

Mr. Cavey: Yes, sir.

Mr. Lee: Do you have to make experiments as to coal consumption now and then?

Mr. Cavey: Yes, sir.

Mr. Lee: And tests?

Mr. Cavey: Yes, sir.

Mr. Lee: You made some experiments yourself, Mr. Cavey, as I understand, on the hill between Rowlesburg and Terra Alta?

The Chairman: What are the terminals of your division?

Mr. Lee: Your territory.

Mr. Cavey: Baltimore is my headquarters; but in 1911,

when I was first appointed, I went over different divisions on the system making tests, and this place which Mr. Lee speaks of now was one of the places included in that.

The Chairman: Where is that?

Mr. Cavey: On the west end of the Cumberland Division on the Alleghany Mountains.

Mr. Lee: You are sent all over the road making various investigations?

Mr. Cavey: Yes, sir.

Mr. Lee: You made some tests of coal burning and the amount of coal consumed on the helpers between Rowlesburg and Terra Alta?

Mr. Cavey: Yes, sir.

Mr. Lee: On the west end of the Cumberland Division?

Mr. Cavey: Yes, sir.

Mr. Lee: Why were these tests made?

Mr. Cavey: There was complaint from the firemen that the engines were burning from 7,000 to 9,000 pounds of coal per trip up the hill, and they did not think they would be able to stand to fire them; and our general manager sent me on the ground to investigate, to see what could be done, to see if it was right.

Mr. Lee: These are Mallet engines?

Mr. Cavey: The Mallet engines, yes, sir. So when I went on the ground I went up the hill—or when I went there rather I had a young man with me to help make the test, but when I first got there I made three or four trips up the hill that I did not interfere with the firemen's methods, the way they were doing; but at the same time I had a pair of scales and a bucket, and I weighed 10 or 12 shovel fulls of coal at different intervals from the time I left Rowlesburg until I arrived at the top of the hill at Terra Alta, and then would get their average weight, and then multiply it by the number of scoops that were fired, and on those trips I found that the first trip consumed 7792 pounds, the second trip 7118, the third trip 7191 pounds and the fourth trip 6848; making an average for the four trips of 7237 pounds per trip. Then after that I had them fire the engines—

Mr. Lee: How about the hours on duty?

Mr. Cavey: The average for the first trip was 1 hour and 37 minutes on the grade from the time we left until we arrived at the top of the hill; the second trip was 1 hour 47 minutes; the

third trip was 1 hour and 34 minutes; the four trip was 1 hour and 54 minutes, making an average of 1 hour and 43 minutes per trip on the grade where the engine was working. Then after that I had the firemen fire the engines according to my instructions, and I made—

Mr. Lee: You instructed the firemen on the second series of trips?

Mr. Cavey: On the fifth trip, yes, sir; I began to instruct the firemen, and I made then nine trips from that on, under my instructions, riding right with him. The first trip we went up the hill in 1 hour and 54 minutes and we burned 5012 pounds of coal; the second trip 1 hour and 7 minutes and we burned 5469 pounds; the third trip 1 hour and 15 minutes and we burned 4203 pounds; the fourth trip 1 hour and 6 minutes and we burned 3800 pounds; the fifth trip 1 hour and 56 minutes and we burned 4336 pounds; the seventh trip 2 hours and 18 minutes and we burned 6436 pounds; the eighth trip 1 hour and 38 minutes and we burned 3641 pounds; the ninth trip 1 hour and 21 minutes and we burned 4056 pounds; and the last trip 1 hour and 15 minutes and we burned 3415 pounds; or a total average for the number of trips of 1 hour and 26 minutes on the hill with an average of 4486 pounds of coal. We reduced it from 7237 to 4486 pounds.

Mr. Lee: That is, when the men were firing properly?

Mr. Cavey: Yes, sir.

Mr. Lee: They burned on an average of about 2800 pounds less?

Mr. Cavey: Yes, sir.

Mr. Lee: Per trip?

Mr. Cavey: Per trip.

Mr. Lee: How did you pick out, Mr. Cavey, the scoops that were to be weighed?

Mr. Cavey: Well, when we would weigh one, we would touch the fireman on the shoulder after he had loaded up his scoop.

Mr. Lee: Did you see the scoop as it was loaded?

Mr. Cavey: No, sir, we would just watch the motion of the fireman.

Mr. Lee: You did not pick out any particular scoop then?

Mr. Cavey: No, sir; and in connection with that, Mr. Lee, these tests were made with a No. 3 scoop.

Mr. Lee: Is that a large scoop or a small scoop?

Mr. Cavey: A small.

Mr. Lee: What would the coal weigh per scoop?

Mr. Cavey: Well, 15 pounds if you load the scoop so that it won't roll off is a liberal average.

Mr. Lee: What weight of coal in the scoops did you find before you instructed the men, on the average?

Mr. Cavey: Well, they were loading them up, well, here is what we averaged per scoop; I have it here. The first trip was 16, 14, 17, 16 and 16.

Mr. Lee: What was the average scoop?

Mr. Cavey: An average of 16.

Mr. Lee: Now, after you instructed the men, what was the average weight of the scoop?

Mr. Cavey: Why, about 14, 13.9.

Mr. Lee: That is, your instructions to them were to fire a smaller amount of coal at a time.

Mr. Cavey: Yes, sir.

Mr. Atterbury: What is the tractive power of that engine?

Mr. Cavey: 105,000 pounds, 461,000 pounds total weight on drivers.

Mr. Lee: What is the length of that grade, Mr. Cavey?

Mr. Cavey: 12 miles.

Mr. Lee: Now, what was the average ton miles of those four trains before you instructed the men?

Mr. Cavey: The average gross ton miles per pound of coal?

Mr. Lee: No, the gross ton miles of the train, the average.

Mr. Cavey: Gross ton miles, the average was 22,685.

Mr. Lee: That is the tons, isn't it—the ton miles.

Mr. Cavey: That is gross ton miles.

Mr. Lee: How much?

Mr. Cavey: Gross ton miles.

Mr. Lee: That is how much, did you say?

Mr. Cavey: 22,685.

Mr. Lee: What was your ton miles after you supervised, the average?

Mr. Cavey: Well, on the average of the ten trips that I made it was 19,717.

Mr. Lee: What was the ton miles per pound of coal consumed before you instructed the men?

Mr. Cavey: 3.1 ton.

Mr. Lee: What was the gross ton miles per pound of coal?

Mr. Cavey: 3.1 ton.

Mr. Lee: Is that the tons per coal, or the ton miles?

Mr. Cavey: That is the ton miles per pound of coal.

Mr. Lee: That is, before the men were instructed?

Mr. Cavey: Yes, sir.

Mr. Lee: How much was it after they were instructed?

Mr. Cavey: 4.5 tons.

Mr. Lee: Mr. Cavey, you have had experience in road service as well as in pusher service?

Mr. Cavey: Yes, sir.

Mr. Lee: Would you consider that the work of a fireman per day on pusher service is as high as in through freight service?

Mr. Cavey: No, sir.

Mr. Lee: Why not?

Mr. Cavey: Well, he only works at the same interval going up the hill that the man does in the through service, and then drifting back down the hill he practically performs no service while the man in through service is performing service.

Mr. Lee: You say in the same interval?

Mr. Cavey: Yes, sir.

Mr. Lee: What do you mean by that?

Mr. Cavey: Well, while the time consumed going up the hill, the man in through service is working about as hard as the man on the helper, and then when he gets on top of the hill the fireman's work ceases until he gets back down the hill to make another push.

Mr. Lee: You mean it ceases, as far as the shoveling of coal is concerned?

Mr. Cavey: Yes, sir.

Mr. Lee: He may put in a few shovels of coal coming down the hill, mightn't he?

Mr. Cavey: Well, he does put in a few shovelsful, maybe 12 or 15, going down the hill.

Mr. Lee: But his work is very light coming down the hill?

Mr. Cavey: Very light, yes, sir.

Mr. Lee: That is, as compared with the through freight service, his work is the same or substantially the same as in through freight service while he is going up the hill?

Mr. Cavey: Yes, sir.

Mr. Lee: But when he is coming down the hill he has very little to do?

Mr. Cavey: Very little to do.

Mr. Lee: Has to watch for signals, doesn't he, coming down the hill, if there are any?

Mr. Cavey: Yes, they sit on the seat box and watch for signals, or watch for a flag on their side of the curve.

Mr. Lee: But, as far as shoveling coal is concerned, he does very little of it coming down the hill?

Mr. Cavey: Why, not more than 12 or 15 shovelfuls. The work of putting in coal drifting back down the hill is very light on those large engines.

Mr. Lee: These tests that you speak of were made under your own direct observation?

Mr. Cavey: Yes.

Mr. Lee: There were other tests made were there not, on the Baltimore & Ohio?

Mr. Cavey: Yes.

Mr. Lee: Are you prepared to state anything about those other tests? Do you know anything about them other than what you see from the record?

Mr. Cavey: I do not know anything about them only what I see from the record. I was not on the ground when the tests were made.

Mr. Lee: You do not know how they were made except from hearsay?

Mr. Cavey: No, sir.

Mr. Lee: Mr. Cavey, you made some other tests yourself in these pusher and helper tests between Philadelphia and Baltimore?

Mr. Cavey: Yes.

Mr. Lee: Please explain those to the Board.

Mr. Cavey: These tests were made in June, 1911, when we first established the fuel economy bureau. I made these tests on our Mikado engines. These engines are classed as Q-1.

Mr. Lee: What is the weight on the drivers

Mr. Cavey: They have 50,184 pounds tractive power; 218,740 pounds on the drivers, and a total weight of 276,050 pounds. The tests that I made on the Philadelphia Division, under my supervision—shall I go through these in detail the same as the others?

Mr. Lee: Yes.

Mr. Cavey: Between Baltimore and Philadelphia I made six trips. On the first trip that we made I have not the time on the road, but we consumed 12,864 pounds of coal; on the second trip 15,227 pounds, on the third trip 12,247 pounds, the fourth trip 11,371 pounds, the 5th trip 12,180 pounds, and the 6th trip 12,363 pounds, or an average for the number of trips of 12,709 pounds of coal. Our average speed while in motion was 20 miles per hour, and the average speed for the total time was 16.3 miles.

They have some tests that were made during the same weeks that I made these, and in these latter tests no instructions were given. There were six of these trips. On the first trip there were 16,869 pounds of coal consumed; on the second trip 14,978 pounds; on the third trip 18,148 pounds; on the fourth trip 18,999 pounds; on the fifth trip 16,827 pounds, and on the sixth trip 13,434 pounds, or a total average for the entire number of trips of 16,531 pounds.

The average speed while in motion on those trips was 21.2 miles, and the total speed for the entire time was 15.9 miles. I have some tests that were made from Philadelphia to Baltimore. I have four of those trips.

The Chairman: Was that on the whole run from Philadelphia to Baltimore?

Mr. Cavey: One set of trips was going the other way, from Baltimore to Philadelphia. That was 96 miles. Now that was the amount of coal consumed on that 96 miles, one way.

The Chairman: Now you are going to give it the other way?

Mr. Cavey: Now we are going to give it from Philadelphia to Baltimore, over the same division, in the opposite direction.

On the first trip the coal consumed was 16,685 pounds; on the second trip 15,844 pounds; on the third trip 13,886 pounds; on the fourth trip 11,741 pounds; making an average for the total number of trips of 14,564 pounds. The average speed while in motion was 16.7 miles, and the average speed for the total trip was 12.5 miles.

Now there were trips that were not supervised, over the same division. On the first one the coal consumed was 18,616 pounds; on the second 20,043 pounds; on the third 20,944 pounds; on the fourth trip 24,765 pounds; on the 5th trip 20,383 pounds;

on the 6th trip 18,381 pounds; on the seventh trip 21,229 pounds; on the eighth trip 18,860 pounds; making the average for the total number of trips 20,411 pounds. Their average speed while in motion was 17.3 miles, and the average speed for the trip was 11.3 miles.

Mr. Lee: Mr. Cavey, what does that indicate to your mind?

Mr. Cavey: It indicates very clearly that when a man does his work in a systematic and intelligent manner he will use considerably less coal.

Mr. Lee: And create for himself a great deal less physical work?

Mr. Cavey: Yes.

Mr. Lee: You may cross-examine.

Mr. Atterbury: Mr. Lee, would you mind asking such questions as would develop the competency of this witness as to the work of the firemen?

Mr. Lee: Mr. Cavey, what was your position previous to your present position?

Mr. Cavey: Road Foreman of Engines.

Mr. Lee: On what division?

Mr. Cavey: On the Baltimore Division.

Mr. Lee: Did you have charge of enginemen and firemen as Road Foreman of Engines?

Mr. Cavey: I had charge of all the freight engineers and firemen on the Baltimore Division, and all the passenger men between Baltimore & Cumberland.

Mr. Lee: Was it your duty to follow up their performances?

Mr. Cavey: Yes, sir.

Mr. Lee: To see that they did their work properly?

Mr. Cavey: Yes, sir.

Mr. Lee: That was part of your duty?

Mr. Cavey: Yes, sir.

Mr. Lee: You were supposed to know what a fireman could do?

Mr. Cavey: Yes, sir.

Mr. Lee: And you could tell whether he was doing it properly or not?

Mr. Cavey: Yes, sir.

Mr. Lee: Did you ever fire an engine?

Mr. Cavey: Yes, sir.

Mr. Lee: Recently?

Mr. Cavey: Yes, sir.

Mr. Lee: How recently Mr. Cavey?

Mr. Cavey: Well, I will say in the last four months, I want to correct it, in the last three months.

Mr. Lee: Not as day in and day out, but occasionally?

Mr. Cavey: At intervals.

Mr. Lee: At intervals; so that your duties require you to know what a fireman can and should do?

Mr. Cavey: Yes, sir.

Mr. Lee: Is that enough?

Mr. Atterbury: Were you regularly employed as a fireman at one time?

Mr. Cavey: Yes, sir.

Mr. Lee: As an engineer?

Mr. Cavey: Yes, sir, I was employed as a fireman for three years, and as an engineer seven years and four months.

Mr. Lee: Were you a fireman demonstrator, or a fireman instructor?

Mr. Cavey: No, sir, I was not while I was firing.

Mr. Lee: I mean since then?

Mr. Cavey: Well, I have always helped since I have been off of the engine run—as road foreman, and assistant train-master at one time.

Mr. Lee: Is it part of your duties to instruct firemen how to fire properly?

Mr. Cavey: Yes, sir.

Mr. Lee: You ride the engines frequently?

Mr. Cavey: Yes, sir; very often, at the present time.

Mr. Lee: You are conversant with all the lines of the fireman's work?

Mr. Cavey: Yes, sir.

CROSS EXAMINATION.

Mr. Carter: Did I understand you to say, Mr. Cavey, that after having instructed these firemen how to fire properly, and presumably they had reached the highest state of perfection, that they burned 4,486 pounds of coal in an hour and 26 minutes?

Mr. Cavey: Yes, sir.

Mr. Carter: Did they use to burn that much coal in an hour and 26 minutes in 1902?

Mr. Cavey: Now I couldn't say, Mr. Carter, for I never made any test in 1902.

Mr. Carter: Were you not firing in 1902?

Mr. Cavey: No, sir.

Mr Carter: When did you fire?

Mr. Cavey: I fired in 1886 to 1889.

Mr. Carter: Were you running in 1902?

Mr. Cavey: No, sir, I was road foreman.

Mr Carter: Have you any knowledge about how much coal a fireman had to fire per hour in 1902?

Mr. Cavey: Well, not at that one particular point.

Mr. Carter: According to this, after having reached the highest stage of perfection, under the immediate tutelage of yourself, a fireman fires 4,486 pounds of coal in one hour and 26 minutes.

Mr. Cavey: Yes, sir.

Mr. Carter: I understand you to say there was a great decrease in the amount of coal burned after you began to instruct them. I notice of the five trips that you instructed them, the most the firemen burned at any time while you were instructing them—for instance, the second trip under your instruction he burned 6,436 pounds in two hours and 18 minutes—

Mr. Cavey: No, Mr. Carter, that was the sixth trip.

Mr. Carter: No, it was the seventh trip; I beg your pardon, no, that was the second trip under your instructions.

Mr. Cavey: No, that was the sixth trip.

Mr. Carter: I see the point; I have not the record straight. What was the average before your instructions?

Mr. Cavey: The average was 7,237 pounds in 1 hour and 43 minutes.

Mr. Carter: Now I note that under your instruction it was 5,000, 5,400, 4,200 and so on, and on the sixth trip 6,400 pounds.

Mr. Cavey: Yes, sir.

Mr. Carter: How do you account for that?

Mr. Cavey: I can account for that very readily, Mr. Carter. That train was gotten out at M. & K. Junction at the foot of the hill, and the conductor made a mistake in the tonnage, and we were overloaded, and the engine had to be worked simple two-thirds of the way up the hill.

Mr. Carter: Is it not possible, Mr. Cavey, that when the tonnage was not carefully arranged for official tests, that the same conditions might have existed before?

Mr. Cavey: Well, Mr. Carter, this tonnage that I have here, there were no trains picked; they were taken as they came along on the line of the road with trains that were despatched from Grafton, a terminal about, I suppose, 20 or 25 miles west of that point.

Mr. Carter: These engines, you say, were in pusher service?

Mr. Cavey: Yes, sir.

Mr. Carter: Did I understand you to say that the fireman on the pusher engines rode down the hill without doing much work, and the firemen on the through freights worked hard, is that right?

Mr. Cavey: He was working, but not while riding down the hill.

Mr. Carter: I didn't think so.

Mr. Cavey: Sir?

Mr. Carter: Is it not a fact that it is practically the same whether a man is in pusher service or through freight service, when he is drifting down the hill; is not that a cessation of his labor, to a certain extent?

Mr. Cavey: Well, yes.

Mr. Carter: Whether he is in through freight or pusher service?

Mr. Cavey: Yes.

Mr. Carter: In pusher service is there not another engine on the front of the train?

Mr. Cavey: Yes, sir.

Mr. Carter: Does not a good deal depend upon what the front engine does?

Mr. Cavey: Most undoubtedly.

Mr. Carter: For instance, if the front engine is in poor mechanical condition, or is steaming badly, or the fire is dirty, does not that throw a great deal more work on the pusher engine?

Mr. Cavey: Yes, that will throw more work on the pusher engine, and then you might reverse that and put it on the pusher engine and throw the work on the head engine.

Mr. Carter: That is true. Therefore, where there are two engines on a train, unless you have an exact knowledge as to the

condition of both engines and test both engines at the same time, it is difficult to reach any scientific conclusion, is it not?

Mr. Cavey: Well, no, I do not think so for this reason Mr. Carter, all engines in through service are not in bad condition.

Mr. Carter: That is what I mean, if to-day we had an engine in good condition and the highest boiler pressure maintained and the valves in perfect condition on the head ends, why it would leave the coal consumption on the back end—

Mr. Cavey: Yes, and that is very true Mr. Carter, and the same thing will apply to a fireman. To-day you will go along and you will take that engine that is in good condition, everything in first class shape on her, and you will have a fireman that is not up to the standard and who will get the same results as you would with a good fireman with a poor engine.

Mr. Carter: Now let us say that is true, then can you make a scientific test of an engine in pusher service without at the same time making a scientific test of the other engine that is helping pull the same train?

Mr. Cavey: No, there was no man on the other engine making a test.

The Chairman: You mean there were two locomotives on this train when you were making a test on one of them?

Mr. Cavey: Yes, sir, on the helper grade between Rowlesburg and Terra Alta.

Mr. Carter: Those engines at that time were comparatively new, were they not?

Mr. Cavey: They had been in service about six months.

Mr. Carter: At that time?

Mr. Cavey: Between five and six months.

Mr. Carter: How long ago was this test?

Mr. Cavey: In July, 1911.

Mr. Lee: What date was that?

Mr. Cavey: July, 1911.

Mr. Carter: They were then in service six months, or practically new

Mr. Cavey: Between five and six months, yes, sir.

Mr. Carter: And now they are over two years in service?

Mr. Cavey: Yes, sir.

Mr. Carter: Mr. Cavey, what is your experience as a road foreman of engines between an engine of any class or type, that

has been in the service less than six months, and one that has been in service say nearly two years and six months; that is, provided they have not been shopped?

Mr. Cavey: Well, Mr. Carter, these engines in that service, those helper engines have got to be kept in good condition as far as cylinder packing, valve packing and flues are concerned to do the work; they have got to be kept in good condition at all times.

Mr. Carter: The work then taxes the locomotives to their highest capacity?

Mr. Cavey: Yes, sir.

Mr. Carter: It would not do to let those engines run down?

Mr. Cavey: No, sir.

Mr. Carter: How about the heat of the fire boxes on those engines?

Mr. Cavey: Well, the heat from the fire boxes on those engines in summer time is very great.

Mr. Carter: What is the size of the fire box?

Mr. Cavey: 100 square feet.

Mr. Carter: Now, you were in service in 1902, were you not?

Mr. Cavey: Yes, sir.

Mr. Carter: Did you ever see anything in 1902, so far as firing an engine is concerned, that compared with this job of firing this 100 square feet with its excessive heat?

Mr. Cavey: Well, no, the work is somewhat hotter and heavier to-day.

Mr. Carter: I forgot to ask you, when were these first tests made that you referred to that I quoted a while ago?

Mr. Cavey: On the helpers, Mr. Carter?

Mr. Carter: Yes, sir.

Mr. Cavey: Why they were made in July, 1911.

Mr. Carter: July, 1911?

Mr. Cavey: Yes, sir; about five months after we got those engines.

Mr. Carter: Would it not be possible and probable that the engines now are perhaps not as easy to fire as they were in July, 1911?

Mr. Cavey: No, I do not think so. I was there in February for a week, and I found the same condition as far as firing is concerned, existing then as existed when I was there in 1911.

Mr. Carter: Have you any data there as to the difference between the pounds of coal consumed by that locomotive and the locomotive, the big Consol?

Mr. Cavey: Now, what have you reference to, the big Consol?

Mr. Carter: Is that an E-27, is that a Consol?

Mr. Cavey: E-27 or E-27-B is consolidation, yes, sir.

Mr. Carter: Now, have you any record in all of your tests of the difference between the coal consumed on this big engine and the Consol?

Mr. Cavey: Not in helper service, I haven't, no, sir.

Mr. Carter: Well, in road service?

Mr. Cavey: I have in road service between E-27-B and the Mikados.

Mr. Carter: Now, these Mallets have been in service quite a long while, have they not?

Mr. Cavey: Why, two years, to the best of my knowledge, last January.

Mr. Carter: I have here a report of a test which I read in a committee report to the Traveling Engineers' Association in 1911; that has been two years ago, and it gives a comparison there. It shows that this 2400, is that the number?

Mr. Cavey: No, sir, the 2400 is a smaller engine.

Mr. Carter: A smaller Mallet?

Mr. Cavey: Smaller that these that I am speaking of and made the test on.

Mr. Carter: What is an E-27?

Mr. Cavey: An E-27 is a consolidation engine, 22 x 30 cylinder, 205 pounds pressure, 60 inch driving wheel, 42,168 tractive power, 185,900 on drivers, total weight 208,500 pounds.

Mr. Carter: 185,000, and something, on drivers?

Mr. Cavey: Yes, sir.

Mr. Carter: Now, what were these 2400s on drivers?

Mr. Cavey: 461,000.

Mr. Carter: Now, do you believe that there is much difference between firing those two engines; do you think they are as easy to fire as the big engine?

Mr. Cavey: Mr. Carter, the difference in fuel consumption on those two engines, on that grade, would not vary so much, for one of the reasons, that the Mallet is a compound engine, and

superheated, and while the consolidation engine has got a 22 by 30 cylinder, she only has 56 square feet of grate surface, whereas the cylinder on the Mallet is 26 by 32, but she has 100 square feet of grate surface, and considerably larger heating surface. I cannot just describe the difference between the heating surface of the two engines.

Mr. Carter: Well, in a committee's return to the Traveling Engineers' Convention in 1911, it was shown that this 2,400 Mallet was pitted against 2-E-27. The Mallet had 2435 tons, and the 2-E-27 had 2473, therefore, the trains were practically the same.

Mr. Cavey: Yes, sir.

Mr. Carter: But, in speed it took the one Mallet three hours and forty-three minutes to do what the two Consols did in two hours and forty-five minutes, increased the time nearly fifty per cent. Now, the coal consumed by the 2,400 was 20,000 pounds for one fireman, while on the two engines there were 30,000 pounds for two firemen; that is, the coal consumption was reduced per locomotive from 30,000 to 20,000, but the coal consumption per locomotive mile for firemen, was increased from 349 to 465. That is reported to the Traveling Engineers' Convention by an official committee of engineers.

Mr. Cavey: Mr. Carter, there must have been something wrong with the E-27-B, or E-27, for the E-27 could not have been worked to the full capacity for they have a tractive power of 42,000 pounds, and this 2,400 only has a tractive power of 70,000 pounds; so there was about 14,000 pounds of tractive power that you were not getting any benefit of in the two Consolidation engines.

Mr. Carter: I can only say that this was a specially conducted test for the benefit of an official committee appointed by the Traveling Engineers' Convention of 1910.

Mr. Cavey: I do not dispute that in the least, but I am just speaking from practical experience, in saying that the two Consolidation engines could not have been worked with their full capacity, for there is a difference of—

Mr. Carter: Let me ask you—

Mr. Lee: Just a moment. I insist the witness be allowed to finish his statement.

Mr. Carter: I ask questions that may be answered by yes or no, and he goes on so long that I want to hurry through with it.

Mr. Lee: Yes, you ask very good questions.

Mr. Cavey: The point I want to make, Mr. Carter, is that the two Consolidation engines, having a tractive power of 42,000 pounds a piece, that would make a combined tractive power for the two, of 84,000 pounds, against one engine with a tractive power of 70,000 pounds, making a difference of 14,000 pounds in tractive power; and I cannot understand why the two engines would not take the same train up there quicker than the one engine did.

Mr. Carter: I am not talking about the tractive power so much as I am talking about the relative labor of firing the two engines. Now, it has been testified here by a witness from your road, that firemen do not work harder on the big engines than they do on the little engines to-day, than formerly. In fact, so it was said, these biggest engines are not much harder work to fire than the little engines, formerly, in 1902. I am quoting to you an official test specifically conducted by the B. & O. road, in compliance with the request of a specially appointed committee of the Travelling Engineers' Association, and they show that the 2400 used 465 pounds of coal per locomotive mile, while the two E-27's used 698 pounds of coal per locomotive mile. That is, each fireman on the E-27's burned 349 pounds of coal a piece per locomotive mile, while the firemen on the Mallet, and it was a little Mallet at that—

Mr. Cavey: How much, 349 pounds?

Mr. Carter: 349 pounds average. The two together burned 698 pounds. Splitting the difference, that made 349 pounds a piece. At the same time, in the same test, when they were burning 349 pounds a piece per locomotive mile, the man on this little Mallet, not your big Mallet, burned 465 pounds of coal per locomotive mile.

Mr. Cavey: There is no question that the man who handles 465 pounds of coal had to work the hardest.

Mr. Carter: The point I want to bring out is that it is harder to fire on the big engines than on the little engines.

Mr. Cavey: But on the other hand, had the two Consolidated engines been working to their maximum capacity, according to the tractive power, then there might have been a different story.

Mr. Carter: Then does not that apply to all these tests?

Do you think these men conducting these tests were any less diligent than you were in conducting your test, and might not the "if" apply to your tests as well as to theirs?

Mr. Cavey: Which test have you reference to?

Mr. Carter: I am referring to the test conducted for the benefit of the special committee of the Travelling Engineers' Convention.

Mr. Cavey: I have every reason to believe they were just as careful as I was.

Mr. Carter: All right. Now about this pusher going down the hill, does he not act also as a flagman?

Mr. Cavey: When it is necessary.

Mr. Carter: What do you pay flagmen on that road?

Mr. Cavey: Train flagmen?

Mr. Carter: Anybody—train flagmen—yes.

Mr. Cavey: I am not versed in those rules, Mr. Carter.

Mr. Carter: Presuming that they paid the same to flagmen as they do the firemen on a small engine, then the pusher firemen, drifting down the hill, would have their duties as pusher fireman to perform plus the duties of a flagman; is not that right?

Mr. Cavey: Yes.

Mr. Carter: You do not know what other flagmen would receive per day if they had put another flagman on?

Mr. Cavey: No, sir, I could not answer.

Mr. Carter: Do these big Mallets drift very nicely down, around curves? Don't they have to work steam on them, unless it is a very steep grade, around curves?

Mr. Cavey: Not down that grade.

Mr. Carter: I mean ordinarily around curves down grade.

Mr. Cavey: Not down there, you do not, unless you have a brake on them.

Mr. Carter: The question I asked was, ordinarily down grade, do not the Mallets bind on the curves?

Mr. Cavey: I cannot speak for any place only on that one particular grade. I have never ridden down any of the other grades on them.

Mr. Carter: In speaking of your tests on the Philadelphia Division from Baltimore to Philadelphia, those engines were Mikados, were they not?

Mr. Cavey: Yes.

Mr. Carter: Brand new?

Mr. Cavey: They had been in service about six months.

Mr. Carter: Broken in pretty good?

Mr. Cavey: Yes.

Mr. Carter: In your experience as a mechanical man, do not practically all locomotives deteriorate very rapidly, so that after going so many miles they have to shop them?

Mr. Cavey: Yes, you have to put them in the shop.

Mr. Carter: How many miles, about, do you get out of a locomotive on the B. & O., without a general shopping?

Mr. Cavey: Without a general shopping?

Mr. Carter: Yes. You might put them out on some branch line, but I mean to say about how many miles do you get out of a locomotive on the B. & O. before it becomes necessary to relieve it from the service for which it was intended?

Mr. Cavey: As a general proposition, with the heavy power, we will average about 28,000 to 30,000 miles before the engine is taken in and given light class repairs such as flues, tires, cylinder packing, valve packing, and things of that nature. But in addition to that, the cylinder and the valve packing is renewed as often as is necessary.

Mr. Carter: How many miles did you say?

Mr. Cavey: I would judge, I have no definite record on that, but in my opinion, from 28,000 to 30,000 miles.

Mr. Carter: Then is not the deterioration gradual from the first trip until the 20,000 miles are made?

Mr. Cavey: Yes, sir.

Mr. Carter: And therefore all locomotives gradually deteriorate until you take them in the shop, face their valves, get the blow out of them, and get the scale off their flues, and the mud out of the belly of the boiler, and so forth; is not that true?

Mr. Cavey: Well, with their method of washing boilers at the present time, Mr. Carter, there is but very little mud accumulates in the barrel of a boiler.

Mr. Carter: Why do you take the engine out of service if the engine is in good condition?

Mr. Cavey: If she is in good condition she would not be taken out of service.

Mr. Carter: Presuming you take her out of the service, why do you take her out of service?

Mr. Cavey: To renew the parts and overhaul her.

Mr. Carter: Why do you renew the parts and overhaul her?

Mr. Cavey: Because they are worn and she begins to get in shape where she will not do her work.

Mr. Carter: That is the point I wanted to bring out, the reason that at the end of about 20,000 miles she is practically unfitted for that service.

Mr. Cavey: At what mileage?

Mr. Carter: At your mileage that you spoke of—what was your mileage there?

Mr. Cavey: I said I thought between 28,000 and 30,000 miles.

Mr. Carter: Between 28,000 and 30,000 miles, whatever it was. Now were these Mikado engines comparatively new when you made the tests on the Philadelphia Division?

Mr. Cavey: No, sir; those engines had made, to the best of my knowledge, between 20,000 and 25,000 miles.

Mr. Carter: They had made that much?

Mr. Cavey: Yes, sir.

Mr. Carter: Then they were shopped right then, were they?

Mr. Cavey : No, sir.

Mr. Carter: How long after that did you shop them?

Mr. Cavey: I could not say; they were put in at different intervals as they required it.

Mr. Carter: Is it not a fact that these locomotives are much more difficult to fire now than they were when you made these tests?

Mr. Cavey: How is that?

Mr. Carter: Is it not a fact that these locomotives are much more difficult to fire now than they were when you made these tests?

Mr. Cavey: No, sir; they are not as hard to fire just at the present time as they were when we made the tests.

Mr. Carter: I understood you to say that these firemen shovel a great deal of coal uselessly.

Mr. Cavey: Yes, sir, I think they do.

Mr. Carter: Do you think they do it purposely, because they want to work hard?

Mr. Cavey: Oh, no, I don't think they do it with that intent at all.

Mr. Carter: Then after you instructed them they never burned that much coal again.

Mr. Cavey: Well, I cannot say that they did burn—

Mr. Carter: Suppose a fireman, with all the instructions, cannot keep the engines hot and get the tonnage over the road without burning this coal to which you refer?

Mr. Cavey: How is that?

Mr. Carter: I say, supposing it can be demonstrated to-day that with your most experienced firemen they find it absolutely necessary to burn these huge quantities of coal in order to get the tonnage over the road.

Mr. Cavey: Well, I feel satisfied in my own opinion, Mr. Carter, that it is not necessary to burn the amount of coal that is being burned on the railroad to-day.

Mr. Carter: That is your opinion?

Mr. Cavey: Yes, sir.

Mr. Carter: Have you been penalizing the firemen over there for not doing as you wanted them to do?

Mr. Cavey: I have not; no, sir.

Mr. Carter: Have not firemen been penalized on your reports to a great extent?

Mr. Cavey: Not to a very great extent, no, sir.

Mr. Carter: Mr. Cavey, don't you know that the firemen on the B. & O. are in a state of rebellion against you?

Mr. Cavey: No, sir.

Mr. Carter: Don't you know that you and they are having trouble all the time?

Mr. Cavey: No, sir.

Mr. Carter: Don't you know that the firemen's general chairman resigned because the men were determined to get your scalp because of the way you treated them?

Mr. Cavey: No, sir.

Mr. Carter: Don't you know that your case has been taken up, even to the president, Daniel Willard?

Mr. Cavey: No, sir.

Mr. Lee: You still have your job, haven't you?

Mr. Cavey: I am still there; yes, sir.

Mr. Carter: Don't you know that over 250 firemen have signed petitions, and round robins, against the way you are treating them and penalizing them?

Mr. Cavey: No, sir; I don't know anything of the kind. You are the first man that I have ever heard make that remark to me.

Mr. Carter: We will put a witness on the stand to prove this later on. That is all.

The Chairman: I would like to ask there, supposing all this is so—

Mr. Carter: There is a very hard feeling between the men.

The Chairman: How would that affect the competency of the witness, on the propositions he has testified about?

Mr. Carter: I would say that a witness would not be very kindly disposed to a set of men that he had treated in the past, in such a manner, that would bring about these matters to which I refer.

The Chairman: Well, admitting that, Mr. Carter, how would that affect the number of pounds of coal that a scoop will hold?

Mr. Carter: Again, I only refer to the mental attitude of the witness.

Mr. Lee: I might also call attention to the mental attitude of counsel.

The Chairman: I want to avoid, if we can, any of these unpleasant features.

Mr. Lee: We will endeavor to keep away from that.

The Chairman: Of course, it is always open to either side to prove the animus of the witness, if the things he testifies to is not true.

Mr. Carter: That is what we want to prove. I believe that the relations between Mr. Cavey and the firemen on that road for the past several years have been very, very strained, and I thought he was acquainted with it; I did not see how he could help it, but he says he never heard of it. We will probably put several witnesses on the stand in rebuttal to show that it has been a matter of notoriety on the B. & O., and that for a long while, and he is probably the only man that has not heard about it. We are going to show that it has even gone as far as Mr. Willard, and we are going to show that the conditions have been greatly improved since the petitions were signed, since Mr. Willard came in.

Mr. Lee: When were you promoted to your present position, Mr. Cavey?

Mr. Cavey: In June, 1911.

Mr. Lee: That is all, much obliged.

Mr. Atterbury: Mr. Cavey, what proportion of the firemen's duties are shoveling coal. If a fireman gets $3.00 a day for his day's work, how much of that would you say was for shoveling coal, how much for cleaning, how much for responsibility, etc.?

Mr. Cavey: Well, Mr. Atterbury, our firemen do not have to clean; and they do not have to put supplies on the engine, or fill lubricators; it is practically all for shoveling coal and seeing that they have their supplies.

Mr. Atterbury: You do not pay for any responsibility?

Mr. Cavey: I do not just understand you; the responsibility, in what way, Mr. Atterbury?

Mr. Atterbury: Well, seeing signals and everything of that sort?

Mr. Cavey: Well, our men are supposed to look for signals, too.

Mr. Atterbury: Well now, on this Consolidation engine and the Mallet, that we have just been discussing, where the firemen on the Mallet burnt 33% more coal than the firemen on the Consolidation engine, what are the wages paid on that Consolidation and what are the wages paid on the Mallet?

Mr. Cavey: Well, on the Consolidation, the wages were $2.95.

Mr. Atterbury: $2.95?

Mr. Cavey: No; was $3.00.

Mr. Atterbury: $3.00. And what the Mallet?

Mr. Cavey: Now, the Mallets in helper service from Rowlesburg to Terra Alta is paid at the rate of $1.33 per round trip?

Mr. Atterbury: I would like to have it in corresponding service, if you can give it, Mr. Cavey, to your $3.00 rate?

Mr. Cavey: Mr. Carter, where did you say that trip was made with the 2400?

Mr. Carter: I will read, this test locomotive 2400 used 25% more coal than one of the Class E-27—

Mr. Cavey: Between what points?

Mr. Carter: I am reading. These trips were made by locomotive 2400 assisted by a large Consolidated locomotive. Between Rockwood and Sand Patch.

Mr. Atterbury: Mr. Cavey, if you have got Consolidation rates for that class of an engine on the helper service, it will

give me what I want; if you have got comparative rates for those two engines in the same service?

Mr. Cavey: $1.10.

Mr. Atterbury: $1.10 for the Consolidation engine?

Mr. Cavey: For the Consolidation engine?

Mr. Atterbury: That is a trip?

Mr. Cavey: Per trip, per round trip, and overtime after four hours.

Mr. Atterbury: What have you got for the Mallet?

Mr. Cavey: Mallet, $1.33 per round trip, and overtime after four hours.

Mr. Atterbury: Was that engine in that service in 1902?

Mr. Cavey: The Mallet was not.

Mr. Atterbury: The Consolidation?

Mr. Cavey: The Consolidation was, yes, sir.

Mr. Atterbury: What was that rate in 1902?

Mr. Cavey: Now, I couldn't give you that. Possibly Mr. Walber could give us that.

Mr. Atterbury: Are you going to present testimony of that sort before we get through?

Mr. Lee: We expect to, sir.

Mr. Atterbury: All right, then.

Mr. Carter: What is the weight of that locomotive on drivers?

Mr. Cavey: In 1902?

Mr. Carter: The one we are discussing, the Consol?

Mr. Cavey: Why the E-27, Mr. Carter?

Mr. Carter: What was the weight on drivers, less than 200,000, wasn't it?

Mr. Cavey: No, the total weight was 208,500.

Mr. Carter: Well, it was not in service in 1900; I have a statement here showing that there was no locomotive in the service—

Mr. Cavey: But, Mr. Carter, that engine was not in service in 1902, but the engine that Mr. Atterbury wants to compare to this Mallet was in service in 1902 at Rowlesburg.

Mr. Carter: What was the weight on drivers?

Mr. Cavey: The weight on drivers—I will give it to you in a moment.

Mr. Carter: On the one Mr. Atterbury speaks of.

Mr. Cavey: Why, 166,000 pounds, total weight 181,000. They were compounded that time, and I think they were about 4,000 pounds heavier than they are after they were simpled.

Mr. Carter: You say they were compound then?

Mr. Cavey: In 1902, yes, sir.

Mr. Carter: Why aren't they compound now?

Mr. Cavey: Well, they simple those engines.

Mr. Carter: Why did they simple them?

Mr. Cavey: Well, that is a question that I am unable to answer, but in my opinion it was due to the excessive repairs that the engines required.

Mr. Carter: Mr. Cavey, is it not a fact that in theory a compound engine is a much more efficient engine than a simple engine?

Mr. Cavey: Well, some compounds are.

Mr. Carter: Well, I am taking the principle of the double expansion of steam.

Mr. Cavey: Yes, sir.

Mr. Carter: Did you have a general knowledge of mechanical conditions on American railroads throughout the country, we will say taking from 1895 on up?

Mr. Cavey: No, I cannot say that I did.

Mr. Carter: You cannot remember the rise of the compound, the craze of the compound, how railroads issue money by issuing bonds in order to get compounds, and then after they had them, they simpled them?

Mr. Cavey: I remember there was a great many of them gotten, but I do not remember how they were gotten.

Mr. Carter: Do you remember at that time it was claimed that compound engines would save 25% of the coal?

Mr. Cavey: Yes, sir.

Mr. Carter: Did you ever hear of a railroad company asking a fireman to fire a compound engine for less than they did the simple engine, because it saved coal?

Mr. Cavey: No, I cannot say that I have, Mr. Carter.

Mr. Lee: That was the E-19-A engine?

Mr. Cavey: E-19-A.

Mr. Lee: Was 166,000 pounds on drivers?

Mr. Cavey: Yes, sir.

Mr. Lee: That engine is still there?

Mr. Cavey: They have a few of those engines there now.

Mr Lee: And when there is not a Mallet to push a train, do they put two of those on?

Mr. Cavey: Yes, sir.

Mr. Lee: Has that engine a Wootten firebox?

Mr. Cavey: A Wootten firebox.

Mr. Lee: That is the wide firebox?

Mr. Cavey: 76 square feet of grate surface.

Mr. Lee: Do they burn a good deal of coal?

Mr. Cavey: No, those engines are very light on coal.

Mr. Lee: I might say for the information of the Board just at the present time, that those engines between Rowlesburg and Terra Alta received 77 cents for the trip that they now receive $1.10 for.

Mr. Atterbury: In 1902?

Mr. Lee: 1902, according to the schedules of March 1st 1902.

Mr. Atterbury: And $1.10 now?

Mr. Lee: Yes, sir.

Mr. Atterbury: And $1.33 for the Mallet?

Mr. Lee: Yes, sir.

Mr. Atterbury: Burning 33% more coal?

Mr. Lee: Does the Mallet burn 33% more coal than the E-19-A?

Mr. Cavey: Well, I could not answer that definitely, Mr. Lee, for I never made any tests.

Mr. Atterbury: I have simply taken the figures that Mr. Carter has quoted on that test, that it burned 33% more coal. I think those were the figures you gave me.

Mr. Carter: It is practically that, Mr. Atterbury—burned 33% more coal. Now are you through, Mr. Lee?

Mr. Lee: Yes.

Mr. Carter: Did I understand you to say that when they used these old styled engines they used two of them instead of one of the modern?

Mr. Cavey: Two and sometimes three. They used three with additional tonnage.

Mr. Carter: That is, they used two to take the place of one. The fireman on the modern engine that they are supposed to use takes the place of two and three firemen under the old method?

Mr. Cavey: If they used three they put on additional tonnage.

Mr. Carter: And if they do not put an additional tonnage they would use two?

Mr. Cavey: They would use two and back off some tonnage.

Mr. Carter: And when they use this modern engine which has been of such great benefit, according to other witnesses, one fireman does the work that two firemen would do if they used the old fashioned engine?

Mr. Cavey: Yes.

Mr. Lee: The stenographer failed to get the figures of the sixth trip on the Rowlesburg and Terra Alta. I want to ask you to read those figures again?

Mr. Cavey: The sixth, 6436

Mr. Lee: Is that the sixth or the seventh?

Mr. Cavey: That is the sixth trip.

Mr. Lee: That appears here as the seventh. Read those figures over and we will check them. The first trip?

Mr. Cavey: 5012 pounds.

Mr. Lee: The second trip?

Mr. Cavey: 5469 pounds.

Mr. Lee: The third trip?

Mr. Cavey: 4203 pounds.

Mr. Lee: The fourth trip?

Mr. Cavey: 3800 pounds.

Mr. Lee: The fifth trip?

Mr. Cavey: 4336 pounds.

Mr. Lee: The sixth trip?

Mr. Cavey: 6436 pounds.

Mr. Lee: The seventh trip?

Mr. Cavey: 3641 pounds.

Mr. Lee: The eighth trip?

Mr. Cavey: 4056 pounds.

Mr. Lee: Were there nine trips?

Mr. Cavey: Yes, the ninth trip 3415 pounds.

Mr. Lee: The figures are all here, but it was simply a question of the number of the trip.

The Chairman: Since you gave those instructions, Mr. Cavey, have the men been using less coal?

Mr. Cavey: Yes, our coal consumption was reduced con-

siderably; but in the last eight months it has gone up again. The men who were looking after the fuel consumption have been working on other special work, and the fuel consumption has gone up again.

The Chairman: This reduced consumption has not been maintained?

Mr. Cavey: No, sir; it has gone up per locomotive mile in the last six or eight months—gone up above what it was before.

Mr. Atterbury: Did the fireman in 1902 have to clean the engine?

Mr. Cavey: I could not just say unless I had one of their agreements with me. Mr. Walbur has that agreement.

Mr. Atterbury: In 1902, I assume there was overtime after four hours on the trip?

Mr. Cavey: Yes.

Mr. Atterbury: How much of that was before he reported to work? Or did he time, from the time he reported to work, or from the time he got on the engine?

Mr. Cavey: I think I cannot give that straight unless I should consult their agreement in 1902.

Mr. Atterbury: Apparently then in 1902, for a snap up the hill the firemen got 77 cents. On the same engine in 1913 he would get $1.10 and on the Mallet he would get $1.33. Now, if he is firing the Mallet as compared with the Consolidation in 1902 he gets 56 cents more a trip, or 72% more, and he burns 33% more coal. That is the way I figure out that particular case.

Mr. Carter: Are you through, Mr. Atterbury?

Mr. Atterbury: Yes.

Mr. Carter: Was the tonnage as heavy on these trains that were pushed up the hill in 1902 as it is now?

Mr. Cavey: No, sir.

Mr. Carter: They are doing a great deal more work now than they were then?

Mr. Cavey: Pulling more tonnage, yes.

Mr. Lee: What is the rating per engine, do you remember?

Mr. Cavey: At the present time?

Mr. Lee: Yes.

Mr. Cavey: Why, about 1650 tons.

Mr. Lee: That will be all; much obliged, Mr. Cavey.
(Witness excused.)
Mr. Lee: Call Mr. Wise.

S. G. WISE was called as a witness, and having been duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: Where is your home?
Mr. Wise: Altoona.
Mr. Lee: Pennsylvania?
Mr. Wise: Yes.
Mr. Lee: What is your position?
Mr. Wise: Assistant road foreman, middle division, Pennsylvania Railroad.
Mr. Lee: What were you previous to that?
Mr. Wise: Traveling engineman, on the middle division.
Mr. Lee: Previous to that?
Mr. Wise: Locomotive engineer.
Mr. Lee: And previous to that?
Mr. Wise: Fireman.
Mr. Lee: How long have you been in the service?
Mr. Wise: Since about 1891.
Mr. Lee: How long were you a fireman?
Mr. Wise: Ten years and three months approximately.
Mr. Lee: How long were you an engineer?
Mr. Wise: About four years.
Mr. Lee: What are your duties at the present time, as assistant road foreman of engines?
Mr. Wise: I have charge of enginemen and firemen, under the direction of the road foreman, of course, and have charge of power, and travel on engines, and look after the economical use of supplies, and the efficiency of enginemen and firemen; and also handling investigations, and so on, and what belongs to office work.
Mr. Lee: Is it part of your duty to see whether the fireman properly does his work?

Mr. Wise: Yes, sir.

Mr. Lee: Do you know a good fireman when you see one working?

Mr. Wise: Yes, sir.

Mr. Lee: You can tell whether he is doing his work properly or not?

Mr. Wise: Yes, sir.

Mr. Lee: You have also been delegated to some special duties, Mr. Wise, at various times?

Mr. Wise: Yes, sir, I have.

Mr. Lee: Making various tests?

Mr. Wise: Yes, sir; we have made quite a number of tests in the way of determining the relative efficiency of different locomotives.

Mr. Lee: What particular kinds of locomotives, Mr. Wise?

Mr. Wise: We have made tests with class H-6 A and B as against the class of H-8-B saturated without arches; and then, we have made tests with the superheater, since we have had the superheater, the H-8-SB in comparison with H-6-B. The H-8 have the superheater in the arch. We also made tests with class E-2 and K-2 in passenger service. Then we made tests with K-2-S-A in regard to their relative efficiency to the saturated steam engine.

Mr. Lee: You might explain to the Board about approximately the weight on drivers of these various engines you have mentioned.

Mr. Wise: With an E-2, in comparing an E-2, with a K-2-S-A, the weight on the drivers of E-2 is about 109,000 pounds, and the K-2-S-A is approximately 189,000 and some odd pounds. On train No. 5 with 7 steel cars—

Mr. Lee: Just a minute. Before you get into the actual experiments just state to the Board the weight on drivers of an 8-H-B?

Mr. Wise: An 8-H-B is 211,000 pounds.

Mr. Lee: And an 8-H-S-B which is a superheater?

Mr. Wise: 219,000 pounds approximately.

Mr. Lee: An 8-6-B.

Mr. Wise: An 8-6-B is approximately 179,000.

Mr. Lee: That is a saturated steam engine?

Mr. Wise: Yes, sir, a saturated steam engine.

Mr. Lee: An S-6-S-B.

Mr. Wise: What?

Mr. Lee: Did you make any tests with the H-6 superheaters?

Mr. Wise: No, we did not have any H-6 S-B's.

Mr. Lee: Go on.

Mr. Wise: Well at one time we made a test with it, but did not consider it on that summary, because it was a smoke box superheater applied to a Baldwin.

Mr. Lee: A K-2 engine, what does that weigh on drivers?

Mr. Wise: A K-2 weighs approximately 178,000 pounds I think.

Mr. Lee: That is a saturated steam engine?

Mr. Wise: That is a saturated steam engine; yes, sir.

Mr. Lee: What does a K-2-S-A superheated steam engine weigh on drivers?

Mr. Wise: Approximately 189,000 pounds I think.

Mr. Lee: Now go ahead.

Mr. Wise: These tests that we made were not made at any time in conjunction with any wage demands at all. They were made at the times that we secured the new power, to determine the relative efficiency of the two locomotives. For instance, when we would get a K-2 engine, we would get possibly one or two and would want to determine the relative efficiency between the K-2 and the type we were using formerly, and when we got a K-2-S-A, we would want to determine the relative efficiency between that and a K-2. Then if we found they were a good thing, of course we would ask to have them made standard, and that is how these tests were made at different times.

Mr. Lee: These engines, so far as you know, were substantially in the same condition when they were compared?

Mr. Wise: Always in the same condition, yes, sir. In the E-2 engine, we would take one which had just undergone repairs in about a proportionate time, and if the other engines were new, so we had comparatively the same condition between the two. For instance, if a locomotive goes through the erecting shop and gets full repairs, new flues and so on, the engine is comparatively a new engine, and can be compared with a brand new engine out of the erecting shop.

Mr. Lee: Go ahead, Mr. Wise.

Mr. Wise: I have duplicate copies here of this, if the Board

would like to have these to look over (handing papers to the Board). Do you want me to read these?

Mr. Lee: Read the essential points, Mr. Wise, and what they indicate to your mind.

Mr. Wise: The essential points to me, in this, are that it indicates to me that the firemen on the E-2 locomotives and E-3's were practically doing just as much work as they are on the K-2-S-A's to-day in passenger service.

Mr. Lee: That is on the E-3 saturated steam engines, and E-2 saturated steam engines.

Mr. Wise: Yes, sir.

Mr. Lee: They were doing as much work as they are on the big engine with the superheater?

Mr. Wise: With the superheater, yes, sir, and the brick arch And in looking over these firemen's demands, I see that they make a certain rate for an engine weighing 140,000 pounds on the drivers and from there to 170,000 pounds on the drivers, and from 170,000 to 200,000.

The Chairman: Freight engines or passenger engines, which are you talking about now?

Mr. Wise: I am talking about the passenger. You will notice coming down about near the last column, you will notice an E-2 on train No. 5, 1/11/11, a K-2-S-A, that is the superheater on train No. 5, 8/20/12. The saturated or smaller engine, E-2, had seven steel Pullman cars and consumed 11,088 pounds of coal, while the superheater or larger engine with nine steel Pullman cars consumed 6,420 pounds of coal.

Mr. Lee: How did the speed compare, Mr. Wise?

Mr. Wise: The speed with the E-2, was three hours on the division, and with the K-2 S-A, two hours and 40 minutes.

Mr. Lee: Are there any other particular comparisons on that sheet?

Mr. Wise: There is the comparison here between the K-2 saturated steam, and the K-3 S-A, or superheated; there are several comparisons above that; and then below is E-3-A on train No. 11 with six cars, consumed 9,320 pounds of coal in a two hours and 30 minutes run on the division. The K-2 saturated on train No. 11, six cars, 7,660 pounds of coal, two hours and 30 minutes on the division, that is, comparing the class E-3-A locomotive with the K-2, both saturated engines.

Mr. Lee: From that statement, Mr. Wise, it would appear, perhaps then, that if this wage request were granted, the men on the larger engines shoveling the less amount of coal would get a higher rate than the men on the smaller engine shoveling a larger amount of coal?

Mr. Wise: That is the way it would appear to be, to take an H-6 Class—

Mr. Lee: This is passenger, we are talking about?

Mr. Wise: Well, passenger, yes.

Mr. Lee: Freight trains, tell us something about these freight trains?

Mr. Wise: In freight we have compared a number of tests that were made with saturated Class H-8-B as against a superheated Class H-8-S-B, and there are several—do you want me to read these different trips?

Mr. Lee: Whichever ones you think are significant for comparison?

Mr. Wise: Well, I think they are all in comparison, that is the H-8-B with the H-8-S-B, saturated and superheater. These tests were made, the saturated was made in 1909, and with the superheater they were made in 1912.

Mr. Lee: Mr. Wise, suppose you start in there on the first one and read the number of cars, and the flat tons, and the coal consumed, the time on the division and the weight on the drivers,—first saturated and then the superheated steam?

Mr. Wise: Saturated, number of cars 72; superheater 82. Saturated flat tons 106; superheater 5901. Coal consumed saturated 22,100; coal consumed superheater 18,800. Detention, saturated 1 hour 10 minutes; detention, superheater 1 hour 8 minutes. Time on division saturated 7 hours 50 minutes; time on division superheater 7 hours 5 minutes. Weight on drivers saturated 211,000; weight on drivers superheater 219,900.

The next comparison is saturated 95 cars; superheater 100. Flat tons, saturated 6,999; superheater 7,150. Coal consumed saturated 25,000; coal consumed superheat 24,900. Detention, saturated 2 hours 10 minutes; detention, superheater 1 hour 43 minutes. Time on division, saturated 9 hours 8 minutes; time on division superheater 6 hours 35 minutes. Weight on drivers, saturated 211,000; superheater 219,900.

The next comparison is comparing an H-6-B with an H-8-S-B, the H-6-B is saturated, H-8 S-B is the superheater. 81 steel, saturated; 100 steel superheater. Flat tons saturated 1,620; superheater 2,000. Coal 28,800 saturated; superheated 26,500. Detention, 1 hour 15 minutes saturated; superheater 39 minutes. Time on division, saturated 10 hours 52 minutes; superheater 7 hours 19 minutes. Weight on drivers 179,000 saturated; 219,000 superheater. The next block is comparing an H-6-B saturated with an H-8-S-B superheater. 81 steel cars saturated; 91 on superheater. 1,620 flat saturated; superheater 1,820. Coal saturated 26,300; superheater 25,900. Detention, saturated 1 hour 6 minutes; superheater 1 hour 9 minutes. Time on division, saturated 8 hours 3 minutes; superheater 6 hours 55 minutes. Weight on drivers, 179,000 saturated; superheater 219,900.

Then the next is comparing an H-8 saturated as against the H-8-B superheated. It shows 86 steel saturated; superheated 100. Saturated 1,720 flat tons; superheater 2,000. Coal consumed, saturated 27,500; superheater 27,300. Detention, saturated 1 hour 6 minutes; superheater 2 hours 5 minutes. Time on division, saturated 9 hours 26 minutes superheater 8 hours 40 minutes. Weight on drivers saturated, 211,000; on superheated 219,900.

Then the next block shows, the H-6-B saturated as against H-8-B superheater, with 81 and 100 steel cars, saturated 1620 flat tons, superheater 2000 flat tons; coal consumed for the saturated 30,200 and for the superheater, 27,700; detention, saturated 2 hours 5 minutes; superheater 1 hour 38 minutes; time on division, saturated 10 hours and 50 minutes, superheater 8 hours and ten minutes; weight on drivers, saturated 179,000 pounds; superheater 219,000 pounds.

Mr. Lee: For further information, and for the purpose of getting it into the record, Mr. Wise, I wish you would take the saturated steam engine and give us the class of the engine, the weight on drivers, the number of cars, and the amount of coal burned. For instance, take the first one H-8-B saturated steam engine weighing 211,000 pounds on drivers with 72 steel cars and consuming 22,100 pounds of coal, 7 hours and 50 minutes. I should like to have you read the others down in just the same way.

Mr. Wise: Do you want all the saturated?

Mr. Lee: Just the saturated ones.

Mr. Wise: Just the saturated ones; 5/21/09.

The Chairman: Instead of 5, say May.

Mr. Wise: May 21, 1909, class H-8-B, locomotive 1,113 with 72 steel cars, 5,106 flat tons, consumed 22,100 pounds of coal in seven hours and 50 minutes. Weight on drivers 211,000 pounds.

The Chairman: We already have that in the record.

Mr. Lee: What I was doing, sir, was making a different comparison. The comparison that the witness has already made is between the saturated engine and the superheated engine. I was now about to make a comparison between the larger engine and the smaller engine.

The Chairman: Of the same class?

Mr. Lee: Both saturated, yes. Now, if the Board desires, we can save putting this in the record by just briefly calling attention to them.

The Chairman: Perhaps in the place the way the witness has read it, it would be just as well to give to the reporter these two sheets and put them into the record.

Mr. Lee: That will be perfectly satisfactory to us, sir. What I wanted particularly to do was to call attention to the varying amount of coal burned by the different classes on these saturated steam engines, one of them weighing 179,000 pounds on the drivers, and the other weighing 211,000 pounds on the drivers. For instance, you will note that in the second one, the large engine weighing 211,000 pounds on the drivers, with 95 steel cars and 6,999 flat tons, it burned 25,000 pounds of coal; while in the next one the engine weighing 179,000 pounds on the drivers with 81 steel cars, empty, 1,620 burned 28,800 pounds of coal. And you will note that the next one, with 81 steel cars, burned 26,300 pounds of coal, and the next one, with the larger engine, burned 27,500 pounds of coal. Then down at the bottom, with 81 steel cars, the small engine burned 30,000 pounds of coal. Of course there are varying reasons for that, that are not brought out by this statement, I presume, but the fact is that large engines under certain conditions will burn more coal than the little fellows, and under other conditions the little fellows will burn more coal than the larger ones. Am I correct in that, Mr. Wise?

Mr. Wise: Yes.

Mr. Lee: The table to which the witness has referred will be copied in the record.

The Chairman: Yes.

(The table is as follows):

MIDDLE DIVISION—PENNSYLVANIA R. R.

Coal Consumption Tests made with Measured Coal.

PASSENGER TRAINS.

	SATURATED STEAM	SUPERHEATED STEAM
Date	Nov. 11, 1911	Nov. 9, 1911
Locomotive Number	3351—K2	3374—K2SA
Number of Cars	5	7
Train Number	22	22
Coal Consumed Altoona to Harrisburg	6,300	6,800
Time over Division	2 hrs. 38 mins.	2 hrs. 20 mins.
Weight of engine on drivers	178,500	189,525
Date	Nov. 11, 1911	Nov. 9, 1911
Locomotive Number	3351—K2	3374—K2SA
Number of Cars	13	9
Train Number	96	96
Coal Consumed Altoona to Harrisburg	7,300	4,700
Time over Division	3 hrs. 26 mins.	3 hrs. 27 mins.
Weight of engine on drivers	178,500	189,525
Date	Nov. 12, 1911	Nov. 8, 1911
Locomotive Number	3351—K2	3374—K2SA
Number of Cars	7	8
Train Number	29	29
Coal Consumed Harrisburg to Altoona	11,600	8,100
Time over Division	2 hrs. 31 mins.	2 hrs. 18 mins.
Weight of engine on drivers	178,500	189,525
Date	Nov. 15, 1911	Oct. 13, 1911
Locomotive Number	3351—K2	3372—K2SA
Number of Cars	9	10
Train Number	25	25
Coal Consumed Harrisburg to Altoona	10,300	7,340
Time over Division	2 hrs. 50 mins.	2 hrs. 46 mins.
Weight of engine on drivers	178,500	189,525
Date	Jan. 11, 1911	Aug. 20, 1912
Locomotive Number	1964—E2	3411—K2SA
Number of Cars	7	9
Train Number	5	5
Coal Consumed Harrisburg to Altoona	11,088	6,420
Time over Division	3 hrs.	2 hrs. 40 mins.
Weight of engine on drivers	109,000	189,525

	SATURATED STEAM	SUPERHEATED STEAM
Date	Apr. 6, 1911	May 2, 1911
Locomotive Number	2982—E3A	3251—K2
Number of Cars	6	6
Train Number	11	11
Coal Consumed Harrisburg to Altoona	9,320	7,660
Time over Division	2 hrs. 30 mins.	2 hrs. 30 mins.
Arch	No	Yes
Weight of engine on drivers	118,200	178,500

MIDDLE DIVISION—PENNSYLVANIA R. R.

Coal Tests—Bagged Coal.

Freight Trains.

	Saturated Steam	Superheated Steam
Date	May 21, 1909	May 8, 1912
Locomotive Number	1113—H8B	1773—H8SB
Number of Cars	72 steel	82 steel
Flat Tons	5,596	5,901
Coal Consumed Altoona to Enola	22,100	18,800
Detention	1 hr. 10 ms.	1 hr. 8 ms.
Time on Division	7 hrs. 50 ms.	7 hrs. 5 ms.
Weight of engine on drivers	211,000	219,900
Date	June 18, 1909	May 17, 1912
Locomotive Number	1113—H8B	1773—H8SB
Number of Cars	95 steel	100 steel
Flat Tons	6,999	7,150
Coal Consumed Altoona to Enola	25,000	24,900
Detention	2 hrs. 10 ms.	1 hr. 43 ms.
Time on Division	9 hrs. 8 ms.	6 hrs. 35 ms.
Weight of engine on drivers	211,000	219,900
Date	June 4, 1909	May 18, 1912
Locomotive Number	2881—H6B	1773—H8SB
Number of Cars	81 steel	100 steel
Flat Tons	1,620	2,000
Coal Consumed Enola to Altoona	28,800	26,500
Detention	1 hr. 15 ms.	39 ms.
Time over Division	10 hrs. 52 ms.	7 hrs. 19 ms.
Weight of engine on drivers	179,000	219,900
Date	June 2, 1909	May 11, 1912
Locomotive Number	2918—H6B	1773—H8SB
Number of Cars	81 steel	91 steel
Flat Tons	1,620	1,820
Coal Consumed Enola to Altoona	26,300	25,900
Detention	1 hr. 6 ms.	1 hr. 9 ms.
Time over Division	8 hrs. 3 ms.	6 hrs. 55 ms.
Weight of engine on drivers	179,000	219,900
Date	May 27, 1909	May 16, 1912
Locomotive Number	1113—H8B	1773—H8SB
Number of Cars	86 steel	100 steel
Flat Tons	1,720	2,000
Coal Consumed Enola to Altoona	27,700	27,300
Detention	1 hr. 6 ms.	2 hrs. 5 ms.
Time on Division	9 hrs. 26 ms.	8 hrs. 40 ms.
Weight of engine on drivers	211,000	219,900
Date	June 7, 1909	May 14, 1912
Locomotive Number	2918—H6B	1773—H8SB
Number of Cars	81 steel	100 steel
Flat Tons	1,620	2,000
Coal Consumed Enola to Altoona	30,200	27,700
Detention	2 hrs. 5 ms.	1 hr. 38 ms.
Time on Division	10 hrs. 50 ms.	8 hrs. 10 ms.

Mr. Lee: What I want to bring out by these figures is that the weight on the drivers is no measure of the work done by the firemen; am I correct in that, Mr. Wise?

Mr. Wise: Yes.

The Chairman: Were these tests made over the same track?

Mr. Wise: Over the same track, yes, between Altoona and Enola on the freight, and on the passenger, of course, between Altoona and Harrisburg.

The Chairman: Now, take the second block.

Mr. Wise: Freight or passenger?

The Chairman: Freight. The engine weighing on drivers 211,000 pounds, hauling 6,999 flat tons with 25,000 pounds of coal. Take the fifth block now. The same engine exactly, number and all, as well as name, number 1,113, with 9 less cars, in the same length of time on the road, consumed 27,500 pounds of coal in pulling 1,720 flat tons.

Mr. Wise: Varying conditions, and varying in the hauling of trains.

Mr. Lee: One is an empty train and the other a loaded train?

Mr. Wise: You want to compare down here the block next to the last block with 52709, that is from Enola to Altoona.

The Chairman: I wanted to compare the same engine.

Mr. Wise: And the one above is from Altoona to Enola.

Mr. Carter: The first are loaded cars, Judge, and the last are empties.

The Chairman: Well, you say it was the same division, but I notice the same engine has taken more coal on one trip to pull 1720 tons, 2500 more pounds of coal on one trip to pull 1720 tons, than it did on another one, to pull 6,999 tons.

Mr. Wise: That is, the 34 miles on the trip that we hauled the 1720 tons, it ranges 2/10ths of one per cent., on some places it runs near 5/10ths of one per cent.

Mr. Lee: It is a little more up-grade with the empty train than the loaded train.

Mr. Wise: About 3/10ths of one per cent. on the hill.

Mr. Phillips: What would be the tonnage rating on that engine, Enola to Altoona?

Mr. Wise: At the present time?

Mr. Phillips: At the time the test was made.

Mr. Wise: Adjusted, it shows it would be 2,622; we do not give the flat tons there, but our adjustment factor, west-bound, was 8. Of course, in order to find the flat tons we would have to take the number of cars; I just gave the flat tons in this.

Mr. Phillips: Was the 1720 full rating for that engine on May 27, 1909; did she have her full tonnage.

Mr. Wise: Yes, I imagine she would have, I think flat tonnage would be about full rating; that would be approximately a full train.

Mr. Phillips: You say the grade varies a little, that is, going west there is a little more grade, than coming east.

Mr. Wise: It is longer, yes, sir.

Mr. Phillips: Is it one of those divisions, you call, up hill both ways?

Mr. Wise: It is one of those divisions; you have a practically, continuous up-grade from Huntingdon, and going east we have ruling grades that are short.

Mr. Phillips: I notice in the saturated steam comparisons here, that while some saving of coal is shown in these tests, they are made approximately three years apart, but the number of hours is also less, and would indicate, just glancing at it hastily, that he was firing more coal per hour, than he was under the former test, that he was burning more coal per hour.

Mr. Wise: I did not include the coal per hour on that summary.

Mr. Phillips: I just looked it over; do you think it would follow that it was.

Mr. Wise: It depends on the tension you have there.

Mr. Phillips: I was just taking the total time, I thought they ran pretty near the same, I could not see much difference.

Mr. Wise: Of course, if you ride a train up to a certain tonnage, and then whip your engine up to a very much higher speed over the division, it naturally must increase the coal per hour over a slower run, while it might not be so much per mile.

The Chairman: If this demonstrates anything, it seems to demonstrate a good deal. I don't see how the same engine going over the same division with practically the same grades at one time should require ten per cent. more coal to haul one-fourth of the tonnage.

Mr. Lee: Ask the witness sir, he can tell you better than I can.

The Chairman: Well, suppose you were doing the firing yourself; now you have one train here with 86 steel cars, the same engine each time, and on one trip with 86 steel cars you haul 1720 tons of coal, I mean 1720 flat tons, and you consume 27,500 pounds of coal, now you come back on that track with practically similar grades, and the same engine, and brought 95 cars, 9 more cars, and 6,999 tons, flat tons, and consume 25,000 pounds of coal in place of 27,500.

Mr. Wise: The topography of the division, coming east with the larger train, that is the 6,000 tons that you speak about, that would steam down to Bellewood, which is about 5½ miles, and then they would close the throttle, and if they did not have any road signals or anything to stop them, they would drift down to Petersburg, which is possibly 28 miles of a drift, that accounts for a whole lot of that; and then from there to Harrisburg there is a continuous pull, and there are no hills long enough that it would pay to shut off the throttle; you just keep using steam, and using a lighter throttle down the little grades. Where you had the 1720 tons, you are up against 125 miles of open throttle. We have no drifts at all, while it is a little rolling, the lower end of the division, there are some little grades, but you keep your throttle open all the time going west, except when you want to stop, you have an empty train.

The Chairman: Are your light loads always east and your heavy loads always west?

Mr. Wise: Oh, no.

Mr. Lee: The other way?

Mr. Wise: Just the other way.

The Chairman: That is what I thought, but your illustration was in the opposite direction.

Mr. Wise: No. Of course in loading cars you have to take in car resistance.

The Chairman: You carry very many more empties west than you do east?

Mr. Wise: Oh, yes, the loaded movement is practically eastward. Of course there is a lot of loaded freight westward, but the majority of it moves east.

The Chairman: Is it the case that your light trains as a general thing require more coal?

Mr. Wise: Oh, no, but you see west you have the number of

cars but of course you don't have as many tons as you have eastward, but you have got the car resistance; you have to take into consideration car resistance.

Mr. Phillips: How do you figure that Mr. Wise?

Mr. Wise: On the ruling grade we get that by use of the dynamometer car; on the ruling grade you would get the car resistance, say. We add eight tons to a car west and 45 east.

Mr. Phillips: Add eight tons?

Mr. Wise: Yes, per car.

Mr. Phillips: That is for each car off, you add eight tons, is that the idea?

Mr. Wise: No, for each car in the train you add eight tons.

Mr. Phillips: Then if you can get your car loads, your total tonnage into lesser cars, you add tonnage proportionately, is that the idea?

Mr. Wise: The weight of one empty car is twenty tons; then we count it 28. Then you take enough to make your tonnage. That is adjusted tonnage; we load by adjusted tonnage, which take into consideration car resistance on our division.

Mr. Phillips: If for a 20 ton empty car you add 8 and then you have an engine that can pull 50 of those cars loaded to their full capacity, and then you get larger cars so that you can get that same tonnage, that same lading into 40 cars, would you add more cars then to make up the difference?

Mr. Wise: No, we have the adjusted tonnage there and we just simply take enough to make that tonnage. Of course the fewer cars that you get that tonnage on, it would mean more cars because you would simply divide weight of the car with adjustment to it into the total amount, and of course the fewer cars you have why of course it would—

Mr. Phillips: You would have a greater tonnage then, the lading would be greater, might be greater, could be made greater on a shorter train than it could on a longer train?

Mr. Wise: No, you can't make any difference in the total weight of the train, understand, but it does make a difference in the number of cars as between for instance take all steel cars or take mixed cars where you get some merchandise and so on, when you get into mixed cars—

Mr. Lee: Perhaps I can bring out your point Mr. Phillips. I think we agree on what we are trying to do, and I think Mr. Wise does.

Mr. Phillips: I know we are agreed on it, but I am just trying to get at the system.

Mr. Lee: Mr. Wise, if you had a train of 40 ton capacity cars and you had another train of cars of 50 tons capacity, which train would probably have the largest amount of lading in it with the same rating?

Mr. Wise: The one with the shorter train would possibly have the larger amount of lading, while the total train would not be any heavier, there would be fewer cars.

Mr. Lee: There would be more tons of lading though in the train that had the larger cars?

Mr. Wise: Yes.

Mr. Lee: With the same adjusted tonnage?

Mr. Wise: Yes.

Mr. Lee: That is the point you wanted to get Mr. Phillips?

Mr. Phillips: Yes. Mr. Wise said that 8 tons were added for each car.

Mr. Wise: Empty cars Westward.

Mr. Phillips: Yes, I understand that is an empty car rating you add, but of course if you only had 40 cars in the train you would have the difference between 40 and 50 times 8 less to add to the train load, so you might add one car to make it up to your total train load and have the same tonnage in the train?

Mr. Lee: Yes, have the same adjusted tonnage.

Mr. Phillips: The adjusted tonnage would be the same?

Mr. Lee: That would be true, would it?

Mr. Wise: Yes, sir.

Mr. Lee: Do you have a car limit on your division for freights?

Mr. Wise: Yes, sir.

Mr. Lee: What is that?

Mr. Wise: 100 cars; we don't go over 100 cars. I think in the east it is 100 cars.

The Chairman: Are you as careful about that as you are about the 16-hour limit?

Mr. Wise: Yes, sir; we do not go over 100 cars. It is not good operation when we get over 100 cars. (Referring to paper.) It is 100 cars

Mr. Lee: The question was raised in your mind, as I understand it, or was it since these hearings have been going on as to the mileage made by firemen as compared with engineers?

Mr. Wise: It was, yes, sir.

Mr. Lee: What did you do about that?

Mr. Wise: I took the names of five engineers and five firemen, I took five crews in slow, and preference, and local freight.

Mr. Lee: How did you select those five?

Mr. Wise: I was just sitting across the desk, and I told the clerk to get the crew list out and give me five preference crews, and he gave me, I think, two off the Altoona side, and two off the Harrisburg side, and the same with the slow freight; we did not make any selection. And I sent the names of the men to the timekeeper to give their earnings.

Mr. Lee: Then what did you do after you got the earnings?

Mr. Wise: After I got the earnings I divided their earnings by their rate per mile to see how many miles they would average.

Mr. Lee: That is, those names were taken at random without knowing where you were going to come out?

Mr. Wise: Yes, sir.

Mr. Lee: I wish you would just read what you found.

Mr. Wise: The first crew was local freight: Engineer, 3,356; fireman, 2,735. The second one, 3,351 for the engineman, and 2,719 for the fireman; off seven days on account of death. The next one is 3,622 for the engineman, and 3,675 for the fireman. The next one 3,579 for the engineman, and 3,412 for the fireman.

Mr. Lee: Is this the mileage made per month?

Mr. Wise: Yes.

Mr. Lee: Which month?

Mr. Wise: October, I think it was; I will have to go back and see.

Mr. Lee: Just read them and you can find out; it was just one.

Mr. Wise: October, 1912. 3137 for the engineman and 3585 for the fireman. Then in preference freight I have 2916 for the engineman and 3556 for the fireman; 3867 for the engineman, and 3333 for the fireman; 3773 for the engineman, and 3963 for the fireman; 3415 for the engineman, and 3294 for the fireman; 3138 for the engineman, and 1633 for the fireman, off five days on leave of absence; the fireman with 1633 was off five days on leave of absence.

Slow Freight: Engineer 3140, fireman 4112; engineer, 3438; fireman, 3624; engineer, 3198, fireman, 3535; engineer, 3353, fireman 3045; engineer 3061; fireman, 3549.

Mr. Lee: Let me have that sheet a minute.

Mr. Wise: (Handing papers) This is where I sent to the timekeeper—

Mr. Lee: What was the date of this on which you asked for these figures?

Mr. Wise: It is on that letter there, January 27th.

Mr. Lee: 1913?

Mr. Wise: Yes, sir.

Mr. Lee: Now, these are the figures that you read here?

Mr. Wise: Those are the figures that were read there, and under that are the figures the timekeeper put on.

Mr. Lee: What does that show, Mr. Wise?

Mr. Wise: It shows that the firemen are able to make as much time as the enginemen.

Mr. Lee: Any other five names might show one way or the other?

Mr. Lee: Yes, sir; there was no selection there, and if you will look at the men there, I did not know what the earnings were until the timekeeper had put it on.

Mr. Lee: It is merely showing a tendency?

Mr. Wise: That is all.

Mr. Lee: That conveys the idea to your mind that the firemen are able to make the same mileage as the engineers?

Mr. Wise: They are on our division, they are able to do it. We have in our freight service now, or when I left, 54 superheaters, H-8-S-B, equipped with superheaters. We have gotten some since then, and we have about 60 now.

Mr. Lee: How many did you have

Mr. Wise: We had 54 when I first came to New York.

Mr. Lee: Passenger or freight?

Mr. Wise: Freight, and 11 passenger, and we have had some freight since then and have brought it up to about 60 now.

Mr. Lee: You are getting them all the time?

Mr. Wise: As far as we can get them out of the shops, superheaters with the brick arch.

Mr. Lee: Do you find that the men prefer the superheaters instead of the saturated steam engine?

Mr. Wise: Oh, yes, if a fireman is given a saturated engine by the engine despatcher and there is a superheater first on another track, he very often comes into the office and wants to know why he cannot get the superheater.

Mr. Lee: Does he make much fuss if he does not get it?

Mr. Wise: If he has an idea that the engine despatcher may have done something crooked with him he does. If he thinks he gets it honestly, in his turn, he does not say so much about it.

Mr. Lee: You have a peculiar arrangement for assisting your firemen on the long runs between Enola and Altoona. Will you describe that to the Board?

Mr. Wise: The brakeman assists the fireman approximately thirty miles each way on the division. Formerly on our division we had a number of places where we had to lay over for passenger trains; and then where we would run a gauntlet, for instance over Vineyard Bridge, or some place where we did not have three or four tracks, of course the firemen got ample time to eat. Then after getting on the division four tracks all the way approximately, and so many diverting switches, we were able most of the time to keep the train moving; in fact all the time except when it makes one stop at Denholm, where he reports his train and takes coal and has his fire cleaned. On account of the brakemen not caring at all times to fire, especially in hot weather, we simply made an arrangement and put it into the instructions that the brakeman would fire between designated points, which would give the fireman when midway over the division ample time to eat a meal. To the best of my knowledge this arrangement was not requested by the firemen, but simply put on of our own accord. The traveling men made that recommendation to the superintendent, that they thought it would be well to issue instructions to have the brakeman fire a certain designated distance, in order that there would not be any doubt but that the fireman would have an opportunity to eat.

Mr. Lee: Mr. Wise, do you give this assistance on all trains?

Mr. Wise: No, sir; just on slow freight. They do give it on preference trains.

Mr. Lee: But not by instructions?

Mr. Wise: But not by instructions. They only require it on slow freights.

Mr. Lee: Do you require it on the H-6 engine weighing 179,000 pounds on the drivers the same as you do on the H-8 engines weighing 211,000 pounds on drivers?

Mr. Wise: Yes.

Mr. Lee: The same on both engines?

Mr. Wise: Yes.

Mr. Lee: Both East and West?

Mr. Wise: Both East and West, regardless of the class of engine.

Mr. Lee: In slow freight service?

Mr. Wise: In slow freight service only.

Mr. Lee: Mr. Wise, what was the class of engine you had on this slow freight service; did you have the H-6 engines on the slow freight runs in 1902?

Mr. Wise: We had some H-6-A's and some H-6 in 1902.

Mr. Lee: What did you pay the firemen on those runs with the H-6 engines in 1902, on the run between Altoona and Harrisburg?

Mr. Wise: $2.55 to the best of my knowledge.

Mr. Lee: What do those men get to-day?

Mr. Wise: $3.81.

Mr. Lee: Have you any knowledge as to the amount of coal burned in 1902?

Mr. Wise: In 1902 I think the coal burned was approximately as much as it is now.

Mr. Lee: On the same engine?

Mr. Wise: On the same engine, yes, sir.

Mr. Lee: Did your division pay overtime in 1902?

Mr. Wise: Yes, sir, after twelve hours.

The Chairman: Overtime now after ten hours?

Mr. Lee: What is it now, what is the overtime limit on those runs?

Mr. Wise: Twelve hours.

The Chairman: That is what I wanted to know.

Mr. Lee: The same overtime limit in 1902 as to-day, from your memory?

Mr. Wise: Yes, sir; twelve hours.

Mr. Lee: That is all.

The Chairman: You are not running then on the 100 miles or less?

Mr. Wise: No, sir; we were not on a mileage basis then.

Mr. Lee: You say it is 130 miles I think, or 127?

Mr. Wise: 127 miles, yes, sir.

Mr. Lee: Actual mileage.

Mr. Wise: 127.

The Chairman: And you paid $2.55 in 1902 and $3.81 now.

Mr. Wise: $3.81 now for the total mileage you know.

The Chairman: Well, was it total mileage then?

Mr. Wise: Yes, sir; we were not on a mileage basis then.

The Chairman: And the same amount of coal and the same amount of tonnage.

Mr. Wise: No, no, we didn't haul the same amount of tonnage; we have increased the rating since that time, we have increased the tonnage since that time.

Mr. Lee: But burning substantially the same amount of coal.

Mr. Wise: Substantially the same amount of coal.

The Chairman: You haul more tons of freight now with the same coal?

Mr. Wise: Yes, sir, on account of improved locomotives, modern locomotives.

Mr. Lee: Well, it is the same locomotive, isn't it.

Mr. Wise: Well, with the H-6-B, we don't have any in through freight service at the present time. We have all class H-8-B and H-8-S-B in our through service both on high class and slow freight.

Mr. Lee: Don't you run any H-6 on through freight?

Mr. Wise: Not regularly, we do sometimes. We have an interchange of engines with the Philadelphia Division at Marysville, on account of Marysville being a preference freight terminal and sometimes they continue one of our engines on through and then, in turn, turn one of their engines through to Altoona for a trip, on account of keeping the high class trains we have pretty nearly a regular time for running, approximately a regular time, and if you would let each crew take an engine in there and hold it all that time you would be practically assigning 24 locomotives for the middle division regularly to that service; and if a crew went in in the evening and did not get out until the next morning at eight or nine o'clock, or six o'clock the locomotive would practically lay there until that time, and you would get no service out of it, and in order to run that with the least amount of engines we interchange with the Philadelphia Division, and sometimes they run a class H-6-B through

to Altoona. We do, at times, use some of our local freight engines through, but not at the present time.

Mr. Lee: When you do, you pay them this $3.81 rate?

Mr. Wise: Yes, anything larger than an F-3 they get $3.81.

Mr. Lee: And when you use these H-6 engines, you pay them the $3.81 rate for through freight service?

Mr. Wise: Yes, sir.

Mr. Lee: Cross-examine.

CROSS EXAMINATION:

Mr. Carter: Referring back, Mr. Wise, to these tabulated statements of tests with saturated steam engines and superheated steam engines, we will take the freight service there. Do you think that these tests were conducted on a scientific basis?

Mr. Wise: They were, yes, sir.

Mr. Carter: Do you attach any considerable importance to them?

Mr. Wise: I do; yes, sir; we made those tests with weighed coal, and did it to determine the efficiency of the locomotive at that time.

Mr. Carter: I see that your tests on the saturated engines were in 1909?

Mr. Wise: Yes, sir.

Mr. Carter: And your tests on the superheated engines were in 1912. Is it possible that there might have been a difference in the grade of coal used?

Mr. Wise: Oh, there may have been some little difference in the coal, but the Pennsylvania Lines East use approximately a standard grade of coal.

Mr. Carter: I understood you to say you had fired ten years and three months.

Mr. Wise: About ten years and three months, yes, sir.

Mr. Carter: When you were a fireman, didn't you often have hard trips and good trips?

Mr. Wise: Yes, sir, we had hard trips and good trips, but the hard trips were pretty generally on slow freight.

Mr. Carter: Didn't you when you were firing an engine, sometimes feel elated that you had a good tank of coal, and then sometimes you would have a bad tank of coal?

Mr. Wise: Sometimes we did, yes, sir.

Mr. Carter: Don't you remember when you were firing an engine, that sometimes there was a great difference in the amount of coal you would shovel on the same engine in the same service.

Mr. Wise: That is true, because we did not have a regular way for loading our trains then. They loaded them on a car basis.

Mr. Carter: Well, when you fired passenger, with the same number of cars on these runs, didn't you sometimes have pretty good trips and sometimes pretty bad trips, on account of the difference in the coal?

Mr. Wise: No, I don't know that we ever had any bad trips on account of the difference in the coal. We had some bad trips on account of detention, and trying to make up time.

Mr. Carter: Your coal has always been just alike, no slack and no lumps, but all uniform?

Mr. Wise: I would not say it has always been just alike, that would be absurd. We get run-of-mine right along—

Mr. Carter: Is it not a fact that even to-day with some trips you burn more coal than on other trips, on account of the quality of the coal?

Mr. Wise: Well, of course the quality of coal will enter into it some, certainly.

Mr. Carter: Is it not possible there might have been a difference in the quality of coal in 1909 and the quality of coal in 1912?

Mr. Wise: No.

Mr. Carter: The same coal, was it?

Mr. Wise: Approximately the same coal.

Mr. Carter: How do you know?

Mr. Wise: Because I know it came from the same fields.

Mr. Carter: Oh, well, I know, but there are some cars of coal that come from the same fields that are rejected by the consumers because they don't come up to the standard.

Mr. Wise: If they have been rejected we would not take rejected cars of coal and make a test of it and would not put it on the engine—

Mr. Carter: Don't you think there was a difference in the coal?

Mr. Lee: Allow the witness to finish his answer.

Mr. Wise: No, sir.

Mr. Carter: Never any difference?

Mr. Wise: I do not say there was never any difference. There is— .

Mr. Carter: Do you think there is any difference in the firemen?

Mr. Wise: Yes, sir, there is a difference.

Mr. Lee: I would ask that the witness be permitted to answer the questions.

The Chairman: We can catch what the witness means.

Mr. Carter: Do you think there is any difference in the firemen?

Mr. Wise: Yes, sir.

Mr. Carter: Is it not possible the firemen might have been better in 1912 than in 1909?

Mr. Wise: No, sir.

Mr. Carter: The same firemen?

Mr. Wise: We had the same special duty men overseeing the firemen in 1909 and 1912.

Mr. Carter: No difference in firemen? Well, presuming that I tell you that the witness on the stand just before you came here showed that even under his immediate instructions the amount of coal varies to a greater degree than you have shown here, what would you think about his experience?

Mr. Wise: I do not know anything about his experience. I do not know anything about his conditions, his grades, his railroad, or his locomotives. I am speaking for the middle division of the Pennsylvania Railroad.

Mr. Carter: Are you not an expert?

Mr. Wise: No, I am not an expert.

Mr. Carter: Have you not had a great deal of experience in such matters?

Mr. Wise: I have had some experience in these matters, yes, sir.

Mr. Carter: Did you hear the testimony of the witness who preceded you?

Mr. Wise: I heard part of it.

Mr. Carter: Did you hear him read a list of the amount of coal burned in nine consecutive trips?

Mr. Wise: I heard him read it, yes. I did not pay particular attention to what it was.

Mr. Carter: Was there not a greater variation in the amount of coal consumed in these nine consecutive trips than you show in these tests here?

Mr. Wise: I do not know, sir.

Mr. Carter: Presuming that it was true, would it not indicate that there was a possibility of a variation in the amount of coal consumed on superheaters?

Mr. Wise: It would not indicate to me that there was any undue variation at all.

Mr. Carter: You are sure then that the conditions were exactly the same?

Mr. Wise: The conditions were approximately the same.

Mr. Carter: Did you ever ride down the banks of the Juanita River?

Mr. Wise: What do you mean—down over the rocks, or on the railroad alongside? I have done both.

Mr. Carter: Are you a cowboy?

Mr. Wise: No, sir.

Mr. Carter: If you were a cowboy, you would ride on a horse; but what are you? Are you a railroad man?

Mr. Wise: Yes.

Mr. Carter: Then you would ride on a train, would you not?

Mr. Wise: Yes.

Mr. Carter: Presuming you are a railroad man and that you do ride on a train, did you ever ride down the banks of the Juanita?

Mr. Wise: Along the Juanita River, yes, sir. My division follows the Juanita River.

Mr. Carter: Has not the Pennsylvania Railroad expended millions of dollars in straightening that back and reducing the grades since this time?

Mr. Wise: They have reduced some grades.

Mr. Carter: Do you think that would make any difference?

Mr. Wise: Since 1909?

Mr. Carter: Yes, since 1909.

The Chairman: Since 1902.

Mr. Carter: My question is since 1909.

Mr. Wise: Since 1909 we have made no reductions that would enter into the consumption of coal materially.

Mr. Carter: None whatever?

Mr. Wise: I would not say none whatever, for I do not remember it; that we have made no big reductions.

Mr. Carter: You have not had any of your work trains along there since 1909?

Mr. Wise: We have work trains along there.

Mr. Carter: You see I generally ride on the Pennsylvania?

Mr. Lee: You have my permission.

Mr. Carter: I generally ride on the Pennsylvania Road. You say there is no change in the conditions at all?

Mr. Wise: I do not say there is no change in the conditions, but that there is approximately no change.

Mr. Carter: The same firemen?

Mr. Wise: The same firemen in 1909? Do you mean that?

Mr. Carter: The same firemen in 1909?

Mr. Wise: The same special duty firemen oversee and supervise the firing as in 1909.

Mr. Carter: I am not talking about supervising firemen. I am talking about the men who do the firing?

Mr. Wise: I am talking about supervisors.

Mr. Carter: I am talking about doing the firing?

Mr. Wise: Our firemen are pretty generally proficient.

Mr. Carter: Your firemen are good firemen and deserve high rates of wages, do they not?

Mr. Wise: They get high rates of wages and they are proficient men generally.

Mr. Carter: You have no bum firemen on your road?

Mr. Wise: We have some who are not as good as they ought to be, but when we have them we get pretty busy, and they are pretty well systemmatized.

Mr. Carter: And then you insist that the conditions were exactly the same.

Mr. Wise: Were approximately the same.

Mr. Carter: You have no firemen on your road that fire better than others?

Mr. Wise: We have some, yes, sir.

Mr. Carter: Can you tell me the name of the fireman that fired on this trip, May 21, 1909.

Mr. Wise: If you want it.

Mr. Carter: I want to see if he was the same man who fired in 1912.

Mr. Wise: I can tell you that he is not; I have got the names of all of them.

Mr. Carter: Do you mean to tell me that the same man fired on any of these two trips?

Mr. Wise: I do not think he did.

Mr. Carter: Now, the witnesses for the company have tried to demonstrate here that it is all in the firemen; don't you think there could have been a possibility of a difference on these trips?

Mr. Wise: Very little difference; the firing was approximately the same, because it was supervised by an expert.

Mr. Carter: Supervised by an expert.

Mr. Wise: Yes, sir.

Mr. Carter: Then it takes two firemen to do the work when you have a test, is that right?

Mr. Wise: No, it did not take two firemen to do the test, but it takes somebody to see that there is no undue waste, or no undue saving, or trying to make an undue saving when you are running a test. A fireman thinks this: "Here you are going to put me up, I am going to make a record for myself"; what we want is regular steam pressure and no more coal put in the firebox than the engine will burn.

Mr. Carter: Then, in these tests, men are making records.

Mr. Wise: No, no, they are not making records.

Mr. Carter: You said so.

Mr. Wise: They want to make a record.

Mr. Carter: They try to do it, everybody does?

Mr. Wise: Yes.

Mr. Carter: Then you think that these tests are fair to the fireman in practice.

Mr. Wise: They are fair; what one man can do at one time, another man can approximately do all the time, under similar conditions.

Mr. Carter: How do you handle the coal in these tests, put it in 100 pound sacks?

Mr. Wise: Yes, sir.

Mr. Carter: Do you do that in regular service?

Mr. Wise: No, sir.

Mr. Carter: Then you are convinced that every test that you ever conducted is perfect?

Mr. Wise: I did not say so; it is approximately perfect, and it is a fair comparison with every day service.

Mr. Carter: About this engine 1964, how old was that engine when you tried her out?

Mr. Wise: I do not know how old; I do not know the date when the engine was built.

Mr. Carter: Suppose I tell you it was ten years.

Mr Wise: I would not care if she was 75, if her boilers were in good condition and her flues in good condition, and only three months out of the shop, it was a comparative test.

Mr. Carter: And you think an engine 75 years old is as good as one three years old?

Mr. Wise: I do not care how old she is, it is the length of time after having undergone the class of repairs that determines the efficiency of the locomotive.

Mr. Carter: Will not a larger engine burn less coal than a smaller engine, even both being saturated steam, if the smaller engine has been overloaded?

Mr. Wise: Undoubtedly it will.

Mr. Carter: We will say a six car train, pulled by a locomotive we will say, weighing 100,000 pounds on drivers, on a given run, and you put an engine on that run, that weighs more on drivers, will not she burn less coal than the other engine did?

Mr. Wise: Less coal than the smaller engine?

Mr. Carter: Yes.

Mr. Wise: More than likely on our road it would.

Mr. Carter: Then it is not so much the superheater, sometimes, as it is the larger engine?

Mr. Wise: But with the superheater we have increased tonnage.

Mr. Carter: With the superheater you increase the tonnage?

Mr. Wise: Yes, sir, but don't increase the coal consumption.

Mr. Carter: How is the Street stoker getting along on your road; how many engines have you equipped with a Street stoker?

Mr. Wise: We don't have any; we did have one, and it got along very nicely, except the Street stoker makes too much smoke for towns.

Mr. Carter: Now here is a report to the Traveling Engineers

Convention, about the Street stoker, on your road, and the report was in 1911.

Mr. Wise: Who made the report, Mr. Carter, may I ask you please?

Mr. Carter: I do not want to be personal, but it was Mr. Street.

Mr. Wise: Mr. Street, all right.

Mr. Carter: "One report on this road shows that the locomotive hauled 11 cars, or 13 per cent. over the regular rating of this class of locomotive. The engine steamed freely and the fire-door was on the latch 75 per cent. of the time. On this run the pop lifted twenty times while the engine was working, and the average steam pressure was 197 pounds. These reports showed very clearly what the stoker will do when properly handled."

Mr. Wise: I did not accompany that trip.

Mr. Carter: Presuming that is a correct report, Mr. Wise?

Mr. Wise: You want me to give a presuming answer?

Mr. Carter: I am going to ask you if there are any stokers on that road now?

Mr. Wise: Not any.

Mr. Carter: I would ask him why not, but it is an unfair question.

Mr. Wise: I would not hesitate to make an answer to you; I would be glad to answer it, if you want to have me.

Mr. Carter: If you believed that the Pennsylvania road thought that stoker was a success, don't you think the Pennsylvania road would have equipped their locomotives with it?

Mr. Wise: I don't think they would equip their locomotives with a stoker that makes so much smoke as the Street stoker, because we have got localities, you know, that we dare not make any smoke.

Mr. Carter: You think then that the Street stoker cannot be used where smoke is forbidden?

Mr. Wise: It can be used, yes, but I believe there is another stoker than can be used to better advantage.

Mr. Carter: The Pennsylvania stoker?

Mr. Wise: I do not know whether it is the Pennsylvania stoker or the Texas stoker, I do not know anything about that, but I know there is another stoker that with some little improvements will give a better service.

Mr. Carter: I understand. That would be an unfair question.

Mr. Wise: No, it isn't anything unfair to me; I have nothing to conceal, Mr. Carter, at all.

Mr. Carter: Well, the Pennsylvania stoker, we will recognize, is better than the Street stoker there. In regard to those firemen making as much time as the engineers, do you assign any importance to that?

Mr. Wise: I do on our division.

Mr. Carter: Well, do you believe that if a fireman had a wife and four or five children, and an engineer had a wife and four or five children, and both of them had about the same appetites, don't you believe that the fireman would have to work more miles than the engineer did to support his family in the same manner?

Mr. Wise: Well, I don't really see why he should. I fired for very small wages, Mr. Carter, and I saved up a considerable amount of money, and I have got some property in Altoona, and got a wife and two children, a boy going to college and supporting him.

Mr. Carter: Then you, as a fireman, can take just as good care of your family at a fireman's wages, as you could as an engineer.

Mr. Wise: No; of course when you get to be an engineer, you get more money.

Mr. Carter: What do you do with this money?

Mr. Wise: I saved it; I don't know what the rest did. I put mine in the savings fund. When I drew $160 for running an engine, I put $100 in the savings fund.

Mr. Carter: $100 in the savings fund?

Mr. Wise: Yes.

Mr. Carter: The Pennsylvania Savings Fund?

Mr. Wise: No, sir, in the bank.

Mr. Carter: You lived on $60 a month?

Mr. Wise: Yes, sir.

Mr. Carter: What kind of a family have you?

Mr. Wise: I have got a wife and two children now.

Mr. Carter: A wife and two children?

Mr. Wise: Yes.

Mr. Carter: How much did you pay for rent?

Mr. Wise: I don't pay any for rent; I buy all my own property, and I have got some I rent out, you know.

Mr. Carter: We will have to expect, that when we have capitalists firing, they should not be compared with other firemen.

Mr. Wise: I was not a capitalist when I started to fire, Mr. Carter. When I started to fire, I started to buy my own property; I didn't throw money away in rent; I started to buy property, and after I got that one paid for then I got another, and then another one, and so on.

Mr. Carter: Suppose you had not been so successful, and you were a common ordinary fireman.

Mr. Wise: I was a common ordinary fireman.

Mr. Carter: How could you live to-day as a common ordinary fireman on $60 a month?

Mr. Wise: The firemen to-day earn over $100 a month; they make full time; and it don't cost me $100 a month to live and maintain my boy at Dickinson College.

Mr. Carter: That isn't the question. I understood you to say that you could save $100 a month then.

Mr. Wise: I told you I saved $100 a month.

Mr. Carter: Out of how much?

Mr. Wise: When I was running an engine—out of $160.

Mr. Carter: When was that you got $160 a month?

Mr. Wise: In 1902.

Mr. Carter: How much are the firemen making there now?

Mr. Wise: Over $100 now.

Mr. Carter: Then they are drawing less now than they were in 1902?

Mr. Wise: Well, I was running an engine.

Mr. Carter: Oh, I am talking about firemen?

Mr. Wise: I told you when I was running an engine, when I drew a check for $160. When I was firing, I drew very much less checks than that.

Mr. Carter: Let us go back and start all over again; you went up one alley and I went up the other. I asked you the question if you did not understand why a fireman would perhaps have to work harder to make as many miles as an engineer if he had the same family, the same family to support?

Mr. Wise: If he has the same family to support, it is up

to the fireman to just simply do like any other class of men. I, as an assistant road foreman, would not expect to be able to live like Mr. McCrea and Mr. Atterbury, or the General Manager. If I did, I would get in a hole.

Mr. Carter: Now, let us stop talking about the General Manager, and get back to the fireman.

Mr. Wise: Well, I was making as fair a comparison as you were.

Mr. Carter: I am going to have you answer my question, if the Commission will permit it, if it takes from now until to-morrow morning.

Mr. Wise: I would be glad to answer it.

Mr. Carter: You answer my question then?

Mr. Wise: Well, it just depends on how you ask them.

The Chairman: We want to adjourn at one o'clock to-day.

Mr. Wise: All right.

Mr. Carter: It is not for me to give you advice, but by trying to evade simple questions, I do not think that you are helping your past testimony.

Mr. Wise: I am not trying to evade anything.

Mr. Carter: Then I am going to ask that question again. Don't you believe that if a fireman had say, a wife and five children, and an engineer had a wife and five children, that in order to support that wife and five children the fireman would be greatly disposed to work harder and try to make the same miles that the engineer did?

Mr. Wise: No, sir.

Mr. Carter: Why not?

Mr. Wise: Because they don't require him to work harder than the engineer. All he needs to do is to work equal with the engineer and make the same time, and make full time or nearly full time.

Mr. Carter: Then you don't think that a fireman wants as much money as an engineer?

Mr. Wise: I don't think he should have as much money as an engineer.

Mr. Carter: What does the engineer need this money for if it is not to support his family?

Mr. Wise: Well, that is up to the engineer. Everybody surely wants to save money. I know I do, and I do save it.

Mr. Carter: I will confess I cannot prove by you a self-evident proposition, that a fireman has to work long hours and make as many miles as he can in order to get enough money to support his family in decency at the present cost of living, while the engineer can work lesser miles and have more money for the same purpose. I will confess you would not answer any question that would bring out anything in favor of the firemen. That is all.

Mr. Lee: Much obliged, Mr. Wise.

Mr. Carter: I want to say, gentlemen, and call the attention of the Commission to the fact as to the difference in the mental attitude of the witnesses for the companies and the mental attitude of the witnesses for the firemen. At no time did we ever put on a fireman witness whether he was an expert statistician or a man shoveling coal, that he did not frankly and freely answer every question propounded, to the best of his ability. I want to call the attention of the Commission to the fact that in nearly every instance except perhaps the last witness last night, the witnesses appear to be determined not to make any reply on cross-examination that will benefit the firemen.

Mr. Lee: I would also desire to call the attention of the Board to the questions asked on cross-examination by both sides.

Mr. Carter: That is all.

The Chairman: Now, Mr. Wise, these tables were prepared and submitted here for the purpose of showing what?

Mr. Wise: For the purpose of showing that the increased tonnage and increased weight on drivers had not materially increased the work of the firemen.

The Chairman: And therefore, in your opinion, as a railroad man of long service—I do not mean that you are an old man, but you have been in service a good long time—these tables are produced here to show that the weight on drivers is not a good criterion upon which to base the wages of firemen?

Mr. Wise: I do not think so. I think if there is to be any difference in the rates for firemen, it should be made for service. For instance, we have 24 high class crews for preference freight; and if there is a preference train which comes into Altoona with 22 or 24 or 26 cars with certain classes of commodities, we simply couple an H-8 on to them and take them East, and it is practically three fifty for four, or four and a half

hours' run, and they do not have half the tonnage rating that the engine could haul. Now if you take a slow freight run, if there should be any difference of rating, I think it should be for service. It is the man, in a long slow freight drag, that has the hard service, if locomotives are not economically loaded. With us, on the Middle Division, we load our locomotives economically. What I mean by that is, there is an economical cut-off for every locomotive. Now if you go beyond that you are going to use an undue amount of coal. But with the large and efficient locomotives we have and the car limit, of course we do not get overloaded unless of course sometimes an engine might start leaking or something might occur and he might have a hard trip.

The Chairman: If the improvement in the locomotives is such that a locomotive can pull a heavier load without the consumption of any more coal, do you think the fireman's wages should be increased?

Mr. Wise: If the adjustment in 1910 was right, I see no reason why a fireman on our road should have his wages increased now, so far as conditions on the road exist.

The Chairman: That does not answer my question. If the profits of the railroad have increased by the improvements in the road itself, and the improvement in the locomotives, do you think it would be fair, or not, that the fireman should share in that profit, although he does not have to do any more work.

Mr. Wise: No, if the railroad stockholders expended a large amount of money to make an increase in the return, I cannot see wherein the firemen contributed to it; and as far as I am concerned, I cannot see where I, as an assistant road foreman, would contribute to it.

The Chairman: You do not think, then, that the fireman is any factor in producing that increased income?

Mr. Wise: Of course as an employee of the company; he has made no special exertion, no special effort; he has made no special outlay of money to produce it.

The Chairman: Do you think then that unless the fireman is called upon to do more work his wages ought never to be increased.

Mr. Wise: No, I would not say that, because I am not the

judge, you know, of when the company can pay or should pay more money; but I am just simply here to say that I have come to the conclusion that from the conditions on the road and the amount of work required of firemen on the middle division of the Pennsylvania Railroad, no conditions have arisen that would warrant an increase in wages. Of course I am not acquainted with other divisions or conditions at all, and do not speak of the general proposition.

The Chairman: You are certain that the fireman is not doing any more work now than he did in 1902?

Mr. Wise: I do not believe they are doing any more work. I think that even when I fired I had more arduous, harder conditions of work than they have now, for the simple reason that we then had points on the Division where we had to clean our own fires and in some places clean our own ash pans and clean our extensions. We had to take water so much oftener, and we had smaller, narrower fire boxes that we had to watch more closely. We had cylinders that were larger in proportion to the grate area, and boiler. The trains were loaded so that you had to work the engines nearer to their capacity, work them beyond the economic cut-off on slow freight. They would tell you to take 65 cars. Well, if you got all coal cars you could hardly drag them. If you got all merchandise you could get along a little better.

The Chairman: You worked harder then, as a fireman, than the firemen have to work now?

Mr. Wise: I worked harder then, as a fireman, than I have to work now when I fire a locomotive.

The Chairman: You worked harder as a fireman for $2.55 a day than the fireman works now on that division for $3.81?

Mr. Wise: Yes, I commenced to work for $2.20, then for $2.40, and then got up to $2.55 for firing, and we had very long hours as compared with what we have now.

The Chairman: How much of a pay check did you get a month at $2.55?

Mr. Wise: Sometimes during the panic of course we were down pretty low.

The Chairman: I am not talking about a panic. I am talking about the average.

Mr. Wise: We would draw along from $60 to $65.

The Chairman: What do the firemen draw there now at $3.81 a day?

Mr. Wise: A fireman at $3.81 a day now can draw over $100 if he makes any where near full time.

The Chairman: Is that about the proportion in the difference between the earnings of firemen in 1902 and now, $65 and $100.

Mr. Wise: Yes. In 1902, when we got the $2.55 rate, possibly a fireman would run up into the $70's.

The Chairman: And now $100?

Mr. Wise: Over $100, yes.

The Chairman: The same man?

Mr. Wise: No, I would not say the same man.

The Chairman : I mean the same class of men?

Mr. Wise: The same class of men. I do not know that there is any one firing now who was firing then.

The Chairman: The class is not as good now as it was then?

Mr. Wise: We have a good class of men on our division.

The Chairman: What I mean is, the man who earned $2.55 and probably got $70 then, corresponds to the man who now makes $3.81 on a trip, and draws $100 a month, so that you would say that the average fireman is making $30 a month more on your division now than he did ten years ago.

Mr. Wise: I believe he is getting approximately that. I would not say just $30, but they would run into the $70's and it might have been $76 or something like that.

The Chairman: And it may run to $105?

Mr. Wise: Ten years ago?

The Chairman: Oh, no, now.

Mr. Wise: Yes, it runs over $100 now, sometimes.

The Chairman: You think then there would be about $30 difference on an average.

Mr. Wise: Approximately, yes.

The Chairman: How much family did you have then.

Mr. Wise: In 1902 I guess I had two or three children. I have had three die since that time. I do not remember just what family I had at that time. I was an engineer in 1902, you know.

The Chairman: Your family was about the same size then as it is now, but you have a boy in college now who costs you something

Mr. Wise: Yes.

The Chairman: I expect you use up some of your rents for that boy.

Mr Wise: I had an income from rents in 1909. I had an income when I quit firing.

The Chairman: I know something about what it costs to send a boy to Dickinson. What I want to get at is, you had a family of about the same size then as now.

Mr. Wise: The same number, yes.

The Chairman: Is there any difference in the cost of your living now and then?

Mr. Wise: Oh, yes. You have to pay more for your commodities to live, than you did then.

The Chairman: Suppose you charged yourself rent for the house you live in, what is the difference in rent now and then?

Mr. Wise: For the house I live in now I would have to charge myself $50 a month rent, perhaps.

The Chairman: A fireman would not live in that sort of a house.

Mr. Wise: No, but I built that house for myself.

The Chairman: Take the kind of house you lived in the last year you were a fireman.

Mr. Wise: The kind of house I lived in the last year I was a fireman, I get $22 a month rent for that house now.

The Chairman: What would the house have rented for then?

Mr. Wise: Well, with the improvements in it I suppose it would have rented for $18 or $20.

The Chairman: Give me your opinion as to how much difference there would be in the average rent of a fireman's house then and now.

Mr. Wise: I do not believe there is two dollars difference. Rents have always been high in Altoona, although I never lived in a rented house. I do not know anything about that, but I know that rents have always been pretty high in Altoona. I have heard other people who live in rented houses complain of it.

The Chairman: Would this difference of $25 or $30 in the pay then and now, account for all the difference in cost of living? I mean would it be equal to it.

Mr. Wise: I think it would, sir. I am sure I would live on it and save a little money if I was firing.

The Chairman: Do you think the fireman's condition now is better than it was then?

Mr. Wise: I think it is, yes.

The Chairman: And he has got an advance in wages of $1.26 in the meantime?

Mr. Wise: Yes.

Mr. Carter: Is that all, Mr. Chairman?

The Chairman: Yes.

Mr. Carter: Pardon me, Mr. Wise, but will you give me an idea of your theory of what would be the proper basis of wages of firemen, instead of the weights on engines?

Mr. Wise: On the service.

Mr. Carter: The heavy work you mean?

Mr. Wise: Yes, tonnage, heavy service.

Mr. Carter: Would you reduce a fireman's wages on a train after they set out some of the tonnage?

Mr. Wise: No, that would be a matter for adjustment. I would not think that would follow after they had set out some of the tonnage that you ought to reduce it. I should think it would be a matter of what you started with.

Mr. Carter: Then you believe that the fireman should be paid for the load per train approximately?

Mr. Wise: I think on a service basis.

The Chairman: Let him tell you what he means by a service basis.

Mr. Wise: I think the men that have the harder service should be allowed to reap the most money. For instance, I think it is unfair to say that for a certain weight on drivers you ought to pay the fireman so much money, and then if that engine is moved light, as it has to be, without any train, pay the same amount for it; or where you are running an engine that is heavy on the drivers in high class freight service, where they do not have half the strain in tonnage, and where they make their running time very much shorter. That is why I think the fellow who does the hard work ought to reap the biggest pay in my judgment.

The Chairman: Do you not think the fireman works harder than the engineer?

Mr. Wise: Do I not think he does?

The Chairman: Yes.

Mr. Wise: No, I never got as tired in my life firing a locomotive as I did running one. I never got as physically fatigued firing an engine as I did when running one. I did not have the strain on my nerves.

Mr. Carter: You would rather fire an engine than run an engine then?

Mr. Wise: No, sir, you get more money for running an engine.

Mr. Carter: I mean at the same price.

Mr. Wise: At the same price I believe I would, I would just as soon fire as run an engine, if there was no difference in the wages.

Mr. Carter: If you had a fireman firing for you, and he was tired, the chances are that of your own free will and accord, you would fire the engine for him and let him look out.

Mr. Wise: I never was too tired to get down and take my station at firing. I always did it.

Mr. Carter: You think the fireman always ought to have help?

Mr. Wise: I did not think he always ought to have help, but I was a young, able-bodied, strong man, and I was willing to share up my profits with him and help him out if he was capable of watching out for me.

Mr. Carter: If he was capable.

Mr. Wise: Yes.

Mr. Carter: You would not help a fireman if you did not think he needed help, would you?

Mr. Wise: Yes, I often help people that I do not think need help.

Mr. Carter: You are charitable like.

Mr. Wise: Yes, I think wherever you can lend a helping hand you ought to do so.

Mr. Carter: That is right. Now in regard to this heavy work of the firemen, if it can be shown that the average tonnage per train in 1902 was less than the average tonnage per freight train now, then on your theory, fixing wages in the way you say, you think the wages should be a great deal higher than in 1902? Is not that true?

Mr. Wise: Loading them on the tonnage basis, if they had

been loaded or paid on a tonnage basis in 1902, and the rate had been considered right at that time, I would say the wages should be increased as the tonnage is increased.

Mr. Carter: Let us not talk about tonnage. Supposing the trains today are twice as heavy as they were in 1902, regardless of whether it is tonnage, or what it is, then according to your theory the fireman ought to receive a great deal more money today than in 1902?

Mr. Wise: The fireman ought to receive some more money to-day than he did in 1902, yes.

Mr. Carter: That is all.

Mr Lee: Is not what you mean to say, Mr. Wise, that the work required of a fireman should be the measure of his pay?

Mr. Wise: That is my idea of it, yes, sir, the work required of the fireman.

Mr. Lee: And one train might haul a heavier tonnage than another, and yet require less work of the fireman?

Mr. Wise: Yes, sir.

Mr. Lee: Your basis of pay would be the work required of the fireman, no matter in what line that work might take, physical or mental, or anything else, you would compare the different runs, or sets of runs and the work required of the firemen?

Mr. Wise: By the service.

Mr. Lee: It would not make any difference whether he had a big or little engine?

Mr. Wise: The service he performed, that would be my idea,

Mr. Lee: And if he had a little engine and he worked harder, would you pay that man more?

Mr. Wise: Yes, sir.

Mr. Lee: The man who does the hardest work should get the most pay?

Mr. Wise: In the same line, for instance.

Mr. Lee: Speaking of firemen?

The Chairman: How much is this difference in the pay, between the $2.55 and the $3.81, accounted for in the increased overtime now?

Mr. Wise: There is no increased overtime; there is a decrease in overtime; that is, we do not have the hours of overtime that we did in 1902, and overtime has been decreasing yearly.

Mr. Atterbury: In 1902, what was your overtime basis, was it the same as it is to-day?

Mr. Wise: No, not the same, we were allowed $2.55 for the run, if we made it in 12 hours, and if you didn't make it, and if you were over 12 hours, you got paid so much an hour, I do not remember what it was.

Mr. Atterbury: Supposing you made a run of 14 hours to-day, would you get more overtime for it than in 1902?

Mr. Wise: Do you mean more money or more hours?

Mr. Atterbury: You would get your money in accordance with the hourly rate?

Mr. Wise: In accordance with the hourly rate, yes, sir.

Mr. Atterbury: Would you get more hours overtime out of a 14 hours' run to-day, than in 1902?

Mr. Wise: Not more hours.

Mr. Atterbury: Then so far as that is concerned, the situation is exactly the same as in 1902?

Mr. Wise: So far as the hours are concerned, yes, sir.

The Chairman: And your overtime is pro rata, is it not?

Mr. Wise: Yes.

Mr. Carter: I understand it is your theory that the harder a man works the more pay he should get, is that right?

Mr. Wise: That would be my theory.

Mr. Lee: As a fireman?

Mr. Wise: As a fireman.

Mr. Carter: It is not fair to apply one theory to firemen, and another theory to other people, is it?

Mr. Wise: Oh, yes.

Mr. Carter: It is?

Mr. Wise: Yes, sir.

The Chairman: Explain that to us a little bit.

Mr. Carter: Yes, that is a peculiar theory, if it only applies to firemen.

Mr. Wise: I might have to work harder than Mr. Atterbury, but I would not say I ought to have more money than he.

Mr. Carter: I don't think you do work nearly as hard as Mr. Atterbury.

Mr. Wise: I don't know whether I do or not, but, I say, I might.

Mr. Carter: I don't think so.

Mr. Wise: Well, you don't know, and neither do I.

Mr. Carter: I will guess at it.

Mr. Wise: All right, so will I guess.

Mr. Carter: And I will leave it to Mr. Atterbury.

The Chairman: Does Mr. Atterbury get any overtime?

Mr. Wise: I don't know that, but at the same time I should not say I should have more money than Mr. Atterbury.

Mr. Carter: Then you believe, so far as firemen are concerned, as compared with each other, that the man who works the hardest should get the most money, regardless of engines or trains or anything of that kind; but you do not believe, if it shows the fireman works harder than you do, or other employees, that the comparison would be fair there.

Mr. Wise: No.

Mr. Lee: They are on a different basis?

Mr- Wise: They are on a different basis, and different employment.

Mr. Lee: This statement that you made up, I understand that was primarily to compare saturated steam engines with superheated steam engines?

Mr. Wise: Yes, sir.

Mr. Lee: And these other comparisons are incidental?

Mr. Wise: Yes, sir, they are incidental.

The Chairman: They were not prepared in the first instance for a wage problem at all?

Mr. Wise: No; there were none of those tests made in connection with any wage problems at all. When we get any appliance we test it out and keep a record of the test, and that is why they were made.

The Chairman: Are you a member of the Brotherhood?

Mr. Wise: No, sir.

The Chairman: Were you ever?

Mr. Wise: Yes, sir.

The Chairman: Of the Brotherhood of Firemen?

Mr. Wise: Brotherhood of Firemen, yes, sir.

Mr. Chairman: And then of the engineers?

Mr. Wise: No, I never was a member of the engineers.

The Chairman: An officer of the road—he is an officer, is he not?

Mr. Atterbury: Yes.

The Chairman: An officer of the railroad can continue his membership in the Brotherhood?

Mr. Wise: Yes, sir. I had quit the Brotherhood before I was made Assistant Road Foreman.

The Chairman: Your relationships with the Brotherhood are friendly?

Mr. Wise: Oh, yes; yes, sir. I have got some firemen and enginemen the best friends I have got, that are Brotherhood men. Sure. I think the Brotherhoods are all right; I haven't anything to say against the Brotherhoods.

(Witness excused.)

M. C. HATCH, called as a witness, being duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your position, Mr. Hatch?

Mr. Hatch: Superintendent of Fuel Service on the Delaware, Lackawanna & Western Railroad.

Mr. Lee: Over what territory?

Mr. Hatch: Over the entire system.

Mr. Lee: What are your duties as Superintendent of Fuel Service of the Lackawanna Railroad?

Mr. Hatch: The duties of the position cover the handling of all locomotive fuel and distribution of the same; it covers all the work of the fuel except the purchasing.

Mr. Lee: Were you ever a locomotive engineer, Mr. Hatch?

Mr. Hatch: No, sir.

Mr. Lee: Nor a fireman?

Mr. Hatch: Never.

Mr. Lee: What were you before you were Superintendent of Fuel Service?

Mr. Hatch: Engineer of tests of the New England Lines.

Mr. Lee: Are you familiar with the socalled 385 Class of Consolidation engines which in a part of 1911 and 1912 were used in through freight service with two firemen on the Buffalo Division of the Lackawanna?

Mr. Hatch: Yes, sir.

Mr. Lee: Please state what the general design of these engines is?

Mr. Hatch: They were a heavy Consolidation type engine with a small wheel, a large cylinder, and a comparatively low boiler pressure; they were a saturated engine without a brick arch. The engines were originally designed for hill service with a maximum speed of perhaps 15 miles an hour.

Mr. Lee: How is it they were used in through road service?

Mr. Hatch: This is merely hearsay, on my part, because this occurred before I was with the Lackawanna, but it was on account of shortage of power on the Buffalo end. It was necessary to put the heavy engines out there to handle the trains.

Mr. Lee: These two firemen were put on there then before you went with the Lackawanna Road?

Mr. Hatch: Yes, sir.

Mr. Lee: I won't ask you about that, then. It has been stated that those engines have been displaced on the Buffalo Division by the type of engine called the Mikado, that they are being handled with one fireman in this same service.

Mr. Hatch: That is right.

Mr. Lee: Can you state from actual tests conducted by yourself what the difference in the fuel consumption is on the Buffalo Division as between the 385 Class Consolidations that had two firemen and the present Mikado that is in the same service with one fireman?

Mr. Hatch: Yes, sir, I have some test figures for that.

Mr. Lee: Have you copies of those Mr. Hatch for the Board, and for Mr. Carter?

Mr. Hatch: Yes, sir, I think I have. (Handing paper to Mr. Lee.)

Mr. Lee: These are for the 385?

Mr. Hatch: This covers all the freight part. Do you want the passenger?

Mr. Lee: We will go into that later. What did you find from these tests Mr. Hatch?

Mr. Hatch: Column B here on this sheet shows the Consolidation or 385 class engine, and Column A is the Mikados, this heavy freight engine, and I think the comparison that may be of special interest—

Mr. Lee: Have you got any extra copy of this?

Mr. Hatch: No, sir. I think the comparison that may be of particular interest is the third from the last.

Mr. Lee: That is the column headed E?

Mr. Hatch: No, A and B are the two columns I am speaking of at present.

Mr. Lee: Yes, go ahead.

Mr. Hatch: The coal per engine mile for the Consolidation figured on the tests of 187.6 pounds, and for the Mikado 143.3. The percentage difference there is shown in the note at the foot of the table as 24.2 less coal per engine mile for the Mikados than the Consolidations which they displaced.

Mr. Lee: How about the coal per hour?

Mr. Hatch: The coal per hour was also less in the case of the Mikado; it was 2145 pounds for the Mikado, against 2440 pounds per hour for the Consolidation. I have not figured the percentage there.

Mr. Lee: Were both of these engines in slow freight service?

Mr. Hatch: Yes, sir; on the same division under the same conditions.

Mr. Lee: How many trips do each of these columns represent?

Mr. Hatch: The Column A represents four trips, and the Column B represents about four and one-half trips, cut out in the middle of the road.

Mr. Lee: How does the speed compare?

Mr. Hatch: The Mikado speed was on an average two miles an hour higher than that of the Consolidation, 15 against 13, average speed over the road.

Mr. Lee: How did the tonnage compare Mr. Hatch; does it show on this statement?

Mr. Hatch: It doesn't show the tonnage; it shows the ton miles. The engines in all cases were loaded to the ratings; which I can give you if you like.

Mr. Lee: Both loaded to their ratings?

Mr. Hatch: Loaded to their ratings.

Mr. Lee: Does the Mikado engine haul more tonnage than the 385 class?

Mr. Hatch: Yes, sir.

Mr. Lee: How do you account for these Mikado engines handling the same and even more tonnage than the Consolidation, with 25 per cent. less coal?

Mr. Hatch: On account of the design of the engine. They are a well designed engine for the service which they are in.

Mr. Lee: The Mikado?

Mr. Hatch: Yes, sir.

Mr. Lee: And the 385 class were not properly designed for road service?

Mr. Hatch: I would not so consider them.

Mr. Lee: You don't know whether they were originally intended for that?

Mr. Hatch: I understand they were not originally.

Mr. Lee: From your observation while riding on these engines, the 385 class, making the different tests, were the two men's time practically all occupied?

Mr. Hatch: Why, no, it was not; that is, as I understand your question, whether they were busy all the time both of them.

Mr. Lee: Yes.

Mr. Hatch: No, sir.

Mr. Lee: When the company conceded to put on the second fireman, were there any other little duties assigned to the firemen on this particular class of engine, on account of having the two men; you were not sure when these two firemen were put on?

Mr. Hatch: No, I was not.

Mr. Lee: Well, I won't ask you that question, then. From your observation, while riding on this engine, the first 15 or 25 miles, did the second man have anything to do?

Mr. Hatch: He did not have much to do, practically nothing, but he would take the water.

Mr. Lee: That was about the extent of his work?

Mr. Hatch: The first part of it.

Mr. Lee: He went to work later on?

Mr. Hatch: He went to work later on, he shifted off.

Mr. Lee: What facilities have you for getting coal en route on each division?

Mr. Hatch: We have a coaling plant practically midway on each of our main line divisions.

Mr. Lee: How much coal does the Mikado engine consume per trip of 141 miles?

Mr. Hatch: The last figure in columns A and B show what they consumed on their test trips. The average for the Mikados was practically 20,000 pounds.

Mr. Lee: How much coal did the 385 class burn on that trip?

Mr. Hatch: These figures show 26,450.

Mr. Lee: That is the average for these trips?

Mr. Hatch: That is the average for these trips where the conditions were favorable.

Mr. Lee: Are any of the 15-385 class, Consolidation, which formerly had two firemen on the Buffalo Division, used in through freight service to-day?

Mr. Hatch: We have one that is in through freight service.

Mr. Lee: Which one?

Mr. Hatch: A 385 engine.

Mr. Lee: How many men has she on it?

Mr. Hatch: Regular crew, engineman and fireman.

Mr. Lee: How does it happen you are not putting two firemen on this engine?

Mr. Hatch: We have equipped her, she has been through the shop, she is equipped with a high degree superheater.

Mr. Lee: Has that cut down the work of the fireman?

Mr. Hatch: It surely has.

Mr. Lee: Hauling any more tonnage?

Mr. Hatch: The rating is made.

Mr. Lee: The rating is the same for the old 385 class? How much did that cut the coal down?

Mr. Hatch: I have a comparison here in columns E and F. Column E shows one old Consolidation, 399, and column F, 388 with the superheater, and they are tested between Scranton and Sacaucus in heavy drag freight service. We did not have the same firemen in all cases, we had the same engineman straight through, and the comparison here, shows the coal per engine mile for the non-superheater, the 399, was 234.7 pounds, and for the superheater engine was 168.3 pounds; that is a difference in percentage per engine mile of 28.3 per cent., in favor of the engine with the superheater.

Mr. Lee: Well, were those 397 and 388 substantially the same engine before the superheater was put on the 388?

Mr. Hatch: Precisely the same.

Mr. Lee: And when these tests were made, were the engines in substantially the same condition?

Mr. Hatch: Substantially.

Mr. Lee: Had they been out of the shop?

Mr. Hatch: Approximately out the same length of time if I recall, the 399 had been out a little less time than the 388; the engines were in good shape.

Mr. Lee: Both in good shape?

Mr. Hatch: Both in good shape.

Mr. Lee: When was this 385 class Consolidation taken out of road service?

Mr. Hatch: They were taken out of service as soon as the Mikados arrived, which, if my memory serves me, was in July, 1912; in the month of July, some time, I am not sure.

Mr. Lee: July and August?

Mr. Hatch: I think the Mikados were all on the road before August.

Mr. Lee: Do you know when the Mikado engines were ordered?

Mr. Hatch: The contract was signed—I will be sure (referring to paper). The contract with the American Locomotive Company for the Mikado engines was signed March 25th, 1912, but the engines were projected probably at least two months before. That was when the contract was finally signed for the construction of the engines.

Mr. Lee: Have you made any actual test to demonstrate how much coal the firemen handled on through passenger trains on the Lackawanna Railroad?

Mr. Hatch: Yes, sir. (Witness produces papers.)

Mr. Lee: Will you please explain to the Board how much coal is consumed by one through passenger train engine of the Pacific type, equipped with the superheater, between Hoboken and Scranton, which is the hardest division of the Lackawanna Railroad?

Mr. Hatch: The second column—

Mr. Lee: Just explain. I will not ask you questions, you can explain better about this particular table, and what it is here for, than I can by asking questions. Go right ahead with it now

Mr. Hatch: You want the information about the Pacifics, especially?

Mr. Lee: About the Pacifics; that is your biggest type of passenger engine?

Mr. Hatch: That is in that service at present.

Mr. Lee: Go ahead.

Mr. Hatch: The second column shows the heading Pacific engine 11-7, that is the superheater. That is the record of a test of two round trips that were made between Scranton and Hoboken on our train 3, which is the Lackawanna Limited. Do you want me to go right down through it, or just give the results?

Mr. Lee: Just the results in a general way. This Pacific type of engine, what is the weight of that engine on drivers?

Mr. Hatch: I will have to look that up; I don't just recall it. It is practically 180,000 pounds on drivers.

Mr. Lee: How much is the 10 wheeler?

Mr. Hatch: The 10 wheeler is about 171,000.

Mr. Lee: They are pretty close together then, not very far apart?

Mr. Hatch: Not very far apart. The Pacific is a good deal heavier engine, of course.

Mr. Lee: But the weight on drivers—

Mr. Hatch: The weight on drivers is not a great deal different. The tractive power is higher in the Pacific.

Mr. Lee: This is the result, as I understand, of four trips on each engine?

Mr. Hatch: Yes, sir.

Mr. Lee: How did the average speed compare?

Mr. Hatch: The average speed is practically the same; they were on practically the same schedule.

Mr. Lee: How murh coal was burned?

Mr. Hatch: The average coal per trip for the 10 wheeler, which is the non-superheater engine, was 18,350 pounds, against 12,850 pounds for the Pacific. That figures on an engine mile basis 135 pounds for the 10 wheeler and 94½ for the Pacific; and on the basis of—perhaps the percentages would be better; the coal per engine mile on the percentage basis for the 10 wheelers, counting the 10 wheeler as 100 per cent., as they were the original engines in that service, and 70% for the Pacific; that is practically the way all those percentages run, about 30% in favor of the Pacific.

Mr. Lee: The larger engine?

Mr. Hatch: The larger engine. I might say further that I had a test run yesterday on that same engine on that same train;

I had a man ride her; and while we made no official test, we counted the scoops of coal; and it might be of interest to know what a man used on that run between here and Scranton. I have forgotten the exact mileage, but it is practically 156 or 157 miles, I don't just recall. He shovelled 395 scoops of coal from the leaving time until he arrived at Scranton, that is three hours and a half.

Mr. Lee: How did the size of the train compare on the two engines?

Mr. Hatch: At the time these tests here were made?

Mr. Lee: Yes.

Mr. Hatch: They are practically the same train. It shows the average number of cars for the 10 wheeler as being 7¼ and 7½ for the Pacific; that is the average.

Mr. Lee: What do these two columns on the other side represent?

Mr. Hatch: They are not comparable, hardly, with the first two columns. The third column shows one of the Pacific engines in a little different service. I did not put that in—I did not want to compare it, because I had no figures of the other engines on that same train; but it merely shows about the amount of coal those engines are burning, where they make the stops and—

Mr. Lee: The service was different?

Mr. Hatch: The service was different in the third and fourth columns. The fourth column shows the 10 wheeler, the 10-36, what she does after the superheater has been applied.

Mr. Lee: Is the engine shown in the fourth column comparable with the engine shown in the first column?

Mr. Hatch: Not precisely as shown here, on account of the difference in trains, but we could make a rough comparison which would be practically fair.

Mr. Lee: But you would not say it would be a fair comparison one way or the other?

Mr. Hatch: It is not an actual comparison.

Mr. Lee: Then, for the purposes of this investigation, we might neglect the third and fourth columns on this blue print?

Mr. Hatch: On the comparative basis; but they both show the amount of work that is being done, and they are accurate in that way.

Mr. Lee: The amount of work actually done on this engine?

Mr. Hatch: On those particular trains.

Mr. Lee: But you could not compare it with anything else?

Mr. Hatch: Not with the information I have here.

Mr. Lee: Of course, if Mr. Carter wants to ask any questions on this you will be perfectly willing to answer.

Mr. Hatch: Yes.

Mr. Lee: But so far as the railroad side is concerned, from what the witness says, I do not know what these last two columns are, I do not know what value they are to us, and therefore I will not ask any questions; but if they are of any value to my friend Mr. Carter, he is at perfect liberty to use them. Go ahead.

CROSS EXAMINATION:

Mr. Carter: In this first table—

Mr. Hatch: Which sheet are you looking at?

Mr. Carter: The first.

Mr. Hatch: The freight?

Mr. Carter: Yes, what was the mileage in this test?

Mr. Hatch: It is 141 miles over the division.

Mr. Carter: Between what points were the tests made?

Mr. Hatch: Between Elmira and East Buffalo. These are the first two columns that you are referring to?

Mr. Carter: No, I am referring to all of them.

Mr. Hatch: They were made at different points on the road, Columns A and B—

Mr. Carter: Columns A and B are not comparable with the other columns?

Mr. Hatch: No, sir, not strictly.

Mr. Lee: A and B are comparable with themselves?

Mr. Hatch: With each other.

Mr. Lee: And E and F are comparable with themselves, on account of different localities?

Mr. Hatch: Yes, sir; that is right.

Mr. Lee: And different conditions surrounding the runs?

Mr. Hatch: Yes, sir.

Mr. Carter: I see that your coal per thousand ton miles on the Consolidated engine 385 was 69.3, and you pass over to the Consolidated 399 under the E column and it is 124?

Mr. Hatch: Yes, sir.

Mr. Carter: How do you account for that discrepancy?

Mr. Hatch: By the difference in the division; there is more steam worked.

Mr. Carter: It is a heavier division, is it?

Mr. Hatch: I think there is more steam worked over that division in which Column E is shown, that is doubling the division, you see what I mean.

Mr. Carter: In regard to this 10 wheel engine in the passenger service, was that engine taxed largely in its capacity to haul this train and make the time?

Mr. Hatch: In the first column here?

Mr. Carter: Yes.

Mr. Hatch: The engine was practically up to what she could do.

Mr. Carter: Is it not a fact that when any engine is taxed too much, that the coal consumption increases rapidly and it becomes a less efficient engine?

Mr. Hatch: There is a certain point of course beyond which—

Mr. Carter: The reason I say that, I mean to say it is possible, by reason of the high coal consumption on this 10 wheel passenger engine, because it was performing a duty perhaps heavier than it was designed to perform, and the other engine being especially fitted for that service, it might for that reason alone consume less coal. Is not that true?

Mr. Hatch: Yes, in a way it is true. The 10-36, of course you see she was a non-superheater engine. It was before the engine was equipped, and put into shape, to handle that train, as we thought, most efficiently.

Mr. Carter: The point I wanted to bring out, Mr. Hatch, I know you know it, and we all know it, that any engine regardless of its design, whether it has had a superheater or not, whenever it is overloaded, it becomes less efficient from the point of coal consumption. That is, you can use your steam less expansively; you have to keep your lever down so as to work you cut-off at a longer point, is not that true?

Mr. Hatch: I think that can be allowed.

Mr. Carter: If it should appear that engines to-day, the same engines, we will say, are working harder than they were formerly, by increasing the tonnage on the same engine, would you [illegible] a higher coal consumption?

Mr. Hatch: On the same engine?

Mr. Carter: Yes.

Mr. Hatch: If the tonnage was increased on the same engine?

Mr. Carter: Yes.

Mr. Hatch: Every other condition being the same?

Mr. Carter: Yes.

Mr. Hatch: Well, if it was increased beyond the capacity for which the engine was designed, I should expect that it might be, but if the train in the first place was loaded light, and then it was brought up perhaps to the full rating comparable with her design, I think the increase would be very small.

Mr. Carter: The point I want to bring out, Mr. Hatch, is this. Let us presume this to be a fact on some roads. Formerly it was not the policy on some roads to load their engines down to say—10 or 15 miles speed over the road. They wanted to get their engines over the road, because they wanted to bring them back and get their freight over the road. Now, presuming on those roads they now have what they call drags, would not that greatly increase the coal consumption on the same engine per mile?

Mr. Hatch: Per mile?

Mr. Carter: Yes, per trip or per 100 miles, or whatever it is, going over the division.

Mr. Hatch: If the engine was not what you call overloaded, I would not consider that it would increase it very materially.

Mr. Carter: Well, let us presume that, we will say a certain class of engines on a certain road formerly pulled a thousand tons over a given piece of track, and now we will say it is pulling 1300 tons, wouldn't you expect that there would be a considerable increase in coal consumption with that same engine.

Mr. Hatch: I do not think I could say that without knowing—I would like to know—

Mr. Carter: Don't you think that the train resistance increases coal consumption?

Mr. Hatch: Why, certainly it does, but resistance is not—the speed is a factor, train resistance also.

Mr. Carter: Of course the higher the speed, the more coal you consume; that is true, is it not?

Mr. Hatch: Why, your resistance increases as your speed increases.

Mr. Carter: On these passenger runs, while they go quicker, why it really takes more coal to take those fast passenger trains over the road than if you went over the same run with the same train and engine slowly, is not that true?

Mr. Hatch: Now, I can show you right here in the passenger sheet.

Mr. Carter: Pardon me; you are acquainted with those curves showing the speed curves, are you not, and train resistance?

Mr. Hatch: Well, I have seen a good many of them; I do not know which particular ones you are referring to.

Mr. Carter: Well, we will take the ordinary text book of speed curves and train resistance, showing how rapidly the train resistance increases with the same train as the speed increases; you are familiar with that, are you not?

Mr. Hatch: I am familiar.

Mr. Carter: Don't those curves, which are presumably authentic, show that with an increase in speed with the same train, the same resistance also increases?

Mr. Hatch: With that same train, an increase in speed will increase the train resistance.

Mr. Carter: Yes. Now, if that is the fact, if that increases the train resistance, it requires more coal to get a train over the road at a high speed than it does at a slow speed, does it not? I am not talking about laying on side tracks, understand me, Mr. Hatch. For instance, assume a train is running thirty miles an hour with six coaches going over the division; now for proper reasons they have got to run that train 50 miles an hour, wouldn't it take more coal to get that same train over the road at 50 miles an hour than at 45 miles an hour?

Mr. Hatch: You said thirty before.

Mr. Carter: Well, thirty, whatever it was.

Mr. Hatch: Over the same division with a given train, and so on.

Mr. Carter: Yes.

Mr. Hatch: I should not expect that the coal consumption would be very much increased, your time is shortened so much there. If you are talking on a mileage basis—

Mr. Carter: No, I am not talking about—

Mr. Hatch: The total consumption from one end to the other?

Mr. Carter: I am talking about it being a matter of general information among mechanical railway men that covering every factor it costs more to run a fast train than it does a slow train, coal, wear and tear on track, and everything.

Mr. Hatch: I know, of course that is a fact in many of those items you have stated there, but I would like to call your attention here to tests on the same class of train over the same road with different engines which we have here. We have, this is on the third column, that engine 1105, her average speed was 33 miles an hour, against practically 39 for the 1107, with a coal consumption over the road of 14,325 pounds for the slower against 12,800 for the fast one.

Mr. Carter: But you have got two more cars and over, 2½ more cars.

Mr. Hatch: That is all right.

Mr. Carter: It is a heavier tonnage.

Mr. Hatch: The tonnage is very little heavier, because the cars are not nearly as heavy. I haven't the tonnage of that particular train, I think.

Mr. Carter: I see under the one you have 7½ cars, and the other 9.2 cars.

Mr. Hatch: Yes, but the cars are heavier on that other train, though I cannot give you the exact tonnage of the two trains in comparison; but I know that that train under the 1107 is practically all steel cars, it is a very heavy equipment. The tonnage would probably be very little different; it might be some.

Mr. Carter: I think it is generally understood, however, that increasing the speed of a train increases the coal consumption. That is all. What were the dates of those tests, please?

Mr. Hatch: Now, which test do you refer to?

Mr. Carter: Are they all different dates, these tests?

Mr. Hatch: Oh, they are all different dates, and they spread over quite a territory. I could not give you the exact date.

Mr. Carter: This freight with A and B Mikado 1200 and Consol 385.

Mr. Hatch: If I recall correctly, that Consol test was made in June or July, 1912, and the Mikado test was made, I think, in September. I could get those for you if you wanted it exactly, Mr. Carter.

Mr. Carter: The reason I ask the question was whether the weather—

Mr. Hatch: The weather conditions were good in both cases.

Mr. Carter: That is what I wanted to know.

RE-DIRECT EXAMINATION:

Mr. Lee: Mr. Hatch, in increasing the speed of a train over a division, it does increase the coal consumption per hour, doesn't it?

Mr. Hatch: Yes, sir.

Mr. Lee: As I understood you to say, you would not know without figuring somewhat on it, whether there would be much increase or decrease in the coal consumed for the trip.

Mr. Hatch: For the trip, I think it would be pretty hard to say that. I think you would have to know your conditions pretty well in order to make that as a flat statement.

Mr. Lee: But your coal per hour—

Mr. Hatch: But your coal per hour would be increased.

Mr. Carter: Gentlemen of the Commission, I won't be able to prove this by a mechanical expert, but the harder an engine is worked, the less efficient she is; and if in order to get a given tonnage over a given division in a lesser time, you have to work the engine harder; that is, less expansively, why I think it is the consensus of opinion of all authorities on the subject, that you are using the coal less efficiently, and it takes more coal to perform the same amount of labor to get the train over the road.

Mr. Lee: Do you follow what Mr. Carter says, Mr. Hatch?

Mr. Hatch: Why, yes, I think so.

Mr. Lee: Do I understand Mr. Carter to say—I am trying to get at what you are after—I think I know what you are after, and I think you are right, and I think he will say so when he finds out what it is. You load an engine with a thousand tons and send it over the road at 15 miles an hour; you take the same engine with a thousand tons and run it over the road at 30 miles an hour, is that your point?

Mr. Carter: Yes.

Mr. Lee: Which trip burns the most coal?

Mr. Hatch: Which trip, or on an hour basis, or over the road.

Mr. Lee: Which trip?

Mr. Hatch: With the same tonnage, and half the time.

Mr. Lee: Yes.

Mr. Hatch: I do not know.

Mr. Lee: But they will burn more coal per hour on the fast train.

Mr. Hatch: They burn more coal per hour.

Mr. Lee: I do not know either.

Mr. Carter: I want to thank you, Mr. Hatch, for the frankness with which you answered my questions, all of them—not the last one—but all of them because you have not tried to sidestep any.

The Chairman: I know in steamer travel that it costs more to run a steamer across the ocean in four days than it does in six days.

Mr. Carter: The same applies to trains.

The Chairman: They tell me that in steamer travel, I know.

Mr. Hatch: I do not know anything about that.

Mr. Phillips: You are not a sailor?

Mr. Hatch: I am not, sir.

The Chairman: You are not a sailor?

Mr. Hatch: No.

Mr. Lee: That is on account of having a very much more powerful machine to do it with, sir.

Mr. Atterbury: Have you ever run a dynamo on a car?

Mr. Hatch: Yes, sir.

Mr. Atterbury: On exactly the same train, on exactly the same grade, which has the greater drawbar pull; a train running 60 miles an hour, or 30 miles an hour?

Mr. Hatch: On the same grade, the train with 60 miles an hour.

Mr. Carter: Sure.

The Chairman: You say you were never an engineer?

Mr. Hatch: No, sir.

The Chairman: How is it you never qualified as an expert?

Mr. Hatch: Why, I have done a good deal of firing; I was a special apprentice on the Southern Pacific, that is what it amounted to, and I worked on the Boston & Maine. I say, that five years kept me on the road a great deal out among the engine-

men. I fired a good deal, I never was tried as a fireman, but I made a considerable study of it.

The Chairman: Are you a graduate of an engineering school?

Mr. Hatch: I am sorry to say I am not a graduate.

Mr. Phillips: I want this for my own information; I want to know how hard these firemen have to work on the Lackawanna. I understood you to say that you have recently, I believe you said within a few days, had some coal shovels, or shovels full of coal counted on some certain train.

Mr. Hatch: I mentioned one test that was made yesterday.

Mr. Phillips: I thought you said yesterday, would you give me those figures; what was the mileage?

Mr. Hatch: 138; I have it here, it is a mile or two out.

Mr. Phillips: I suppose so.

Mr. Hatch: 395 scoops.

Mr. Phillips: 395 scoops of coal, what would those scoops weigh?

Mr. Hatch: That was 8 coal, it would probably weigh in the vicinity of twenty pounds.

Mr. Phillips: Well, then, they run that 138 miles on three ton of coal?

Mr. Hatch: It is practically four; that is what it showed up yesterday.

Mr. Phillips: That is all. I was just asking for my own information.

ARTHUR E. STAUB, called as a witness, being duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: Mr. Staub, what is your position?

Mr. Staub: Statistician of the Delaware, Lackawanna & Western Railroad.

Mr. Lee: How long have you held that position?

Mr. Staub: Since 1907.

Mr. Lee: Were you present at the hearing before this Board on Wednesday of last week?

Mr. Staub: Yes. The only session I attended was on Wednesday morning.

Mr. Lee: Did you hear the testimony of the witnesses from the Lackawanna Railroad?

Mr. Staub: Yes, firemen Davis and Hubler?

Mr. Lee: As I remember it Mr. Hubler testified, or admitted, or gave the impression that when these 385 class engines had two firemen put on, they cut down the time two hours.

Mr. Staub: Yes, he said the running time was cut down an average of two hours.

Mr. Lee: That was my understanding, that from the time books of the men he was able to get that.

Mr. Staub: He said according to his own investigation, by examining a good many of the time books of the men and hearing their statements?

Mr. Lee: That was his testimony?

Mr. Staub: That was his testimony.

Mr. Lee: That was the impression that was created on me, that it had been cut down about two hours. As I remember the Board requested some information on that subject, and that we told the Board we would present it. That is what this witness is here for.

The Chairman: Yes.

Mr. Lee: Mr. Staub, please tell the Board how you got at this information, what you did in compiling it, and what your information consisted of, as far as the comparison of time is concerned?

Mr. Staub: I went to Buffalo and took the two months which were nearest comparable as far as the one and two firemen propositions were concerned, and I took two full months and by using the engineers' time slips and checking them against the train sheet I worked them out and abstracted them, and after they were abstracted they were checked again. Then the average time was figured out, and the times between the two months compared. For that comparison we took the months of October and November 1911, inasmuch as these engines were first placed on the Buffalo Division in the beginning of September but were not given full tonnage until the month of October.

The second fireman was put on on November 1. Considering the two months, considering that the traffic conditions,

weather conditions and all other conditions were as nearly alike as they possibly could be, we assume that the comparison is absolutely correct and fair to both sides.

Mr. Lee: Tell us what you found?

Mr. Staub: I took the month of October, for the 385 class engine that makes the run between Elmira and East Buffalo in slow freight service, and we found that during the month of October we had 363 trains. The average fireman's duty for those 363 engine crews amounted to 13 hours 25 minutes. That includes 30 minutes preparatory time before the engine leaves the engine house, and it includes the time up to the minute when they are placed on the ash pit at the destination terminal.

Mr. Atterbury: 363 trains?

Mr. Staub: Yes.

Mr. Atterbury: That is 363 trips?

Mr. Staub: Yes.

Mr. Atterbury: How much overtime?

Mr. Staub: It is not a question of overtime. That run is 141 miles. The average time on duty for these men was 13 hours and 25 minutes, and the average total time on the road was 11 hours during the month of October.

Mr. Lee: That was the time on the road?

Mr. Staub: Yes, excluding the initial and terminal time.

Mr. Lee: The time on duty was 13 hours and 25 minutes?

Mr. Staub: 13 hours and 25 minutes including 30 minutes preparatory time at the engine house.

Mr. Atterbury: Does that mean from 30 minutes before leaving time up to the time that he put his engine on the ash pit?

Mr. Staub: It means 30 minutes before he left the engine house, when he got the engine ready, and it went up to the time that the engine was placed on the ash pit at the destination terminal.

Mr. Atterbury: That is what it was computed on?

Mr. Staub: Yes, sir; that is what it was computed on.

Mr. Atterbury: And that is a 140 mile run?

Mr. Staub: Yes, sir, a 141 mile run.

Mr. Atterbury: For these 363 trips have you given the total overtime?

Mr. Staub: No, sir, we have not given the total overtime. We have the time consumed in the making of the run.

Mr. Atterbury: Because if the fireman was on a mileage basis he would have 14 hours and something in which to make it.

Mr. Staub: Yes. The majority of them did not make overtime. Some of them did.

Mr. Atterbury: That is perfectly apparent, because the average time was 13 hours and 25 minutes?

Mr. Staub: The average time was 13 hours and 25 minutes.

Mr. Atterbury: So it is perfectly clear that there were a great many more who made it in less than 14 hours than there were who made it in over that time, but I wanted to know what the total was?

Mr. Staub: We can easily compute it, because we have got all the figures showing the total time on duty for each trip. Anything above 14 hours and 6 minutes would be overtime. Do you want me to go ahead?

Mr. Lee: Yes, go ahead.

Mr. Staub: During the month of November—

Mr. Lee: When were the two firemen put on?

Mr. Staub: On the first of November. During the month of November we had 410 trains or trips, and the average time on duty for these men was 13 hours and 8 minutes, a difference of 7 minutes between October and November.

Mr. Lee: 17 minutes?

Mr. Staub: 17 minutes, the difference between 13 hours and 8 minutes and 13 hours and 25 minutes. The average time on the road was 11 hours and 28 minutes, or a difference of 14 minutes, comparing it with October.

Mr. Lee: Was the tonnage substantially the same?

Mr. Staub: The tonnage was somewhat lighter in November. The engines were not doing as well as they should, and the tonnage was reduced. It was not a case of weather conditions, but it was a case of performance.

Mr. Lee: We put this witness on to show that there was a material reduction in the time that these engines ran, after the two firemen were put on.

The Chairman: Does this table show how much more it cost the road?

Mr. Lee: It cost twice as much for firemen, did it not?

Mr. Staub: We reduced our wage to what we call a standard rate of $2.90 when they had two firemen, but with one fireman the wage was $3.20; so it is the difference between $5.80 and $3.20, which is $2.60 per hundred miles.

Mr. Lee: Not per trip, but 100 miles?

Mr. Staub: Per 100 miles. You have got to figure this on a 141 mile basis.

Mr. Atterbury: When were these 363 trips run?

Mr. Staub: During the month of October.

Mr. Atterbury: And when were the 410 trips?

Mr. Staub: During the month of November.

Mr. Atterbury: The succeeding month?

Mr. Staub: Yes.

Mr. Atterbury: Are you competent to explain why they reduced the tonnage in November?

Mr. Staub: I would not be competent to say as to every single case. We would have to look at every single case to find out why the tonnage was reduced on a certain date. There was a 10% reduction on these trains, which brought the average per engine down, as shown by the tonnage statement. That is just a matter of record. That is compiled by the Superintendent of Car Service, showing that there was a reduction in tonnage, notwithstanding the fact that we had more 385 class engines on the Buffalo Division during the month of November. We had a total of 63 Consolidation engines on the Buffalo Division there, each month, October and November. We had 15 of these 385 class, that is these heavy engines, and the rest were our standard Consolidation, or 700 class engines, which have a drawbar pull averaging 37,000 pounds. Now of these 15 engines there were 11 in the service actually on the Buffalo Division on the 1st of October. Four were put in service between October 2 and 8, and that explained why there were more trips made by these engines during November than during October.

Mr. Lee: You may cross-examine.

CROSS EXAMINATION:

Mr. Carter: Do you say there is no difference in the climatic conditions between October and November?

Mr. Staub: As a usual proposition there is not. There was not that year anyway. The winter did not get severe at

Buffalo until after New Year's. During October and November there was very little difference so far as weather and traffic conditions were concerned in that territory.

Mr. Carter: Is this from your memory?

Mr. Staub: From my observation. I worked on the Buffalo Division for fifteen years.

Mr. Carter: You remember then how the wind blew in Oc- and November of that year?

Mr. Staub: The wind always blows pretty stiff up there, that is at intervals. It is a windy proposition all the way through there. Even in summer you may have wind there.

Mr. Carter: Do you remember the difference in temperature between October and November?

Mr. Staub: There was no difference in temperature that would affect the operation of the railroad to any extent.

Mr. Carter: Do you remember how cold it got in November after that October?

Mr. Staub: No, sir, I do not remember it. I would have to get the weather statistics in order to make sure of that.

Mr. Carter: If the records of the Weather Bureau show that it was a good deal windier in November than in October, that would affect this tonnage would it not?

Mr. Staub: Not to any appreciable extent, no, sir.

Mr. Carter: You do not think a windy day makes it harder work to get a train over the road?

Mr. Staub: There is no question about that.

Mr. Carter: If you should have some cold weather in November, do you think it would have any effect?

Mr. Staub: Not unless it gets very low, down to zero, it would not.

Mr. Carter: Have you made any records of tonnage of the trains? Have you any records showing what was the average tonnage of trains in October and the average tonnage of trains in November?

Mr. Atterbury: The impression I got, Mr. Carter, was that the tonnage was reduced in November, and that was his statement, but my first impression was that it was on these particular trains that he was talking about. I rather judge now, from the last things he said, that it was the average tonnage for the division that was reduced.

Mr. Staub: That is what I refer to. The average tonnage for the division was reduced.

Mr. Atterbury: And not as applied to these particular trains?

Mr. Staub: Not on these particular engines.

Mr. Carter: My understanding of the situation is that during the month of October they gradually increased the tonnage right along. The tonnage of trains in the first part of October was not so big as in the last part of October and was not so great as in November; and at the time when this matter was discussed, when the two firemen were put on, it was with the distinct understanding that this tonnage was increasing.

Mr. Atterbury: The illuminating information would be in connection with the tonnage of these trains in regard to which he is giving the statistics.

Mr. Carter: The point is this: I can well understand that the firemen, or the putting on of two firemen would not be able to reduce the time if the tonnage were increased?

Mr. Atterbury: Yes.

Mr. Lee: The purpose of calling this witness was particularly to show that the time had not been materially reduced.

Mr. Atterbury: Have you any information that would indicate the tonnage of these trains?

Mr. Lee: These particular trains? Have you, Mr. Staub?

Mr. Staub: We have not, but we can tell you that the tonnage in October was the same as during November on these engines, that is the rated tonnage.

Mr. Carter: You mean the rating?

Mr. Staub: Yes, the rating was the same for October and November. There was no change made in the rating by reason of putting on the second fireman.

Mr. Atterbury: Was the loading carried out in November the same as in October?

Mr. Staub: It was, except that occasionally we had to reduce 10% on account of some of these engines not performing as well as they should.

The Chairman: What was the second fireman put on for, if there was not an increase of tonnage?

Mr. Staub: The second fireman was put on there at the request of the men, who claimed these engines were too hard to fire

on that division. You understand there is a good deal of level running ground up there, and they maintain considerable high speed on that division. Now the large cylinder and small wheels of these engines, and the load of trains made them somewhat harder to fire than the Consolidation engines at that time.

Mr. Carter: How many trains did you get over the road in October?

Mr. Staub: 363.

Mr. Carter: And how many in November?

Mr. Staub: 410.

Mr. Carter: Does that indicate that they were handling more traffic?

Mr. Staub: No, that indicated that on account of putting four engines of this class, these large engines, in service between October 2 and October 8 we did not have the full 15 engines available during the whole month of October, while we did during the month of November.

Mr. Lee: The only contention as to these 385 class engines that we are talking about here has been explained heretofore, that on account of the low wheel and large cylinder it is claimed the work was harder.

The Chairman: Do you want to make exhibits of these tables which Mr. Staub has referred to?

Mr. Lee: I do not think the matter is really important enough. I think the record is sufficient, unless Mr. Carter or the Board desire them. You may have them to look them over.

The Chairman: We will now adjourn until Monday morning at 9 o'clock.

(Whereupon at 1:10 o'clock p. m. the hearing was adjourned until Monday, March 24, 1913, at 9 o'clock a. m.)

PROCEEDINGS.

ARBITRATION

between the

EASTERN RAILROADS

and

THE BROTHERHOOD OF LOCOMOTIVE FIREMEN AND ENGINEMEN

Submitted to Arbitration, under the Erdman Act,
By Agreement Dated Feb. 18, 1913

AT WALDORF ASTORIA HOTEL
New York

March 24, 1913.

HULSE & ALLEN, Official Reporters,
115 Broadway,
New York.

New York, March 24th, 1913.

Met pursuant to adjournment at 9.12 A. M.

Present—Parties as before.

Mr. Carter: Mr. Chairman, I should like to read a telegram to the Commission. It bears date Delphos, Ohio, March 21, 1913, is addressed to me, and is signed by J. Nomina, General Chairman of our Committee on the Toledo, St. Louis & Western Railway, and reads as follows:

"I have been informed by our superintendent that the present management claim that they had not authorized the conference committee of managers to represent the T. St. L. & W. Ry., and now claim they will handle working conditions and rate of pay directly between them and their employees. As this is not our understanding, please advise immediately."

I take this opportunity to make formal protest again, against the withdrawal of the Toledo, St. Louis & Western Railway from this arbitration proceeding.

The Chairman: Mr. Lee, I think that makes it necessary for you to put on record a statement as to the status of these railroad negotiations with reference to the Toledo, St. Louis & Western.

Mr. Lee: At the time the arbitration agreement was signed, sir, it was the understanding of the conference committee of managers that they represented the Toledo, St. Louis & Western. The claim has been made that they did not have formal authority. We feel that our records are very clear on the matter, and I regret exceedingly, of course, that this should have arisen. I also regret that the matter has not been definitely settled; that is, we have not gone as far as we think we can go before saying to this Board that we can go no further with the Toledo, St. Louis & Western. When we come to the point where we feel we have gone as far as we can go by ourselves, in getting them to come into this movement, we will so advise the Board.

The Chairman: Do you mean, gone as far as you can go, in getting them to come into this arbitration?

Mr. Lee: To fulfill the obligations that the conference committee have made for them.

The Chairman: To come in, or to stay in.

Mr. Lee: To stay in.

The Chairman: We will attend to their staying in if they have ever been in.

Mr. Lee: It was our understanding that we represented them when we signed the arbitration agreement, and we feel that our records are very clear on the matter; but we have not gone with them as far as we desire to go ourselves before finally laying the matter before this Board.

The Chairman: This Board is willing to leave it in that condition for the present.

I. A. SEIDERS was called as a witness, and having been duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your occupation, Mr. Seiders?

Mr. Seiders: Road foreman of engines on the Reading and W. & C. Division of the Philadelphia & Reading Railway.

Mr. Lee: How long have you been in that position?

Mr. Seiders: Six years.

Mr. Lee: What were you before you were promoted to be road foreman of engines?

Mr. Seiders: Locomotive engineer since 1890.

Mr. Lee: What were you before you were an engineer?

Mr. Seiders: Fireman.

Mr. Lee: What are your present duties?

Mr. Seiders: To look after the motive power, to see that it is kept in proper condition, and to instruct the enginemen and firemen in the discharge of their duties.

Mr. Lee: You indicate to the master mechanic, or proper officials, what repairs you consider necessary to engines.

Mr. Seiders: Yes.

Mr. Lee: Do you follow up the work of the firemen?

Mr. Seiders: I do.

Mr. Carter: Do you examine them for promotion to engineers?

Mr. Seiders: I do.

Mr. Lee: Are you frequently on the road?

Mr. Seiders: Yes, nearly all the time.

Mr. Lee: You are conversant with the requirements of the firemen?

Mr. Seiders: I am.

Mr. Lee: Do you know when a fireman is firing an engine properly?

Mr. Seiders: I do.

Mr. Lee: That is a part of your duties?

Mr. Seiders: Yes.

Mr. Lee: Are you responsible for fuel economy?

Mr. Seiders: Yes.

Mr. Lee: To see that the engines are properly fired?

Mr. Seiders: Yes.

Mr. Lee: You are familiar with the conditions of the firemen's work?

Mr. Seiders: I am.

Mr. Lee: You are familiar with the working schedules of the company?

Mr. Seiders: Yes, sir.

Mr. Lee: That is, the regulations for them in their work?

Mr. Seiders: Yes, sir.

Mr. Lee: Are you familiar with the rates of pay?

Mr. Seiders: Yes, sir.

Mr. Lee: You have nothing to do with the rates of pay?

Mr. Seiders: No, sir.

Mr. Lee: How is that handled on your road?

Mr. Seiders: That is handled through the trainmaster and timekeeper.

Mr. Lee: Mr. Seiders, what type of engine in slow freight service did you have in 1902?

Mr. Seiders: We had bituminous coal burning engines known as the I-7 or 900 or 1,000's.

Mr. Lee: What did those weigh on drivers?

Mr. Seiders: 145 thousand pounds.

Mr. Lee: 145,000 pounds on the drivers?

Mr. Seiders: Yes, sir.

Mr. Lee: Are those engines working in slow freight service to-day?

Mr. Seiders: Yes, sir, they are.

Mr. Lee: Coal service?

Mr. Seiders: Yes, sir.

Mr. Lee: Long road service?

Mr. Seiders: Long road service; coal freight.

Mr. Lee: Have you in charge other engines than those to-day?

Mr. Seiders: We have.

Mr. Lee: What class are those?

Mr. Seiders: Known as the I-8 engine, or the 1500 or 1600 engines.

Mr. Lee: How much do those weigh on the drivers?

Mr. Seiders: The first lot weighed 205,000 pounds on the drivers; the second lot weighed 215,000 pounds on drivers.

Mr. Lee: Are those engines weighing 145,000 pounds on the drivers working right alongside of engines weighing 205,000 pounds on the drivers, in the same class of service?

Mr. Seiders: Yes, sir.

Mr. Lee: In your judgment is it harder to fire the engine weighing 145,000 pounds on the drivers to-day than it is to fire the engine weighing 205,000 pounds on the drivers?

Mr. Seiders: No, sir; it is not.

Mr. Lee: Not harder to fire the lighter engine?

Mr. Seiders: The heavier engine.

Mr. Lee: It is harder to fire the heavier engine?

Mr. Seiders: Harder to fire the lighter engine.

Mr. Lee: Yes, sir; that is what I thought. Why is that? Please explain that. I just want to say to the Board that this is a peculiar condition that we just want to bring out, showing the weight on the drivers.

Mr. Seiders: The I-7 engine, bituminous coal burning engine weighing 145,000 pounds on the drivers, having a cylinder of 21 by 28, with a grate area of 33 square feet, and the second lot having a grate area of 47 square feet are very much harder to fire than the I-8 engine that is heavier on the drivers, for this reason: The I-7 engines from time to time, through tests made, the tonnage was increased and in each increase of tonnage there is an additional extra service required to keep those engines hot on account of the small grate surface. On the new I-8 engine, known as the 1500 or 1600 engine, the first lot built in 1905, they are anthracite burning engines, with a wide firebox, and

they are very much easier to fire than the I-7 or soft coal burning engine. You need not continually feed this firebox, but you can prepare the fire, and run some distance before you need to put any more coal in that firebox. On the soft coal engine you have got to continually feed while the engine is pulling, and not so with the other engine.

Mr. Lee: The reason then, why this large engine is so much easier to fire than the small engine, is because it burns hard coal while the small engine burns soft coal.

Mr. Seiders: That is true.

Mr. Lee: And is much easier to fire on that account?

Mr. Seiders: Yes, sir; and the more modern construction.

Mr. Lee: This large engine weighs 205,000 pounds on the drivers?

Mr. Seiders: 205,000 pounds. The last lot, similar construction, fireboxes alike, weighing 215,000.

Mr. Lee: And in accordance with this request of the firemen would require two firemen on the through service?

Mr. Seiders: On the larger engine, yes, sir.

Mr. Lee: While this engine weighing 145,000 pounds on the drivers, makes harder work for the firemen, it would only require one man?

Mr. Seiders: Yes, sir.

Mr. Atterbury: What is the size of the cylinder on the 1500 and 1600 class?

Mr. Seider: The size of the 1500 class is 22½ by 30.

Mr. Atterbury: What about the 1600?

Mr. Seiders: The 1600's run 23 by 30.

Mr. Atterbury: And what is the boiler pressure of the I-7?

Mr. Seiders: The I-7 is 200 pounds.

Mr. Atterbury: And the 1500 and 1600 is 205 pounds?

Mr. Seiders: 205 pounds, yes, sir.

Mr. Lee: Do your men as a rule prefer the heavier, or I-8 engine, to the I-7, the soft coal burning engine?

Mr. Seiders: Yes, sir.

Mr. Lee: How do you know that?

Mr. Seiders: When they are called to the engine house for the engines, if there is an I-8 engine there, they make frequent calls for that class of engine and even call me by telephone, or my office, and make requests for the 1500. As a rule, the first engine

in is supposed to go out with the first crew out, so that we do not have the complaint between the men for the better engine.

Mr. Lee: What was the date of your last regulations issued covering the work of firemen, Mr. Seiders?

Mr. Seiders: In June, 1910; revised some in February, 1912.

Mr. Lee: That was also the first one that was made with the firemen?

Mr. Seiders: Yes, sir.

Mr. Lee: Previous to that agreement, were firemen required to do more cleaning than they are to-day?

Mr. Seiders: Yes, sir.

Mr. Lee: What cleaning?

Mr. Seiders: In regular assigned service, and in switching service, they were compelled to clean their engines entirely above the footboard, also to clean their own headlights.

Mr. Lee: This is previous to 1910 I am talking about?

Mr. Seiders: Previous to 1910.

Mr. Lee: Did they clean below the footboard?

Mr. Seiders: Yes; back as far as 1902, I was in the extra passenger service, and was held on switching service, to be called in a moment, and I had to clean my own wheels; the fireman took one side and I took the other.

Mr. Lee: How about fires? Were they required to clean their own fires?

Mr. Seiders: Yes, sir.

Mr. Lee: That is in switching service?

Mr. Seiders: In switching service.

Mr. Lee: Were the men in through service required to do any more cleaning?

Mr. Seiders: Above the footboard entirely.

Mr. Lee: On assigned engines?

Mr. Seiders: On assigned engines, yes, sir.

Mr. Lee: Now, there has been a change in your schedule since July, 1910. What was the change in your cleaning schedule?

Mr. Seiders: That was revised in February, 1912.

Mr. Lee: Do the firemen on the switch engines have to clean fires at the present time?

Mr. Seiders: No, sir; they do not.

Mr. Lee: But they did previous to 1910?

Mr. Seiders: Yes, sir.

Mr. Lee: Do they have to do less cleaning than they did?

Mr. Seiders: The rule, as applied in February, reads like this: "Firemen will be required to keep the cab clean on all engines, on assigned engines; they will also keep the engines clean above the footboard or running board, other parts to be cleaned at engine house. Assigned engines will be cleaned before turned out for service by motive power department." The rule as applied would mean this: That the engines passing over the cleaning pit would become dirty and will be cleaned then before turned over to the crew by the motive power department. In this particular case it would lessen the work of the fireman for this reason, that the engine would be clean, but they would be expected to keep it in clean condition during its day's service.

Mr. Lee: Mr. Seiders, I will read you one of these requests in regard to local freight: "Firemen on all freight runs that load or unload freight, and firemen on all freight runs that set out or pick up cars or do switching at four or more points between their initial and final terminals will be considered as in local freight, way freight, pick-up or set-out service, and will be paid 25 cents per day in addition to through freight rates specified herein, according to weight on drivers of engine used."

How would that affect trains on your road?

Mr. Seiders: With about two or three exceptions that would give us an entire local freight service over the entire system.

Mr. Lee: Why is that?

Mr. Seiders: In our coal service we have at times had some trains set out more than three or four shop cars at different terminals or sidings on account of hot journals, or brake beams down, or some other cause; and in our mining service engines taking the cars to the mine and working in at the several colleries getting the coal out, if I interpret the rule aright, it would throw these crews into local service. And our fast freight service also; we have some fast freights that run from one terminal to the other without any pick-up, while we have other fast freights that generate at one terminal and interchange at different points along the division to other divisions, setting out and picking out fast freight for a New York Central terminal or the terminus of the division.

Mr. Lee: You would understand from this rule, the way it is written, then, that if a train stopped to set out a hot box or

on account of the lack of a brake shoe or anything of that sort, any small defect in the car that required the car to be set out, that could not be foreseen, that would be counted as one of the stops?

Mr. Seiders: As I interpret the rule, I would think so.

Mr. Lee: As it is written?

Mr. Seiders: Yes, sir.

Mr. Lee: In your opinion can the occurrence of a heated journal resulting in a hot box be foreseen at all times?

Mr. Seiders: No, sir. My reason for that is this: We have classification yards and we have quite a number of inspectors, and it must be admitted that cars leaving any classification yard, after having been closely inspected, you have no promise of its reaching its terminal without a heated journal, for this reason: There may have been a new wheel applied which will cause a car to run hot; a new brass on another car on account of a wornout brass, through inspection; we have had occasions where brasses have broken and caused the car to run hot. We have had other cases where journal boxes have had a defect and through jar en route have opened up or broken and some foreign substance has got into the journal and run it hot.

Mr. Lee: These defects cannot always be foreseen, then?

Mr. Seiders: No, sir; not those that I speak of.

Mr. Lee: And if four of these defects develop on a through train that was not scheduled to stop any place, making it necessary to set those four cars off at different points that train would be called a local freight?

Mr. Seiders: As I interpret the rule, yes, sir.

Mr. Lee: In your coal through freight service, Mr. Seiders —that is your through freight service, is it not?

Mr. Seiders: Yes, sir.

Mr. Lee: Do your firemen make as much mileage in the month as the engineers?

Mr. Seiders: Yes, sir; our enginemen have their regularly assigned firemen, and if they care to they make the same amount of mileage as the enginemen.

Mr. Lee: Do you find as a rule that the enginemen lay off more than the firemen or firemen more than the enginemen?

Mr. Seiders: As a rule they do.

Mr. Lee: Why is that?

Mr. Seiders: We have had more sickness among our enginemen than we did have among our firemen, and I really have not gone into the conditions entirely to know as to why that occurred; but we do have more of our enginemen lay off than our firemen.

Mr. Lee: Your firemen are a husky lot of boys, aren't they?

Mr. Seiders: Yes, sir; we have a lot of firemen known as the Pennsylvania Dutch boys, and they are quite a prosperous set of young fellows.

Mr. Lee: They are a pretty good lot of men, are they not?

Mr. Seiders: Very enterprising.

Mr. Lee: What?

Mr. Seiders: Yes, sir.

Mr. Lee: That is what I thought, that you had a good bunch?

Mr. Seiders: Yes, sir; we have quite an enterprising set of men, and quite a number of them own their own homes.

Mr. Lee: The firemen?

Mr. Seiders: The firemen.

Mr. Lee: You may cross-examine.

CROSS EXAMINATION:

Mr. Carter: I understood you to say, Mr. Seiders, that on these soft coal engines the tonnage had been increased?

Mr. Seiders: Yes, sir.

Mr. Carter: On the same engine?

Mr. Seiders: On the same engine, yes, sir.

Mr. Carter: Now it is a good deal harder to fire those than the larger engines?

Mr. Seiders: Yes, sir.

Mr. Carter: Do you attribute the increased labor to the heavier tonnage now carried?

Mr. Seiders: Mr. Carter, I attribute the entire cause for this as due to the small grate surface, increased tonnage and increased surface in keeping the engine hot.

Mr. Carter: Then it is harder to fire the same engine today than formerly?

Mr. Seiders: Of that class of engine, yes, sir.

Mr. Carter: I believe you make your comparison between anthracite and bituminous coal, do you not, Mr. Seiders?

Mr. Seiders: Yes, sir.

Mr. Carter: Have you made any observations on other roads?

Mr. Seiders: No, sir, I have not.

Mr. Carter: You do not then know it to be a fact that on two different roads, because of the difference in the quality of bituminous coal, both roads burning bituminous coal, that it is probably harder to fire on one road than on the other?

Mr. Seiders: I could not really answer that question. I have never lined up on any other road but my own.

Mr. Carter: On your railroad would your judgment lead you to believe, that on the same engine a higher grade of bituminous coal would make it easier on the fireman than a low grade of bituminous coal?

Mr. Seiders: True.

Mr. Carter: The fact of the matter is they are varying conditions?

Mr. Seiders: Conditions vary very much.

Mr. Carter: You spoke about those switch engine firemen; what rate do you pay your switch engine firemen?

Mr. Seiders: I am not familiar with the rates, Mr. Carter, that is entirely out of my line of employment.

Mr. Lee: The witness so stated on his direct examination.

Mr. Carter: It is very inconvenient that we did not have a witness from the Philadelphia & Reading who was familiar with the rates paid.

Mr. Lee: We will put one on for you, if you want him?

Mr. Carter: I think we can prove by the schedule that the Philadelphia & Reading is now paying as much and more money for switching service than we are asking. We do not have to have a witness. We have the schedule. The point I wanted to bring out is that the Philadelphia & Reading has seen fit to pay their switch engine firemen, regardless of these changes to which you have referred, more money than we are asking.

Mr. Lee: Do you know the reason for it?

Mr. Carter: I imagine the fireman asked for it and the officials believed they should have it. There has never been a strike vote or anything of that kind. I imagine the officials would not give the company's money away unless there was some reason for it (addressing the witness). You don't know what rate is now paid to the switch engine men?

Mr. Seiders: No, sir; I do not.

Mr. Carter: I had a good many questions here on rates, but he does not know anything about the rates. You spoke about the engines being turned out cleaned by the motive power department. When you turn out a new baggage car, you clean it up, do you not?

Mr. Seiders: Yes, sir.

Mr. Carter: Do you expect the baggageman to keep it clean?

Mr. Seiders: No, sir.

Mr. Carter: When you turn out a new coach you have it clean, do you not?

Mr. Seiders: Yes, sir.

Mr. Carter: Do you require the passenger conductor or flagman to come down and clean it up?

Mr. Seiders: No, sir. May I answer the question—give an answer to that, Mr. Carter?

Mr. Carter: Sure.

Mr. Seiders: When we turn out a switch engine or any other assigned engine it must be remembered that that engine reaches its terminal each day and they are then cleaned again by the motive power department before being turned out.

Mr. Carter: But isn't it a fact that when these car cleaners are around swabbing and cleaning the sides of cars, there are conductors and trainmen in town at the same time?

Mr. Seiders: They have car cleaners for that purpose.

Mr. Carter: You spoke about the sickness of engineers causing them to lose time. Without asking you to express any medical opinion, is it not possible, in your opinion, that this disability of engineers is perhaps largely due to the excessively hard labor they performed while firemen?

Mr. Seiders: I would not think so. I did considerable of that myself, and I still feel physically able to go back and think if I did I would be able to

Mr. Carter: You would not know of course that most of the pensions paid by the United States Government to-day, are to soldiers who left the service in perfectly good health, but who now claim that because of the exposures and hardships suffered while they were in the service, that they have now become disabled and are therefore entitled to pensions. You would not

know anything about that. What I wanted to bring out is, that the average soldier to-day who receives a pension from the United States Government for physical disability, does not claim that he was disabled at the time he left the service, but that he has since become disabled because of the hardships while he was in the service, and I ask if you do not think possibly it was the hardships formerly suffered by the fireman while he was in the service, that now makes these engineers unable to keep their health?

Mr. Seiders: As a rule, or as I have observed on our own division, or on our own lines, I think we have got a class of husky fellows that you cannot get sick. A man that stands back of a plow nearly all of his time, can go behind a fire and handle a shovel.

Mr. Carter: It takes a pretty good fellow.

Mr. Seiders: Yes, sir.

Mr. Carter: Don't you think the advanced age of these engineers would probably make them not so able to work as younger firemen?

Mr. Seiders: It has been in my mind more amongst the men rather who are middle aged men, who report off and are away from service.

Mr. Carter: The older men have the passenger runs, the better runs, have they not?

Mr. Seiders: Not in all cases.

Mr. Carter: Do you not have seniority on your road?

Mr. Seiders: Yes, but a lot of them do not want the passenger engines, but prefer the freight service, local freight, as a rule.

Mr. Carter: Then passenger service has some objectionable features, as well as freight service?

Mr. Seiders: Not on our line; we have very good work.

Mr. Carter: Why should men prefer freight service to passenger service?

Mr. Seiders: In local freight service there is not as much responsibility, and there is not as much work as there is in connection with passenger service, and there are not as many miles to make?

Mr. Carter: And there is not as high steam?

Mr. Seiders: No.

Mr. Carter: And in the passenger service the signals come very rapidly?

Mr. Seiders: Yes.

Mr. Carter: And they are not under as high tension in the freight service as in the passenger service?

Mr. Seiders: No.

Mr. Carter: Gentlemen of the Commission, I have a letter that I would like to read now, but unfortunately everything is always at the other end of the road. I have sent to the hotel for this letter, and it ought to be here in 10 or 15 minutes, but I will not hold the witness any longer. I could ask him a lot of foolish questions in order to delay him.

Mr. Lee: Put him back on again, if you want to.

Mr. Carter: I will tell you why I want to read the letter. I make this statement for what it is worth, without knowing why Mr. Shea gave me this information. When I left here after signing the agreement to arbitrate, I had accumulated a vast amount of information by correspondence. It was all segregated by subjects. In fact, we had a big trunk full of it from every division terminal in this movement. We had replies from everywhere as to every condition. I said to Mr. Shea, "Now, Mr. Shea, it is up to you to get the witnesses from these roads."

When I came back I noticed that there was no witness from the Philadelphia & Reading. I asked Mr. Shea why he had not anybody here from the Philadelphia & Reading. He said our Chairman there would not answer his correspondence, and he never could get any satisfaction at all. Now, our Chairman may have been sick abed, I do not know, but I have a letter stating that the men on the P. & R. are protesting, that somebody was responsible from the employees' standpoint for our having no witnesses, either in the engineers' arbitration, or in this arbitration. The writer of this letter is anxious to come. I should like to read the letter, showing the conditions on the Philadelphia & Reading road. It is not evidence, but I want to read it, and ask Mr. Seiders if it agrees with his understanding of the subject. I cannot present it as evidence unless you accept this letter as evidence, like some of the information perhaps, that may have been received from their men. I will not hold this witness any longer. We have a man coming post haste with this letter, but I will not hold Mr. Seiders.

Mr. Lee: I do not see what bearing that has on the case. It may have some bearing.

The Chairman: You mean to read it and question this witness about it?

Mr. Carter: That is the only way we expect to use it, to ask him if these statements as to conditions are as he understands them.

Mr. Lee: We can put this witness back on again, if Mr. Carter desires to have it done.

Mr. Carter: Understand, gentlemen of the Commission, that if for some reason unknown to us we have been unable, and the engineers have been unable to get any witnesses from the Philadelphia & Reading, that is the only reason why we resort to this method. Letters have not been answered.

Mr. Lee: You could subpoena any witness you wanted.

Mr. Carter: I do not want to subpoena them.

Mr. Lee: I protest, sir. I know what Mr. Carter is driving at, and I protest against any such insinuation. If he wants a witness from the Philadelphia & Reading Road, let him subpoena him, if he cannot get him in any other way. He has that right before this Board.

The Chairman: Will not your Chairman come without a subpoena, Mr. Carter?

Mr. Carter: Mr. Shea wrote to all of our General Chairmen on all of these roads, and asked these Chairmen to furnish the names of men who were acquainted with the conditions. We have failed altogether to get any reply from the P. & R., as to any names or anything else. Therefore, we passed up the P. & R. road and gave it no further thought.

Now, day before yesterday we received a letter of protest from one of our men down there, protesting against the P. & R. men not being here in this arbitration, and not being here in the engineers' matter, and he recites conditions as he finds them. I cannot swear to them, and he does not swear to them.

The Chairman: Can he not come here?

Mr. Carter: I imagine he will come if I wire for him to come.

Mr. Lee: Bring him here, and let us hear what he has to say.

The Chairman: That is right.

Mr. Carter: Then I will have him come.

Mr. Lee: Do you want Mr. Seiders any more?

Mr. Carter: No; I will have this witness come.
The Chairman: Mr. Seiders will remain here?
Mr. Lee: Oh, yes, he will be here.

S. A. BICKFORD was called as a witness, and having been duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your occupation?

Mr. Bickford: Road Foreman of Electric Equipment, for the New York Central.

Mr. Lee: Do you have charge of the engineers and firemen and electric equipment on the electric division?

Mr. Bickford: Yes, the electric division, and the Grand Central Terminal.

Mr. Lee: Where does your territory extend?

Mr. Bickford: From the Grand Central Terminal to North White Plains and Croton.

Mr. Lee: What were you previous to holding your present position?

Mr. Bickford: I spent about a year and a half at Schenectady in developing the electric locomotive. Previous to that I was a locomotive engineer for about 17 years. Previous to that I was a locomotive fireman.

Mr. Lee: You are familiar with the types of electric cars used on your territory?

Mr. Bickford: Yes.

Mr. Lee: Explain to us briefly the duties of a fireman on an electric locomotive.

Mr. Bickford: His duties are to observe signals, ring the bell, and in a general way work under the instructions of the engineer.

On about 20 per cent. of our service, he is required in the winter months to look after the flash boiler for the heating of revenue trains.

Mr. Lee: You say he works under the instructions of the engineer?

Mr. Bickford: Yes.

Mr. Lee: Is the fireman responsible for the inspection of locomotives before going out?

Mr. Bickford: No, sir.

Mr. Lee: After arriving at the terminal?

Mr. Bickford: No, sir.

Mr. Lee: Does he assist the engineer in preparatory work before leaving on the run?

Mr. Bickford: As directed by the engineer. But that is a very small service. Coming south, for example, at High Bridge, where we hook onto our revenue trains coming in, the train is usually announced passing F. H. tower, about three miles before getting there. That is about five to seven minutes previous, about three miles north of High Bridge, about 5 to 7 minutes previous to the arrival of the train at High Bridge.

Mr. Lee: To what extent does the fireman assist the engineer in preparatory work?

Mr. Bickford: He sometimes places the switches. He closes the switches in the various circuits. Or the engineer may do that work. He may pull the cut-off lever that uncouples the engine from other engines on the tie-up track.

Mr. Lee: Is he personally responsible for any of this work?

Mr. Bickford: No, sir, not directly.

Mr. Lee: Does he have to draw any oil?

Mr. Bickford: No, sir.

Mr. Lee: Does he have to get any tools?

Mr. Bickford: No, sir.

Mr. Lee: How long a time before starting is the electric locomotive fireman supposed to report?

Mr. Bickford: Our rule requires that he shall report 30 minutes before leaving time.

Mr. Lee: And his time starts at that time?

Mr. Bickford: Yes, if he is on duty at that time.

Mr. Lee: How does the work of a fireman on an electric locomotive, compare with that of a fireman on a steam locomotive?

Mr. Bickford: He has practically no physical labor on an electric locomotive.

Mr. Lee: He calls signals and rings the bell?

Mr. Bickford: He observes signals and rings the bell, and that is about all. It requires no special skill and no physical labor.

Mr. Lee: You say he is not responsible for any switches in the engine?

Mr. Bickford: Not directly, no, sir.

Mr. Lee: Is he required to know the use of the various switches?

Mr. Bickford: He is.

Mr. Lee: All the electric switches?

Mr. Bickford: Yes.

Mr. Lee: Why?

Mr. Bickford: As a matter of safety to himself and to the equipment, we want him to be thoroughly familiar with all the apparatus on the locomotive.

Mr. Lee: Is he responsible for the proper working of any part of the machine?

Mr. Bickford: No, sir.

The Chairman: These switches you refer to are the switches inside of the locomotive?

Mr. Bickford: Yes, on the electric engine in every circuit there is a switch which opens or closes that particular circuit. In other words, you have a main motor circuit, and when you throw on that current it does the work of pulling the train. We have a main switch in that circuit, with which that can be opened or closed entirely. That is, if you throw off that switch, it throws out that circuit entirely. There are the lighting circuits and the heating circuits, and every electric circuit on the locomotive has a switch.

Mr. Lee: And the fireman works those?

Mr. Bickford: He is entirely familiar with them, yes, sir.

Mr. Lee: He is not responsible for the workings of any of those though, Mr. Bickford says.

Mr. Bickford: The direct responsibility is up to the engineer entirely. There is a measure of responsibility, of course, to the fireman if he should do some things that we have instructed him he should not do we would hold him responsible in a measure for the results that probably would follow.

Mr. Lee: That is, it might be called a negative responsibility?

Mr. Bickford: Exactly.

Mr. Lee: He has no positive responsibility of his own?

Mr. Bickford: No, sir.

Mr. Lee: What is your opinion as to the advantages of electric service over steam service?

The Chairman: You know, in electricity a negative is just as important as a positive.

Mr. Lee: It is, sir, I am speaking of another kind of a "positive."

Mr. Bickford: You mean from the fireman's standpoint?

Mr. Lee: Yes, from the fireman's standpoint pure and simple.

Mr. Bickford: I should say that there is less work.

Mr. Lee: Is it cleaner?

Mr. Bickford: It is cleaner; less hazard and altogether more desirable than the steam locomotive.

Mr. Lee: Is he responsible in any way for the power used?

Mr. Bickford: No, sir.

Mr. Lee: Is the steam engine fireman responsible for the power used?

Mr. Bickford: He is.

Mr. Lee: Is the steam engineer responsible for economy in the use of fuel?

Mr. Bickford: He is.

Mr. Lee: To a certain extent?

Mr. Bickford: Yes, sir.

Mr. Lee: Is the electric locomotive fireman?

Mr. Bickford: No, sir.

Mr. Lee: Does the electric fireman have any steam gauges to watch?

Mr. Bickford: No, sir.

Mr. Lee: Is there any gauge that he is supposed to watch that would be in the same class as the steam gauge?

Mr. Bickford: No, sir; except where we use the flash boilers in heating our revenue trains.

Mr. Lee: He is responsible then for the heating of the train?

Mr. Bickford: Yes. It is his duty to watch the performance of that boiler.

Mr. Lee: How much time does that require?

Mr. Bickford: It requires only a few minutes to start the boiler and after it is once started it requires little labor. They are oil fed boilers, understand. After the feed on the oil and

water is adjusted it requires very little labor. He simply sits on the box and keeps his eye on the water level in the boiler. That is about all he has to do.

Mr. Lee: He can do that from his own seat?

Mr. Bickford: He can do that from one end of the locomotive and still observe signals. From the other end of the locomotive he cannot do that very readily and still observe the signals.

Mr. Lee: Can a man qualify for a fireman on the electric locomotives as quickly as he can on steam?

Mr. Bickford: Quicker.

Mr. Lee: Why?

Mr. Bickford: That is, acquire proficiency.

Mr. Lee: Yes.

Mr. Bickford: It usually takes us about two days to qualify our firemen on our electric locomotives and it requires much longer time than that to make a man proficient in steam locomotive service.

Mr. Lee: Do you put new men on the electric locomotives?

Mr. Bickford: In one branch of our service, yes, sir; where we hire men. Our revenue train service, the men on the Hudson Division and Harlem Division hold rights over that territory and they are manned by men from those divisions, usually men who are among the senior men on their respective divisions.

Mr. Lee: Do you give the new man the same examination and instructions that you give a man who has come out of a steam service?

Mr. Bickford: We do.

Mr. Lee: Your service is interchangeable between electric and steam, except in the Grand Central Terminal?

Mr. Bickford: It is, and we have still a few steam engines in the Grand Central Terminal, men who hold rights there.

Mr. Lee: Do the the men in electric service reach home every night?

Mr. Bickford: Yes, sir.

Mr. Lee: What length of time are they on duty?

Mr. Bickford: That depends somewhat on the meaning of that term. In our shop and switching service they are on duty ten to eleven hours daily. In some of our revenue train service, for example that on the Harlem Division side, where we pay mileage, they make from 120 to 144 miles in from ten to twelve

hours, usually getting long swings in that time. They make about three round trips. On the Hudson Division side where the run is shorter, they work from approximately ten to twelve hours, making from 42 to 56 miles as an average, per day.

Mr. Lee: How does the amount of apparatus on the electric locomotive, Mr. Bickford, compare with that on the steam locomotive?

Mr. Bickford: Well, I should say that the electric locomotive is in one sense much simpler than the steam locomotive.

Mr. Lee: You have valves on the steam locomotive?

Mr. Bickford: Yes, sir.

Mr. Lee: Do you have them on the electric?

Mr. Bickford: No, we have no valves except as indicated with the flash boiler, there are a few small valves.

Mr. Lee: How does the risk on electric locomotives compare with that on steam?

Mr. Bickford: Much less.

Mr. Lee: What makes you think so?

Mr. Bickford: Well, we have statistics on that subject. We furnished some, I think, for the engineers' arbitration; and since that time I have looked up some statistics. For the year 1912, on what we term the electric division, we made 1,351,577 electric locomotive miles. We had five accidents. Two of those were minor, in which the men lost no time whatever. One man was hit by a post along the right of way, and lost nine days; one man received what we call a flash, that is simply an arc in the face that affects the eyes somewhat, and he lost one day; and another fireman in lifting a water cooler ran a sliver in his hand, and lost a day. Now in that same territory we made steam locomotive miles—let me say that that averages about 270,315 miles per accident,—on steam locomotives in this same territory we made 764,362 miles and had 28 accidents.

Mr. Lee: How many?

Mr. Bickford: Twenty-eight, most of them or all of them perhaps more serious than any we have had in electric service. That shows about 30,574 miles per accident in this same territory, or about 8.8 times as many as in electric locomotive practice.

Mr. Lee: Yes, Mr. Bickford, but in those five in electric service, how many were actually due to the class of service?

Mr. Bickford: There was one fireman who had his finger

slightly burned in closing a switch, one of these switches I referred to in the light service, no time lost. Another fireman who was closing the door in the front end of the locomotive, the record says, he had a flash and lost one day.

Mr. Lee: That was the flash?

Mr. Bickford: Yes.

Mr. Lee: Those two out of five would be the only ones then, that really could be attributable to the electric service?

Mr. Bickford: Yes.

Mr. Lee: That would not have happened if the man had been in the steam service?

Mr. Bickford: Yes, sir, that is correct.

Mr. Lee: Have there been many firemen seriously injured since the electric service went into effect?

Mr. Bickford: We have only had two firemen as I recall that were seriously burned that lost perhaps several weeks' time on account of their burns; they had their hands burned. One was due to a lamp that the fireman set down in one corner of the cab, and it formed a short circuit. I do not recall the circumstances connected with the other. Since we commenced the electric operation in 1907, in that time we have made 5,966,088 electric locomotive miles.

Mr. Lee: With two or three serious accidents, you say?

Mr. Bickford: With only two that were serious. I might state here that these records might be compared with the records submitted in the engineers' arbitration. We had a third one submitted there which was a total, but this includes this fireman I have just spoken of that had his finger burned on the switch and lost no time.

Mr. Lee: Have you any figures of the runs made by these electric locomotives during a day?

Mr. Bickford: Yes, sir, I have our entire schedule here for revenue service.

Mr. Lee: How about your Harlem Division, on those runs?

Mr. Bickford: Those are the only runs in which they make mileage. The other runs are short and the men are paid on an hourly basis.

Mr. Lee: You might give us those runs, if you will?

Mr. Bickford: We have a total of nine runs in the service, made up of each run covering between two or three round

trips, between Grand Central Terminal and North White Plains. I will give you the actual schedule figures on these trains. Run No. 1 requires 9 hours and 14 minutes and he is paid for 144 miles.

Mr. Lee: He makes 144 miles, does he?

Mr. Bickford: He makes 144 miles, yes, sir.

Run No. 2, 10 hours and 3 minutes, making 144 miles.

Run No. 3, 12 hours and 15 minutes, making 144 miles.

Run No. 4, 10 hours and 27 minutes, making 123 miles.

Run No. 5, 10 hours and 4 minutes, making 120 miles.

Run No. 6, 10 hours and 9 minutes, making 144 miles.

Run No. 7, 6 hours and 53 minutes, making 96 miles, for which he is paid for 100 miles.

Run No. 8, 12 hours and 18 minutes, making 144 miles.

Run No. 9, 9 hours and 41 minutes, making 132 miles.

Mr. Lee: These are the passenger runs on the Harlem Division?

Mr. Bickford: Yes, sir.

Mr. Lee: On your Hudson Division the men are in short run service, are they?

Mr. Bickford: Yes, sir; the scheduled time between the Terminal and High Bridge is approximately 20 minutes each way, and they make from three to four trips. I don't think any men are scheduled to make more than four round trips in that service, although occasionally a man is required to make more than four round trips, if we get extra service.

Mr. Lee: Which runs do you find the men prefer, the older men, particularly?

Mr. Bickford: They take the run that has the longest hours, in this Hudson Division service.

Mr. Lee: Why is that?

Mr. Bickford: More money, I guess.

Mr. Lee: That is the only reason you know of?

Mr. Bickford: That is all.

Mr. Lee: Is the work any easier on these longer runs?

Mr. Bickford: There practically isn't any work—it is a question of time. We require a little more of their time, that is about all. No difference in the work.

Mr. Lee: You are working under a temporary arrangement with your men in the electric service are you not?

Mr. Bickford: Yes, that is so far as the rates of pay are concerned.

Mr. Lee: And working conditions?

Mr. Bickford: And working conditions.

Mr. Lee: Do you know anything about that temporary arrangement?

Mr. Bickford: Only as it is a part of our present contract with firemen. It was made before the electric service was started and was a joint arrangement between the officials of the New Haven and the New York Central roads on one side and the firemen and engineers' brotherhoods on the other.

Mr. Lee: Why was it made temporary, so far as you can tell, from a reading of the record, Mr. Bickford?

Mr. Bickford: Their preamble says "That whereas there is some question between the companies and the firemen as to the advantage or otherwise of electric engines over steam engines, as an advantageous piece of machinery—", in other words it was an experiment and they were willing to apply the same rules and practices on the electric locomotives that they had on steam, until it was finally determined, at a conference I presume, for that is implied further on in this argument, that it was more advantageous to the men or the company, as the case might be, at which time other rules and regulations might be adopted.

Mr. Lee: You might just read that clause, if you will, Mr. Bickford?

Mr. Bickford: (Reading) "The firemen of the New York Central Company and the firemen of the New Haven Company will take position as helper on the electric engines of the respective companies at a rate of $2.10 per 100 miles, all other conditions of hours, service and allowances to be applied as per steam schedule of firemen which is in effect on the 30th day of October, 1906. Such arrangement to be continued for a period of not less than six months after the electric operation is in full effect; that is to say, when the electric operation has generally superceded the steam operation between the points mentioned. If there is any question as to the date of such commencement, the respective chairmen of the committees mentioned will agree with the general managers of the respective companies as to what date shall be considered as the date effective. All the foregoing with the un-

derstanding that at the end of six months, provided that it is shown by the companies that the opportunity to make mileage on an electric engine is more advantageous than the same number of hours with the steam locomotive, then and in that event, the firemen will grant to the companies such increase of mileage per day as may be in force on their respective systems, as is shown to be fair and equitable, not to exceed 120 miles for consecutive service for the day, as the schedule may appear on each system."

Mr. Lee: From your knowledge of the work required of firemen or helpers on electric locomotives Mr. Bickford, do you think they should get the same rate of pay as firemen on steam locomotives?

Mr. Bickford: I don't think that there is any good argument for such a rate.

Mr. Lee: You think he should be paid some wages?

Mr. Bickford: Yes. So far as the fireman is concerned on a railroad, there are perhaps two or three primary factors that should enter in in fixing his rate of pay. One is his time. Another is the actual physical labor required, and perhaps a third might be the skill required to perform the service. Now, as applied to electric locomotives, we really only require a man's time. Therefore, I can see no good argument to say that we ought to pay for electric locomotives, at least, anything above the minimum wage in any particular class of service for steam locomotives.

Mr. Lee: Why do you put him there then, Mr. Bickford?

Mr. Bickford: The fireman?

Mr. Lee: Yes.

Mr. Bickford: Oh, as a matter of precaution, I should say. On our electric locomotives I think it wise to have two men. It is not always necessary. It depends somewhat on the class of service. It is possible to build electric locomotives, the same as you build electric cars; you could put automatic devices on to stop your trains in case anything happened to the engineer, or the man who is running it. But in high class service, as we have, in revenue train service, I think perhaps it is well to have him there as a precautionary measure; a matter of safety.

Mr. Lee: But you require no actual work of him, or responsibility?

Mr. Bickford: No work.

Mr. Lee: Other than attending the flash boiler?

Mr. Bickford: That is a small percentage of our service at the present time. Perhaps when we are fully electrified we will use these boilers on approximately 50 per cent. of our service, during the winter months.

Mr. Lee: Mr. Bickford, when the electric locomotives are engaged in a service consisting of two or more trips, the time between trips, as we understand, need only be the time required for shifting or going from one end of the train to the other; whereas, on the steam locomotives, the time required between trips must be very much longer than in electric service, on account of getting water, preparing the engine, and so forth? Is that so, Mr. Bickford?

Mr. Bickford: Generally speaking, that is correct.

Mr. Lee: Then would it be fair, for this reason: At a time steam firemen are engaged at the engine house waiting for the locomotive or assisting in supplying same with fuel or water, to be used in road service with the electric locomotive?

Mr. Bickford: I did not just get all of that?

Mr. Lee: Will you read it, please, Mr. Stenographer.

(Question read.)

Mr. Bickford: If I catch your thought it is this: That if we could get miles out of the fireman in electric service for the time that he spends around the ash pit and getting a steam locomotive ready for service, we ought to get the miles. Yes, I will say that is a fair proposition.

Mr. Lee: Would you get as many trips out of your firemen on the Hudson or Harlem Divisions if you had steam locomotives instead of electric locomotives?

Mr. Bickford: Under the old arrangement, that is, under steam locomotive service, I think their hours of service are much longer. I am not, however, thoroughly familiar with that branch of service at that time; I wasn't in this territory.

Mr. Lee: Perhaps I should qualify my question. Could you get as many trips out of your fireman on the Hudson or Harlem Divisions, if you had steam locomotives instead of electric locomotives for the same number of hours?

Mr. Bickford: Hours' service of the fireman? No, he would have to give us more of his time.

Mr. Lee: That is, on the steam than on the electric?

Mr. Bickford: On the steam locomotive.

Mr. Lee: That is, you can get more miles out of a man upon an electric locomotive the same number of hours than you can upon a steam locomotive, in your service?

Mr.Bickford: We may and we may not. That is controlled somewhat by the schedules that you are running. However, for the same amount of labor on the part of the fireman we would get more miles.

Mr. Lee: The same amount of time, I mean?

Mr. Bickford: Yes, the same amount of time.

Mr. Lee: Would you consider that furnishing electric locomotives to the firemen, compared with steam service, means about the same as furnishing a man in a shop with improved machinery?

Mr. Bickford: Yes, sir, in one sense it might be so looked upon.

Mr. Lee: The improved machinery is delivering more miles for less labor output?

Mr. Bickford: Delivering more miles with less labor.

Mr. Lee: Do you have electric locomotives in switching service?

Mr. Bickford: Yes, sir.

Mr. Lee: Where are they located?

Mr. Bickford: Grand Central Terminal Yard and in part of the Mott Haven Yard.

Mr. Lee: What are the duties of firemen or helpers in electric locomotive switching service?

Mr. Bickford: To ride on the side of the locomotive designated as the fireman's side and observe signals.

Mr. Lee: Is it very hard work?

Mr. Bickford: No physical labor.

Mr. Lee: Has he any other duties than that?

Mr. Bickford: No. That covers, as far as switchmen are concerned, all they have to do.

Mr. Lee: Regardless of the size of the engine?

Mr. Bickford: Regardless of the size of engine or type of locomotive.

Mr. Lee: Do you have the electric locomotive in freight service?

Mr. Bickford: Occasionally; we do not have a regular freight service.

Mr. Lee: Is the work any harder on the electric locomotive in freight service than it is in passenger service?

Mr. Bickford: No, sir. It requires a little more of his time, that is all.

Mr. Lee: Does not differ any more?

Mr. Bickford: No difference so far as the service is concerned, except this; that he never has the flash boiler to look after in freight service or switching service, I might say.

Mr. Lee: The locomotive helper in freight service has less to do than the locomotive helper in passenger service?

Mr. Bickford: Yes, sir; than the helper in revenue service.

Mr. Lee: Mr. Bickford, you are more or less familiar with the working of the electric system on the Michigan Central between Detroit and Windsor?

Mr. Bickford: Yes, sir; that is part of the New York Central System, and I have been over that plant and have some knowledge of it.

Mr. Lee: What kind of men do they use as electric helpers out there?

Mr. Bickford: Mr. Jennings, the road foreman of engines there, tells me that the men they use—he says they have one man there who was formerly a steam locomotive engineer and gave it up on account of his nerves breaking down, who will be pensioned the 31st of this month, being 70 years of age.

Mr. Lee: He is working as a locomotive helper?

Mr. Bickford: A fireman, yes, sir, or helper. They have another man there who could not qualify as a steam fireman and they put him on an electric locomotive. He is forty years of age. They have a third man there who could not stand firing a steam switch engine on account of a broken ankle, and they put him on an electric locomotive. They have another man there who is too old to pass the mechanical examinations, being between 50 and 55 years of age, and they put him on the electric locomotive. They have several others. One man who was injured with a water scoop, one who was injured with a grate lever, and another man who was recovering from the effects of typhoid fever.

Mr. Lee: These are helpers on these electric locomotives?

Mr. Bickford: Yes, sir, in that service.

The Chairman: If they want any more men, they might go down to Washington, and get the defeated office seekers.

Mr. Lee: It is merely indicating that there is not a very great deal of very hard labor.

The Chairman: I thought you were going to prove, a while ago, that a man ought to buy a ticket to ride on one of these locomotives.

Mr. Lee: I believe, pretty nearly, that they ought to pay us money for it. You may cross-examine.

CROSS EXAMINATION:

Mr. Carter: Have you not an examination on equipment for electric locomotive firemen?

Mr. Bickford: What is that question?

Mr. Carter: Have you not an examination on equipment for these men before they take a position as electric locomotive fireman?

Mr. Bickford: Yes, sir.

Mr. Carter: For what purpose is that examination conducted?

Mr. Bickford: I think I stated it is to make a man more familiar, as a matter of safety to himself, and safety to the equipment.

Mr. Carter: Well, presuming he did not care a "tinker" for himself, and the company did not care either, is it not possible that this examination on equipment is conducted to show the man is qualified to do certain things in certain emergencies?

Mr. Bickford: Yes, sir; that is the purpose of any examination.

Mr. Carter: After he has entered the service, and after having passed an examination on electric equipment, is he required to pass examinations on signals, signal rules, and so forth?

Mr. Bickford: The same as a fireman in steam locomotive service.

Mr. Carter: Suppose he leaves the electric zone for thirty days, and goes into steam service, when he comes back, is he examined again to see if he has forgotten anything?

Mr. Bickford: I would not put it that way, Mr. Carter. He has to make what we call a signal review; in other words,

he goes to the examiner, and if any changes in the signaling service have been made, he is supposed to know that, or it is pointed out to him, before we allow him to go into service again.

Mr. Carter: Do you know anything of the duties of a fireman on an oil burning locomotive?

Mr. Bickford: No.

Mr. Carter: You read from a schedule a while ago that was a tentative agreement. What did you say the wages were?

Mr. Bickford: At that time it was to be $2.10—

Mr. Carter: For passenger?

Mr. Bickford: Per 100 miles. I do not think that that specifies whether it is passenger or freight. It says here at the rate of $2.10 per 100 miles.

Mr. Carter: What year was that?

Mr. Bickford: As effective the thirtieth day—do you mean this schedule, or when was this made?

Mr. Carter: Yes.

Mr. Bickford: November 13th, 1906.

Mr. Carter: I understood you to say that was a tentative agreement.

Mr. Bickford: I so understood it. It is a part of our agreement now.

Mr. Carter: But were there not subsequent negotiations, and the wages of these men were increased to $2.40 for passenger and $2.85 in freight service?

Mr. Bickford: Oh, yes, that is our agreement now. This did not fix the rate, understand. This article, only fixed the rate at that time. The rate has been changed, but so far as the operation of this agreement is concerned, I understand that that is still part of our contract.

Mr. Carter: Would it not appear on its face, that after having tried out this tentative agreement, the officials believed that these electric firemen were entitled to more money, and the tentative agreement became a permanent agreement?

Mr. Bickford: I would not say that, Mr. Carter, not so long as the firemen continued to hold this as part of their contract. You understand as well as I do—I do not know why the rates were changed and the high rates given. That is a matter of bargaining between committees and general superintendents, or the men who make the agreements.

Mr. Carter: Just for a hypothetical case, presuming that you entered into a tentative agreement with the owner of some property that, for the time being, you would pay him, we will say, $1,000 a year rental, with the understanding that the matter would be again taken up; and a year, or two or three years subsequently, under that same lease, it was taken up and you both agreed that you would pay him $1,500 a year rental; so far as your original tentative agreement is concerned, would not this subsequent agreement be conclusive if the conditions justified the increase in rental?

Mr. Bickford: That might or might not be true, Mr. Carter; but so long as the original contract was kept in that contract, that is, the later contract, it certainly was a part of the later agreement. You understand, that, so far as the New York Central is concerned, our electrification is not complete, and my interpretation of this agreement would be that this same question is open for debate and adjustment at this time, the same as it was at any time after November 13th, 1906, because I find it there.

Mr. Carter: Is it not a fact, Mr. Bickford, that practically every contract or agreement made between employees and the company, practically has a 30-day notice by which either side may cancel it?

Mr. Bickford: That is true.

Mr. Carter: Therefore, there never was an agreement of this kind made that was not subject to change with the proper notice by either side.

Mr. Bickford: No, sir; that is the real reason why we are here now, trying to arbitrate the wage adjustments.

Mr. Carter: And therefore, this peculiar stipulation in this original tentative agreement is in line with the stipulation in practically all agreements, whereby either the company or the employees can change that agreement with 30 days' notice?

Mr. Bickford: Well, I should say that applies to agreements between engineers and firemen and railroad companies, the same as any agreement; the question can be taken up at any time and an attempt made to change that agreement.

Mr. Carter: I understood you to say just now that you expected to extend this electric zone?

Mr. Bickford: Yes, we expect to extend the operation of

electric locomotives, you will understand. We are now operating electric trains over this entire territory, but on the Hudson Division side we only run our locomotives seven miles. We expect to run them about 32 miles in the final electrification.

Mr. Carter: That would be to Croton?

Mr. Bickford: To Harmon, two miles south of Croton.

Mr. Carter: Would you expect these same men who are now in the High Bridge works to go out the remainder of the distance, seven miles further or whatever it is, the same as under the present conditions of employment and recompense? Under the present schedule they could go out beyond High Bridge without earning any more money, could they?

Mr. Bickford: Yes, if we had the same working schedule then that we have now, these same men would run through to Harmon, certainly.

Mr. Carter: And the probabilities are they will soon be doing that?

Mr. Bickford: That is the men holding rights in this same class of service. I question whether they will be the same men. They will be promoted.

Mr. Carter: You mean that the men who are there now will be promoted, but other men will have taken their places?

Mr. Bickford: Yes, I mean the men in this same class of service.

Mr. Carter: Would not that provide in a certain degree for this idle time you have at High Bridge waiting for the incoming trains? Would not more of their time be occupied in actual moving than in standing still?

Mr. Bickford: You will get mileage out of these men, in place of the hourly basis on which we now pay them. The same men I think would go further on a mileage basis.

Mr. Carter: Have you heard any complaint on the part of the higher officials of the company against the wages they are paying their employees on the New York Central Road? I do not mean the subordinate, we know how they feel always, but I am talking about the higher officials?

Mr. Bickford: I am not taken into the confidence of the higher officials.

Mr. Carter: I understand.

Mr. Bickford: I should like to answer that question for you,

but your proposition is quite general. You had better confine it to the electric service, and I should like to answer it for you. I do not want it to appear as though I am evading questions.

Mr. Carter: The point is this: It seems that since this tentative rate was fixed the higher officials, with whom wage scales and wage schedules are negotiated have increased the rate. I will confess that it is not a fair question to ask you why they did that, but really I meant to indicate that they had done it without any coercive proceedings.

Mr. Bickford: As I understood, the original question confined it to the electric service. If you put the question in this way, if you ask me if I have heard any criticism as to the rate in electric service being too high or excessive, I will say to you that I have.

Mr. Carter: Who are the officials who are criticising the electric rate?

Mr. Lee: Just a moment—

Mr. Carter: I do not care for the name. I want to know whether it is the higher officials, or the men who are personally responsible for running the electric zone as cheaply as possible. That is what I want to find out.

Mr. Lee: The purpose of the question—

The Chairman: I do not see the bearing of it, but I do not see that it bears any more one way than the other, Mr. Lee.

Mr. Lee: I do not see that it has much bearing either, sir.

The Chairman: You cannot tell what the bearing is until the question is answered?

Mr. Lee: If he will state why he wants the question answered, I may be perfectly willing to let the witness answer the question.

The Chairman: Let him state.

Mr. Carter: The purpose of this character of questions is largely in rebuttal of the character of questions asked by counsel for the employers.

Mr. Lee: Wait a moment. I should like to understand just what questions he means by that statement.

Mr. Carter: Evidently it was the purpose of counsel to show that these electric firemen were getting too much money where they were getting $2.85 in freight service and $2.45 in passenger service.

Mr. Lee: Yes, I will admit that.

Mr. Carter: And what I wanted to show was that so far as those officials who are accountable for the general policy of the road are concerned, it does not seem objectionable to them; but I can understand why a man in charge of the electrical zone perhaps, with a reputation for economy to make for himself, would think everything was too high. That is what I want to bring out.

The Chairman: I see no objection to it.

Mr. Lee: How far up do you desire to reach?

Mr. Carter: I think I have covered it entirely.

Mr. Lee: If you can answer the question, go ahead, and we will see what will happen.

Mr. Bickford: The rate on electric locomotives under the present contract is practically the highest rate paid in each particular class of service, with the exception I think of the Class K engines in passenger service. I believe I am perfectly safe in saying that our operating officials will take the position that that rate is too high, as compared with the steam road rate, when you take into consideration the question of labor and service performed. I may be wrong, but that is my general belief.

Mr. Carter: Presuming it can be shown that in the present firemen's requests that on a huge locomotive, either electric or steam, say 250,000 to 300,000 pounds on drivers, performing the work for which a locomotive of that weight is employed—I say presuming it can be shown that practically 25 per cent. more is being requested for the steam service than for the electric service, don't you think that would be overcoming the matter in the present firemen's requests?

Mr. Bickford: I understand from the framing of your question, that if you conceded a 25 per cent. or 25 cents—was it?

Mr. Carter: 25 per cent.—may be 20 per cent.

Mr. Bickford: If you concede 25 per cent. more work on the steam locomotive than on the electric—

Mr. Carter: No, that is not the question, Mr. Bickford. I said in the firemen's requests we will say that we are asking for $3.25 on a certain electric engine of a certain weight, and we are asking for $4.00 on that same engine, if it were steam, would not that indicate that we recognize the difference?

Mr. Bickford: Yes, that would indicate—

Mr. Lee: So far as weight is concerned?

Mr. Bickford: That would be one factor.

Mr. Carter: Now, with regard to the economical feature.

Mr. Lee: Do I understand that you agree to fix the rate for electrics 25 per cent. less than steam?

Mr. Carter: No, I changed it to 20 per cent., and I stated the two amounts. Gentlemen of the Commission, I think if you will read the requests, you will find that in fixing the rate for electric firemen, we have had no regard, perhaps, for these different sized engines; we have made a request for a rate which, on its face, shows that it is much less than the steam rate for the some weights on drivers, and therefore we have anticipated practically all that has been said by the witness, and that was my purpose in bringing out this in cross examination. (Addressing the witness): Now, I would like to ask you about the economic features. Let us presume that the day comes when electric locomotives are substituted for steam, presumably at great profit to those people who have their money invested in railroads, because of this difference in firing an electric locomotive and a steam locomotive, would you consider that the wages of firemen should be reduced because of the substitution of one for the other?

Mr. Bickford: Reduced?

Mr. Carter: Let us presume that on a certain engine, the fireman is receiving, we will say, $3.25 a day in steam service, and the new electric locomotive is substituted for the steam locomotive, and it performs more work, pulls more cars, and more economically from the company's standpoint, that because the labors of the firemen have therefore been reduced, would you, having regard for the ecnomical feature, reduce the wages because of the change in the conditions? For instance, to be plain, at certain mills, we will take Lawrence, Massachusetts, for instance, once they paid a tolerably high rate of pay there, but by the installation of certain simple machinery, they succeeded in getting girls to do the work for $4.50 a day, as I believe was testified to at one time. Now, do you believe that they should have reduced the wage on that account?

Mr. Bickford: If I understand you correctly, and to carry your analogy further, and to perhaps make clear my position, when they installed those looms in the cotton mills, they increased the output of the operative, but did not reduce the wage. Now, the position I would take with reference to the locomotive, is practically the same.

Mr. Carter: You would not reduce the rate?

Mr. Bickford: If it can be shown that this machine is more economical, more efficient, that we can increase the output without adding any additional burden to the fireman, then I think it is perfectly fair that we should get some additional output for the additional money invested.

Mr. Carter: The probabilities are that the electric locomotive would not be substituted for the steam locomotive, unless such results were at least anticipated.

Mr. Bickford: No, not always. In this particular electrification, we were forced to electrify. The extension of the electrification, so far as the New York Central System is concerned, was compulsory—the Legislature took a hand. Electrification is not an economical proposition by any means. Electric locomotives cost a great deal more than steam locomotives, and I am frank to confess to you that we have no data—at least, I have no data now, to show the relative economies in operation as between electricity and steam, in this particular territory; but, so far as the fireman is concerned, if, by the substitution of the electric locomotive, we reduce his labors, and can get an additional output at no expense to him for time, then I think it would be only a fair concession to the company to say that we ought to get the additional output.

Mr. Carter: Supposing the fault wasn't his—let us presume that this electric locomotive was placed in service not by his volition, but because certain mechanical engineers in the employment of the company, had vouched for it being economical, and more productive; that is, the productive efficiency would be higher; you still believe that because of this substitution, there would be no reason to reduce the wages of the man who stepped from one engine to another?

Mr. Bickford: It is hardly fair to measure the fireman's wages on a steam locomotive with a fireman's wages on an electric locomotive.

Mr. Carter: Let me put another question to you. You spoke a while ago of the possibility of automatic stops. Let us presume that the experiments that are now being carried on, succeed in placing in the track a device that if the engineer fails to see the signals, it stops the train. Do you believe that that reduction of his responsibility in labor should reduce his wages?

Mr. Bickford: Oh, no. There is a reasonable limit to which you can carry those reasonings. I should say that I am not willing to assume that that is going to reduce the engineer's responsibility. Any automatic stop, so far as the engineer is concerned, does not in any way relieve the engineer from responsibility. The same responsibility is fixed upon the engineer, and there are certain checks placed upon him by which you can determine whether or not he is meeting the requirements of the service.

Mr. Carter: Well, presuming that in these modern locomotives they have substituted metallic packing for the old piece of rubber hose we used to steal off foreign cars, if you remember?

Mr. Bickford: Our cars were not equipped with rubber hose.

Mr. Carter: Do you believe now, that the fact that metallic packing is put in by the shop man and the engineer is relieved of that—would that be any reason for reducing the wages, or changing his wages, or considering it in his wage proposition?

Mr. Bickford: That isn't a fact alone that could be considered; there are many other factors that enter into it. I would not want to say that they should reduce his wages because the shop man does the packing.

Mr. Carter: Presuming there is a machinist working in a shop with a certain drill press, and it is rather laborious to get around it; and, for some reasons best known to the company, they put in an improved drill press, which actually makes his labors lighter, would you consider that any reason for changing his wages or lowering his wages?

Mr. Bickford: It might or might not be. If it increased his output, I think the company should participate in the increased earnings.

Mr. Carter: And then you think a good deal depends upon the productive efficiency of the man.

Mr. Bickford: That is one of the elements, certainly that enters into it.

Mr. Carter: If it could be shown to-day, in 1912, that the productive efficiency of a fireman has greatly increased aside from any increase in labor, then, according to your theory, that should be considered in fixing the wages of firemen?

Mr. Bickford: That might be one of the things to fix an adjustment of wages. It is not always—

Mr. Carter: Presuming that wages of electrical firemen have been fixed properly, where already fixed, and it should be shown that other economic features and conditions affected his well being such as a great increase in his cost of living, that would have some bearing on the subject too, would it not?

Mr. Bickford: If that was a question taken into consideration in adjusting all wage questions for firemen, I would say yes.

Mr. Carter: I meant to say that the electrical fireman would have the same show for his white alley, to use a boy's expression, as any other employee.

Mr. Bickford: But the point I want to make clear in my method of reasoning is, this, that if you can once establish a rate for firemen, a minimum rate for firemen, now there are certain factors which should be established whereby we recognize a differential in rate. If you can once establish a minimum wage for a fireman in any class of service, to my mind there is no reasonable argument to raise the rate on an electric locomotive above any rate on a steam locomotive; because, if you use the steam locomotive and the electric locomotive in similar service, it is certainly apparent to every man that the man on the smallest type of steam locomotive would actually have more labor to perform than any man on the heaviest type of electric locomotive would have to perform over that same territory.

Mr. Carter: But that would be ignoring your theory of increased productive efficiency, would it not?

Mr. Bickford: No, that is only measuring it another way. On the increased productive efficiency, I said we would get increased mileage, or increased output without imposing any additional hardship either as to labor or time, upon the fireman. That is the other way to measure it. We pay him the same but get an increased output from the man.

Mr. Carter: Assuming that on a little engine the work is not nearly so great as on the electrical engine which is substituted therefor, and in fact it makes it possible for the same engine crew, and I do not except the engineer, to produce an immense amount greater revenue, then that would be a question of increased productive efficiency?

Mr. Bickford: It might or might not. We come back again in my method of reasoning, Mr. Carter, to the starting point. A man's time is worth money. Practically, that is all he has

to offer in electric locomotive service. It requires no particular skill. We take a young fellow who comes in perhaps from high school, and will put him on a locomotive, and in two days' time he becomes just as efficient as the man who may have spent five years on a steam locomotive and comes to us, and we qualify him for that locomotive. Now, measured from the company's standpoint, there is not any reason that I can see why we should pay the one man a high rate simply because on a steam locomotive he formerly got a high rate. In other words, there is a minimum wage for a fireman because we take his time. That applies to all classes of locomotives, steam locomotives or electric locomotives. That is the one thing he has to sell. Now, when you and the companies agree, that there should be a minimum wage for a fireman, after that is once established, then I take the position in my mental reasoning that there can be no argument advanced for placing the rate for an electric locomotive fireman above the minimum rate for a steam locomotive fireman.

Mr. Carter: Then the theory in the case of the cotton mill, where automatic looms were substituted, with the same time consumed of the employe, an immensely greater output was reached, would not apply with the firemen?

Mr. Bickford: Oh, yes, because you already have with these railroad companies, with us, two ways of measuring a man's time, his productivity to the company. One is by the hours, the other is by the miles. One is the man's time, the other is the output. Now, when we come to measure the output—for that is the only time that this would apply—the increased output comes on a mileage basis,—then I say the same thing should apply that we would get in any other branch of service; if you increase the output without any increased labor, without any more of the man's time, then I think it is only fair that the company should get a proportionate share at least of that increased output.

Mr. Carter: I presume you understand that the greatest concern that enginemen, firemen and engineers, have in the electrical question is purely economic; that is, they fear that because of the substitution of electricity for steam they will suffer a great economic loss. You understand that that is the real impetus behind the movement?

Mr. Bickford: Well, that is one of them, Mr. Carter.

Mr. Carter: I think that is the principal one.

Mr. Bickford: Yes, that is one of them—only one. But that could not apply, Mr. Carter, if you can adopt and take the position I have already taken, that if a minimum wage is fair for a fireman in any class of service there can be new arguments made from an operating standpoint for increasing that minimum wage on an electric locomotive.

Mr. Carter: That is all. Pardon me, Judge, for this lengthy discussion of political economy by two people, neither of whom claims to be a political economist. I thank you for your kind attention.

RE-DIRECT EXAMINATION:

Mr. Lee: Are you acquainted with shop practice at all, Mr. Bickford, the handling of tools?

Mr. Bickford: No, sir; the shops do not come directly under me.

Mr. Lee: Has the electric zone of the New York Central been finished yet as intended in the agreement?

Mr. Bickford: No, sir; we are getting some additional locomotives. There is a new engine house being built at Harmon and we expect to commence to put into operation, or commence to operate, some of our through trains electrically to Harmon by the 20th or 25th of June, and we will perhaps have that service entirely installed by the latter part of September or October.

The Chairman: You have trains where you do not have an engine separate from the car?

Mr. Bickford: Yes. Practically all of our suburban service is covered by what we call our multiple unit trains, made up of car units, the same as the subway or the elevated trains here in the city.

The Chairman: You do not have firemen on those?

Mr. Bickford: No, sir.

The Chairman: These take the place of trains which formerly did have firemen?

Mr. Bickford: Yes, there were formerly firemen in that service.

The Chairman: If you thought it necessary as a require-

ment for safety to have two men on an engine, why do you not have two men on these trains too?

Mr. Bickford: The controller that operates—

The Chairman: What I want to get at is, is there any real reason for having this second man on the engine at all.

Mr. Bickford: The real reason is this: On our car trains we have what is generally known as a dead man's button. In other words the controller that the man uses to start the train is equipped with an automatic device which operates so that the moment he lets go of it, the brakes are applied automatically, and the train comes to a stop.

Our method of reasoning—and it has been conceded by everybody who has made a study of the subject—is that we are perfectly safe in running these trains with one man on the head end because, if anything should occur to him, the brakes would be automatically applied and the train would come to a stop. He simply occupies the front platform on the front car.

Now on our locomotives on the New York Central we do not have any such device. I understand, however, that on the New Haven road they have, or are equipping some of their engines with what might be termed a dead man's button, and I was told by Mr. Gilliam that they did operate their switching service over there in one of their yards with one man on the locomotive when they first commenced; but there was so much pressure brought to bear by the Fireman's Brotherhood, that they were forced to put on a second man.

Mr. Lee: That is more particularly in the switching service?

Mr. Bickford: In the switching service only.

The Chairman: What has become of the firemen who were displaced by the substituting of the electric train in the suburban service?

Mr. Bickford: I do not know, Judge, that we could say that anybody has really been displaced. Take for example when we commenced the service it was a very short mileage.

A fair illustration is this service that we now have between Grand Central Terminal and High Bridge, a seven mile service. We are using in that service 14 or 15 firemen. Now, formerly these trains started from Grand Central Terminal, and terminated their running at Albany. The firemen that were on the trains north of High Bridge under that old method of operation, covered

this territory; and really, so far as this particular service is concerned it requires additional firemen now to cover the service, who would not have been required if we had continued under the old method of operation. You see those men simply start seven miles further this way and make seven miles more each way, and run between here and Albany, that is, they did that under the old method. Now, instead of running between here and Albany, they run between High Bridge and Albany, and between here and High Bridge these additional men are put into the service to cover that distance.

I might say to go further on that, that I do not want to be misunderstood, that there will come a time when perhaps it will be necessary in the re-adjustment of these runs between Harmon and Grand Central Terminal, and Harmon and Albany, or Utica, or wherever they are going to run to, where they may be a few men pushed out of the service. It will have to work in either one of two ways. You will have to reduce the mileage that the men make in steam service, or perhaps you will lay off a few of the younger men in the electric service. I do not know just how that may work out; but it does not directly affect very many men. The development has been so gradual on the Hudson Division that any effect as to the number of firemen in that service is hardly perceptible. We ran first to High Bridge. Then we used locomotives from there north on all these trains that are running electrically now. We simply ran them electrically to High Bridge, and then attached a steam locomotive to that train. Then we extended the service to Yonkers, about fifteen miles out. That perhaps affected one or two or three firemen, I do not know.

Then we ran to Tarrytown, which may have affected at that time one or two firemen.

We finally completed the suburban service to Croton, and I think it was in March of this year. I do not clearly recall the date. It was probably about the first of February when we completed it to the present point. My recollection is that it then required three less firemen for that service.

So it has been so gradual that I do not believe it has made any perceptible difference in the number of men employed as firemen on the Hudson Division.

Mr. Lee: Would it not be largely a matter—

The Chairman: Pardon me. If the whole system becomes

electrified, according to your theory, you could get along without any firemen?

Mr. Bickford: If we had all electric trains, and did not have any electric locomotives.

The date of this extension to Croton that I spoke of was February 24th.

Mr. Lee: What you mean, as I understand, is that if there were any men displaced from passenger service, they would go back into freight service, and on account of seniority go on down the line, so that the youngest extra men would be dropped off the list.

Mr. Bickford: That is it. The rule applies itself automatically, according to the needs of the service, the senior men taking the preferred runs. That simply means moving along down until you catch the junior man in the service, and if any are laid off, they are the younger men.

Mr. Lee: That might be regulated by the knowledge of the officials as to when the electric service was going into effect, so that they might stop the employment of men. It might be regulated in three or four different ways, might it not?

Mr. Bickford: As I have said, the number of men affected has been so small, that I do not believe we could find them if we tried to look for them, as to the actual number of men who have been displaced because of the electric service.

The Chairman: Do you pay your electric engineers any less than you pay your steam engineers?

Mr. Bickford: No, I have not got that last award. I do not know just exactly what rate they pay. As a general proposition we have not paid any less up to the present time. In the passenger service we pay the electric engineers the same rate as in the steam service. The measure of responsibilty on the engineer in electrical locomotive service, as compared with steam locomotive service, perhaps has not been reduced as much as that of the firemen.

The Chairman: How about the work of the engineer on the electric locomotive?

Mr. Bickford: His work is altogether more comfortable, more desirable, from my point of view. That applies to the engineer the same as to the fireman. His work is easier to perform. It is cleaner, and requires less of his time. That applies to the engineer as well as the fireman.

The Chairman: Do you think that the relative responsibility of the fireman is less on the electric engine than it is on the steam engine?

Mr. Bickford: Taking into consideration the actual physical labor—

The Chairman: I do not mean the physical labor, but purely the element of responsibility, for switches and so forth.

Mr. Bickford: So far as switches are concerned, if you have any analogy on the steam locomotive to the switch on an electric locomotive, it may be the valves; but I do not know that the responsibility is any different.

Primarily a locomotive engineer is responsible for everything on the steam locomotive, but the fireman has some definite responsibilities that belong primarily to him alone.

The Chairman: On the electric engine?

Mr. Bickford: On the steam engine.

The Chairman: But not on the electric?

Mr. Bickford: But not on the electric.

The Chairman: I thought you said he did have.

Mr. Bickford: No, except to watch the water level on the flash boiler.

Mr. Lee: In the winter time only?

Mr. Bickford: In the winter time. At present that is on possibly twenty or twenty-five per cent. of our service.

The Chairman: Do you think the services of an electrical engineer are any more severe than the services of a fireman on a steam engine?

Mr. Bickford: Well, if you take it from a physical standpoint I would say no, certainly not; but there are other elements that enter into the question as fixing the value of a man as between the locomotive engineer and fireman in any class of service.

The Chairman: Yes, but I understood you to fix three elements or factors—

Mr. Bickford: Well, as to this particular class of service, I meant as to firemen—

The Chairman: One is time, and one is responsibility, and one is physical labor.

Mr. Lee: And skill?

Mr. Bickford: Or skill, yes, sir. Those are primary ele-

ments. There are some other elements that enter into it. I frankly confess that one of the things that Mr. Carter spoke of, that is cost of living, that element has to be considered in all wage adjustments, but primarily—

The Chairman: That you consider in the case of both men?

Mr. Bickford: Yes, sir.

The Chairman: The same?

Mr. Bickford: Yes, not only locomotive men but shop men and road foremen of engines, for example.

The Chairman: We are talking about this class of men. You think the firemen ought to be allowed to live as well as the engineers?

Mr. Bickford: Well, now, Judge, that is a pretty hard question to answer. So far as a man's family is concerned, of course the condition in which a man supports his family is measured or should be measured entirely by the ability of the man to provide for them.

The Chairman: Well, get my idea now. I am getting at this primary factor of a man's time, we will take that first, without reference to his skill and without reference to the amount of work he does. But you said a while ago that about all a fireman ought to be paid on an electric engine in your service was for his time; and you illustrated it by the kind of men you employ at certain places.

Mr. Bickford: Yes, sir.

The Chairman: Now we will suppose that the fireman and the engineman are on the same level as to that; then they should get the same for the time?

Mr. Bickford: Yes, so far as time is concerned, perhaps that is the basis for starting, and we would say yes. Any man's time is worth so much money. But as I see it, there are other primary factors that enter into it.

The Chairman: Yes. In other words, an engineer might get his right arm broken and could not run as an engineer perhaps, but he could work as a fireman on one of those engines.

Mr. Bickford: Yes, and he might be able—

The Chairman: But he would get the same for his time if he was demoted as the fireman would?

Mr. Bickford: Yes, sir; for performing the same class of

service, regardless of the man, I think he should get the same pay; that is true.

The Chairman: Then the only difference between the fireman and the engineer on an electric machine would be the increased responsibility of the engineer?

Mr. Bickford: Practically, yes. Now we cannot measure, there is no way by which we can measure the value of responsibility, except as by some arbitrary standards that we have already set up. That is true as between engineers and firemen on electric locomotives and engineers and firemen on steam locomotives. There has always been a relative difference in the wages paid. How that came about is a long argument that was thrashed out before the other committees; but it is generally recognized that there is a relative difference—

The Chairman: Then the fireman, when he gets to be an engineer thinks so too, does he not?

Mr. Bickford: Certainly, he expects that increased rate. Now, to come back to that other question you asked me, as to whether a fireman's family ought not to live as well as an engineer's family, that is rather a perplexing question. In the first place, firemen, as a general rule—

The Chairman: I do not mean theatre expenses or traveling expenses, or in the matter of an extra dress for the wife and that sort of thing, but I mean living.

Mr. Bickford: Generally speaking, yes; they should have a good clean place to live, the surroundings should be good, just as good as the engineers; they should have good wholesome food. But when you get into the luxuries that is another question. An engineer may be able to afford more things, give his family more things that might be classed as luxuries, than the fireman; but the absolute necessaries of life, I think it is fair to state that a fireman's family is entitled to just as much as an engineer's family.

The Chairman: Is it costing the fireman any more these days to live in New York than it did ten years ago?

Mr. Bickford: Yes, I think it does, but—

The Chairman: About how much, would you think?

Mr. Bickford: Well, I would not like to say. I never lived in New York as a fireman. But, generally speaking, I think that every intelligent man will concede that the cost of living has ad-

vanced. Now as against that, I would say that railroad companies very generally have met that, in one way, by advancing rates of pay. We pay more, as you will observe in this schedule, we pay more now on electric locomotives than we did in 1906 when this contract was made. I presume that the committees and the general manager perhaps took into consideration the increased cost of living, and that was perhaps the one primary factor that was considered when these rates were established. In a general movement of this kind, however, I do not think that it is entirely fair to take an expensive place like New York and attempt to fix wages for a great large territory based upon the cost of living. That is only one of the factors. If that is to be the factor for the fixing of a rate of wages, the cost of living, then I think we want to go back and re-arrange the making of our schedules. It does not cost as much to live at some of the terminals on our line as it does in New York, and yet our firemen themselves insist that they must have the same rates of pay and the same working conditions, so that while you and I look at the question from a standpoint of cost of living—but it is a factor that enters into all wage adjustments.

The Chairman: Do you think, on that account, the men ought to be paid a different wage on certain parts of your system?

Mr. Bickford: That is debatable ground. I think it could be very safely advanced as one argument for having different wages on different parts of the system, and there are other things entering into it, and that is only a ground for bargaining between committees and the management. You would first have to establish, if you wanted to get a relative rate, you would first have to establish what was a fair rate for each particular locality, if you did that.

The Chairman: No road does that, I suppose.

Mr. Bickford: No, not at the present time.

The Chairman: If they base it on the cost of living at all, they find the part of the road which is the most expensive place to live, and make the rate for the system?

Mr. Bickford: Exactly so. Therefore, we cannot say, of course, that it would be fair to take the cost of living in New York City as a basis for fixing the rates all over the system.

Mr. Lee: Would you say that an engineer and fireman should be paid the same rate of wages?

Mr. Bickford: I did not say so, and I do not want to be so understood. I said that if the engineer was put back to firing and performed a fireman's duties, then he should be paid the same rate of wages.

Mr. Lee: That is what I thought. That is, he should be paid the same wages for the same class of service?

Mr. Bickford: Yes, sir.

Mr. Lee: That is what I thought you said.

Mr. Carter: Is that all?

Mr. Lee: Yes.

Mr. Carter: Mr. Bickford, is it a fact that in the New York Central terminals here, this zone to which you referred, that the electric firemen are held equally responsible with the engineers for signal observations, and such things as that, switches and so forth?

Mr. Bickford: Only to this extent, that if they fail to call a signal, or if they interpret a signal incorrectly to the engineer, then there is a measure of responsibility to the fireman, yes, sir.

Mr. Carter: Isn't it required of the fireman to call these signals?

Mr. Bickford: The rules require him to call the signals.

Mr. Carter: And he is subject to an examination to see if he understands the rules, is he not?

Mr. Bickford: Oh, yes.

Mr. Carter: Well, in administering discipline, don't you also discipline the fireman for overlooking these signals and switches in much the same manner as you do the engineer?

Mr. Bickford: We discipline him not the same as the engineer. There is a measure of responsibility for the fireman. He hasn't anything else to do. We tell him "We put you on there, and that is your business."

Mr. Carter: He is a kind of safety appliance?

Mr. Bickford: It is a precaution, certainly.

Mr. Carter: In regard to the theory of cost of living, a man under that theory employed at outlying points, should work for less than in the City of Chicago. If it can be shown that in many places on western railroads the cost of living is less than here, under that same theory these eastern roads should pay more wages than the western roads because the cost of living is higher here?

Mr. Bickford: Not necessarily so. You would have to first establish this fact; that the western rate was fixed, based on the cost of living there; then you would have to show that, relatively, it costs more to live here than it does there. If that is the factor upon which you based these rates for these two particular localities only—that is, the only factor upon which you base the rates for these two particular localities, I would say yes, certainly.

Mr. Carter: That is all.

Mr. Lee: That is all, Mr. Bickford.

J. V. R. DUER was called as a witness, and having been duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your business, Mr. Duer?

Mr. Duer: Foreman of motormen, of the Manhattan Division, of the Pennsylvania.

Mr. Lee: What are your duties as foreman of motormen?

Mr. Duer: I have charge of the electric locomotives on our division, and the men who are assigned to duty on them.

Mr. Lee: Including the helpers?

Mr. Duer: Yes, sir.

Mr. Lee: They report to you?

Mr. Duer: Yes, sir.

Mr. Lee: What was your occupation before you were foreman of motormen?

Mr. Duer: I was Electrical Inspector, with the Long Island Railroad for five years, and prior to that time I was on the apprentice course of the General Electric Company at Schenectady. Prior to that time I graduated from Stevens Institute, in 1903.

Mr. Lee: Explain the duties of helpers on electric locomotives on the Manhattan Division.

Mr. Duer: They are supposed to observe signals and check the engineer's observance of the signals by calling, and repeating them, and to assist the engineer in such duties as he may give them.

Mr. Lee: Does he assist the engineer in the preparatory work?

Mr. Duer: Yes. We have engines with side rods and he assists the engineer in screwing down the grease-cups and in making a general inspection of the locomotive prior to starting. It takes about twenty minutes. We allow them thirty minutes to make the inspection.

Mr. Lee: It consists in closing certain switches, and so forth?

Mr. Duer: Yes; under the direction of the engineer.

Mr. Lee: Is he personally responsible for any of this work?

Mr. Duer: No, he is not.

Mr. Lee: You say he starts to work thirty minutes before the engine starts?

Mr. Duer: Yes, sir.

Mr. Lee: And his time begins at that time?

Mr. Duer: Yes, sir.

Mr. Lee: Does the electric helper have to know anything about the circuits on the engine?

Mr. Duer: No, sir.

Mr. Lee: Are the switches that he handles labelled?

Mr. Duer: Yes, sir.

Mr. Lee: So that he can tell by looking at them what they are for?

Mr. Duer: Yes, sir.

Mr. Lee: How long does it take a man to qualify as an electric helper?

Mr. Duer: We allow them three days to qualify. That is, we call them a week.

The Chairman: That is what you call a locomotive helper?

Mr. Lee: Yes, sir. We call them locomotive helpers. What is the designation of them?

Mr. Duer: We call them locomotive enginemen helpers. That is, we call the man on the electric locomotive an electric engineman and the second man his helper.

Mr. Lee: It is the same man that other roads call the locomotive fireman. It is a difference in designation?

The Chairman: Yes.

Mr. Lee: How long does it take to qualify as an electric engineman's helper?

Mr. Duer: Three days.

Mr. Lee: That is, on the Transportation Rules?

Mr. Duer: Yes, sir; that is, on everything.

Mr. Lee: The men that you have as electric enginemen's helpers, where do you get them from?

Mr. Duer: We secure them by advertisement, from the connecting steam division.

Mr. Lee: That is, from the New York Division?

Mr. Duer: Yes, sir.

Mr. Lee: Your Division, Mr. Duer, was organized as an entirely separate division?

Mr. Duer: Yes, sir.

Mr. Lee: That is, it did not exist before the electric service was put into effect?

Mr. Duer: No, sir. The division was organized at the time our New York Terminal was opened, and the men secured to run the division were taken from the New York Division, connecting steam division, from which the trains were diverted.

Mr. Lee: Are your men on a ten-hour basis?

Mr. Duer: Yes, sir.

Mr. Lee: For how many miles?

Mr. Duer: 120.

Mr. Lee: Do your men ever make these 120 miles?

Mr. Duer: They do during the times we have a heavy service; that is, within the ten hours.

Mr. Lee: As a usual proposition, though, they are on the hourly basis?

Mr. Duer: Yes, sir.

Mr. Lee: In your opinion, is 120 miles for ten hours fair to men?

Mr. Duer: Absolutely.

Mr. Lee: Why?

Mr. Duer: Because our experience has shown that the men on the electric engines can make that 120 miles in ten hours without any undue exertion on their part.

Mr. Lee: Does the electric engineman's helper do any physical labor?

Mr. Duer: No, he does not.

Mr. Lee: Is he responsible in any way for the production of power that operates the engine?

Mr. Duer: No, sir.

Mr. Lee: Is he responsible for economy in the use of fuel?

Mr. Duer: No, sir.

Mr. Lee: Is the electric locomotive an easy riding machine?

Mr. Duer: Yes, sir.

Mr. Lee: Easier than the steam locomotive?

Mr. Duer: Yes, sir.

Mr. Lee: Why do you have a helper on an electric locomotive?

Mr. Duer: Why, when we started our operation we did not have any helpers. We had a man who was an electrician and who we used as a second man on each engine to instruct the engineer, and during the period these men were on the engine, we found that in cases where slight troubles would occur on the engine, the second man very often could discover this trouble while the train was en route and remedy it without any delay, and as we withdrew those men from the service we substituted firemen from the steam service. I might say in that connection that in an electrical locomotive the power is concentrated in the locomotive. By that I mean the motive power and it is not distributed through the train as in a multiple unit train, where if one or two cars in a ten or twelve car train go out of business, it makes no material difference. We did it simply as a matter of precaution to insure better operation.

Mr. Lee: In case of emergency?

Mr. Duer: Exactly.

Mr. Lee: Because the electric engineman on an electric locomotive is separated from the rest of the train?

Mr. Duer: He is not in touch with the crew as he would be on a multiple unit train.

Mr. Lee: Have you had many accidents to helpers on electric locomotives since you got the service going?

Mr. Duer: No; we have only had one accident to an electric engineman's helper since September, 1911, and this accident that I refer to occurred in February, 1913. The engine was running from the station where it had left its train, to the lay-up track, and the helper opened the main switch while the engineer was using current, a thing which he is not supposed to do, and caused an arc; and although he felt no evil effects at the time, that night his eyes bothered him and he laid off for two days to get in shape again.

Mr. Lee: That is the only accident you know of?

Mr. Duer: That is the only accident since 1911.

Mr. Lee: That caused any loss of time?

Mr. Duer: Yes.

Mr. Lee: Do you know how this 120 miles for ten hours was arrived at; was that arrived at between the officials and the men.

Mr. Duer: Yes. When we started operation we started on a yard basis. I believe it would have been impossible to have started any other way, and the service, as it gradually got settled, gave us more uniform operating conditions, and first the engineers and then the firemen asked us if we would not put the service between Manhattan Transfer and Sunnyside Yard on a road basis, and we replied that we would if we could arrive at a satisfactory arrangement, and we met the engineers' committee first and settled on an arrangement with them and afterwards the firemen's committee, original committee, and arrived at an arrangement with them. That was based on the steam rate of the New York Division, extended to cover a ten hour day. They had an eight hour day on the New York Division. In consideration of going on a road basis and also of the ten hour day, the men gave us 120 miles instead of 100.

Mr. Lee: You may cross examine.

CROSS EXAMINATION:

Mr. Carter: This expression "electric fireman" is really a misnomer, isn't it?

Mr. Duer: I didn't use that expression, Mr. Carter. We use the term "electric engineman's helper." We formerly called the men "motorman's helper," and when the motormen asked to be changed to enginemen, we changed the title of the second men.

Mr. Carter: The word "assistant" is a synonym of "helper" is it not if we refer to the lexicographers?

Mr. Duer: Yes, I should say it is.

Mr. Carter: Then this man is more of an electrical engineman's assistant than a fireman?

Mr. Duer: Yes, I prefer the term "apprentice" however.

Mr. Carter: Apprentice?

Mr. Duer: Yes.

Mr. Carter: You were not here when a gentleman by the name of Kirby gave evidence, were you?

Mr. Duer: Yes, I was here.

Mr. Carter: Do you remember that he said that the apprentices as I remember it got about 60% of the carpenter's pay? I forgot how much he did say.

Mr. Duer: He got $10 a week as I remember it.

Mr. Carter: But anyhow he showed I think that during three months of the year the apprentices went to school, and still were paid, etc.?

Mr. Duer: Yes.

Mr. Carter: These electrical enginemen's helpers are really electrical enginemen's helpers rather than firemen?

Mr. Duer: Yes.

Mr. Carter: They are required to pass examinations from time to time are they not?

Mr. Duer: We probably will re-examine our men this year. We have a three year re-examination.

Mr. Carter: That is practically necessary, is it not? I mean to say it puts more responsibility on the men?

Mr. Duer: I think it is desirable.

Mr. Carter: It is a precaution that should be taken?

Mr. Duer: Oh, yes.

Mr. Carter: What are these electrical enginemen's helpers examined on?

Mr. Duer: When they come into the service from the steam service we examine them on the physical characteristics of the division, because it is a separate division.

Mr. Carter: On signals?

Mr. Duer: No, on the physical characteristics; that is, the grades, the hills, the curves, and then on the signals and the signal instructions, which vary on some points from those on the steam division, and also on the electric apparatus on the engines.

Mr. Carter: The question was asked of another witness if there were not fewer valves on the electric locomotive than on the steam locomotive. That is true, is it not?

Mr. Duer: We have no valves at all on our engines.

Mr. Carter: Are there not more switches on an electric locomotive than there are on a steam locomotive?

Mr. Duer: And switches—I should say not.

Mr. Carter: Electrical switches, for cutting in and out currents.

Mr. Duer: Yes, I understand. There are four switches in each half of the engine.

Mr. Carter: Would not the fireman—

Mr. Duer: I may say in that connection, Mr. Carter, that there are two switches that the helper has to manipulate every three hours. The other switches are closed at the beginning of the day and stay closed until the end of the day.

Mr. Carter: I understand from what you have said that the company has deemed it advisable to have this electric engineman's helper on the locomotive?

Mr. Duer: Yes.

Mr. Carter: On the road?

Mr. Carter: That is all.

Mr. Atterbury: Have you got these dead man's buttons on your electric locomotive?

Mr. Duer: Yes.

Mr. Atterbury: What kind of heating apparatus have you?

Mr. Duer: We have under experimentation an electric flash boiler. It is not in service this winter.

Mr. Atterbury: You have not had it in service this winter at all?

Mr. Duer: No, sir; we did not require it.

The Chairman: Do you pay these helpers the same pay that they formerly got as firemen?

Mr. Duer: Not the individual men. We pay them the same rate, yes. That is, we might have a man come into our service who would be making more money in the steam service, but we pay him the advertised rate.

The Chairman: And you advertise only on the division when firemen have been displaced by the electric system?

Mr. Duer: That was the method we followed in starting. Since the service was inaugurated we have been combining with the steam division. The two divisions have been made one, and we now allow those men the opportunity of coming into the electric service if they so desire.

The Chairman: You recognize the seniority of the men coming from the steam service, and take them into the electric service?

Mr. Duer: Yes.

Mr. Atterbury: Did I understand you to say that the use of the electric locomotive displaced any firemen?

Mr. Duer: No, it did not displace any. The service was diverted.

(Witness excused.)

J. T. CARROLL was called as a witness, and having been duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your position, Mr. Carroll?

Mr. Carroll: Assistant General Superintendent of Motive Power, B. & O. Railroad.

Mr. Lee: Baltimore & Ohio?

Mr. Carroll: Yes, sir.

Mr. Lee: What were you before that?

Mr. Carroll: Superintendent of Motive Power of the Pittsburgh System of the B. & O.

Mr. Lee: Before that?

Mr. Carroll: Master Mechanic, Lake Erie & Western.

Mr. Lee: And before that?

Mr. Carroll: Assistant Master Mechanic, Western Division of the Lake Shore & Michigan Southern.

Mr. Lee: Your experience has been in the mechanical department?

Mr. Carroll: Yes, sir.

Mr. Lee: You have ridden engines.

Mr. Carroll: Yes, sir.

Mr. Lee: And are familiar in a general way with the work required of firemen?

Mr. Carroll: Yes, sir.

Mr. Lee: On the Baltimore & Ohio you have some engines equipped with stokers?

Mr. Carroll: Yes, sir; we have 50.

Mr. Lee: In a general way, are you familiar with the work on these engines?

Mr. Carroll: Yes, sir.

Mr. Lee: You have ridden them?

Mr. Carroll: Yes.

Mr. Lee: Did you make any special study of the stoker proposition?

Mr. Carroll: Yes, sir; I rode them when we first got them, to see what I could do towards remedying the defects that existed, or might exist, and to improve the service.

Mr. Lee: You had some little trouble with them at first?

Mr. Carroll: Yes, sir.

Mr. Lee: Did you find out what the trouble was?

Mr. Carroll: We remedied quite a number of the defects.

Mr. Lee: And you corrected most of them?

Mr. Carroll: Yes, sir.

Mr. Lee: When did you receive these engines?

Mr. Carroll: In August, September and October of last year.

Mr. Lee: Well, it was August and September of last year?

Mr. Carroll: During three months—there were fifty delivered in a period of three months.

Mr. Lee: You put the engines on gradually as you got the men educated to them?

Mr. Carroll: Yes, sir, we kept them over until about the first of October, and then we put five into commission, and started dropping them in gradually, so the men would become familiar with them, instead of putting them all in at one time.

Mr. Lee: When did you get them all into service?

Mr. Carroll: I think it was about the first of December that we put the last of them into service.

Mr. Lee: Has any record been kept of the performance of these engines?

Mr. Carroll: Yes, sir; during the first of February, we asked to have a report made at the terminals on the Cumberland Division by the engineers, in the work report book, as in their opinion what percentage of the coal was put into the firebox by hand, and why.

Mr. Lee: For each trip?

Mr. Carroll: For each trip.

Mr. Lee: They reported each trip as they arrived at their final destination?

Mr. Carroll: Yes, sir.

Mr. Lee: That is, it was an estimate made by the engineer.

Mr. Carroll: By the engineer, to the best of his ability.

Mr. Lee: Did the fireman have anything to do with this estimate?

Mr. Carroll: We did not ask the fireman to. I suppose in lots of cases the engineer and fireman consulted one another, and made a guess at it.

Mr. Lee: This special report, then, is gotten up from figures submitted by the individual engineers?

Mr. Carroll: Yes, sir; in the work report book.

Mr. Lee: What do you find from these trips that you have had reported?

Mr. Carroll: You want to distribute these?

Mr. Lee: Yes, I think it would be well to let the Board have copies of those.

(The papers were distributed to the Board and Counsel.)

The Chairman: Have you a picture of one of these machines here?

Mr. Lee: Of the stokers?

The Chairman: Yes.

Mr. Carroll: Mr. Walber has.

Mr. Lee: Mr. Walber, have you a picture of one of the big stokers?

(A diagram was here produced and exhibited to the Board.)

Mr. Lee: This statement, Mr. Carroll, will you please explain to the Board just what that is.

Mr. Carroll: There are four terminal points on what we call the east end of the Cumberland Division; and from the period of February 21st to 28th inclusive, this statement shows the report as made by the enginemen upon their arrival. There was a total of 309 stoker engine trips made during that week on this division.

Mr. Lee: How many?

Mr. Carroll: 309, but the enginemen reported on 209 only. Of that 209, that is 67.6 per cent. of the total trips made, of that number of trips 70.3 per cent. of these trips were reported as being 95 per cent. and better stoker-fired.

Mr. Lee: That is on the bottom line?

Mr. Carroll: That is the total, yes, sir. Now, this figure does not show on there, but you can figure it up, 92.3 per cent. of these trips were 90 per cent. and over.

Mr. Lee: That is in ink down below, I think.

Mr. Carroll: Oh, yes, it is in ink; less than 95 per cent., 29.7 per cent.

Mr. Lee: Now, Mr. Carroll, that is a statement of the engines reported?

Mr. Carroll: Yes, sir.

Mr. Lee: There were 100 engines that were not reported?

Mr. Carroll: 100 trips.

Mr. Lee: 100 trips that were not reported. Those might have been worse or might have been better; you don't know what they were.

Mr. Carroll: Yes, sir, and we do not know why the men did not make a report.

Mr. Lee: And they might be all worse?

Mr. Carroll: They might be all worse.

Mr. Lee: And they might be all better, you don't know?

Mr. Carroll: Yes, sir; some of them might be 100% hand-fired, and some of them might be 90% stoker-fired, or 100%, although we do not show any 100% on here.

Mr. Lee: That is, of the trips reported 92.3 per cent. of those trips, 90 per cent. or over of the coal was placed in the firebox by the stoker?

Mr. Carroll: Yes, sir.

Mr. Lee: How many of these stoker engines have you?

Mr. Carroll: We have 50 Mikados, on which this report is made, and we have 12 Mallets equipped with it, and we are equipping the other eight that are in service.

Mr. Lee: Have you ordered any more stokers?

Mr. Carroll: We have ordered 60 more Mikado engines and they will be equipped with this stoker, and 12 Mallet engines which will be equipped with the stoker.

Mr. Lee: What will be the percentage of engines on that division then, equipped with stokers, after you get it on all these engines?

Mr. Carroll: I believe there are from 75 to 80 engines in through freight service on that division now, and it is the intention to fill out the division with stoker engines. I do not know where or what division they will put the remainder of the sixty on.

Mr. Lee: But it is the idea to fill out this Cumberland Division?

Mr. Carroll: To fill out the Cumberland Division.

Mr. Lee: Do you know anything about the relation between the weight on drivers of an engine and the work required of a fireman, in your experience?

Mr. Carroll: In my experience the weight on drivers has not been a measure of the work of the fireman.

Mr. Lee: From what do you get that impression?

Mr. Carroll: Going back a considerable length of time and having had experience in riding small engines; and we naturally went into a larger engine that had a better boiler for its cylinder capacity, better firebox; and these engines proved that they were more conomical on coal and easier for the fireman than the small engine.

Mr. Lee: You had some personal experience with firemen in regard to the old 1600 class?

Mr. Carroll: On the E-16 engines, when I was at the Pittsburg Division, the firemen running out of Connellsville, over what they call the "Sheeps Skin," didn't like the 1600's very well—they were too hard on coal, they claimed. And in talking to some of them, after we put the arch in, they claimed it made a much better engine out of it. But they did prefer to get an E-24 or E-27 engine, on these runs.

Mr. Lee: What did these old 1600's weigh on the drivers?

Mr. Carroll: The E-16 weighed 153,000 pounds.

Mr. Lee: What was the engine that they preferred running alongside of?

Mr. Carroll: They would rather have an E-24 which weighed 173,000 or an E-27 which weighed 186,000.

Mr. Lee: That is, they preferred to fire the heavier engine, the heavier engine on drivers, than they did the smaller engine?

Mr. Carroll: Yes, sir.

Mr. Lee: Why was that?

Mr. Carroll: They claimed they were harder on fuel.

Mr. Lee: That is, burned more coal?

Mr. Carroll: And the tractive power of these 1600 engines, which weighed 153,000 pounds on drivers, is 40,531; of the E-24's and E-27's is 42,168; very little difference in the tractive power; and the rating was nearly as high for the 1600 engines as it was for E-24's or E-27's.

Mr. Lee: In your opinion did the construction of the engine have anything to do with it?

Mr. Carroll: A great deal to do with it, just the same as the application of the brick arch to the 1600, lightened all their work on it.

Mr. Lee: Merely the application of the arch?

Mr. Carroll: Yes.

Mr. Lee: Without affecting the weight on the drivers?

Mr. Carroll: Without affecting that, or the steam pressure, or the tonnage, or anything else.

Mr. Lee: Then you do not think the weight on drivers is much measure of the work required on a fireman?

Mr. Carroll: I do not think it the true measure, no, sir.

Mr. Lee: What other things would you think entered into the work of a fireman?

Mr. Carroll: I believe that the service and the division on which engines are run enters into it, together with the design of the engine and the appliances which may be put on it.

Mr. Lee: You have some saturated steam Mikado engines still running on the Cumberland Division have you not?

Mr. Carroll: Yes, I believe there are about 10 or 15 of them.

Mr. Lee: Also on the Newcastle Division?

Mr. Carroll: On the Newcastle Division.

Mr. Lee: I wish you would describe the work of the firemen so far as you have seen it from riding over the road with them, on the Cumberland Division, and compare that with the work of the firemen on the Newcastle Division, the Cumberland Division being an undulating division as I understand it, up and down, and the Newcastle Division being more nearly level?

Mr. Carroll: On a saturated steam Mikado engine on the Newcastle Division and on the Cumberland Division, both on the Newcastle Division westbound, and on the Cumberland Division East bound, the tonnage rating is practically the same. On the Cumberland Division it is a pretty hard pull out of Cumberland yard. It is pretty easy going from there to Hansrote.

Mr. Lee: How far is that?

Mr. Carroll: I believe that is about 40 miles. I can look it up.

Mr. Lee: I believe that is near enough.

The Chairman: That is east of Cumberland?

Mr. Carroll: That is east of Cumberland, yes. At that

point they stop and get a helper up that grade which is three miles long.

After tipping over the hill they drift for six or eight miles, sometimes using the air, I believe, going down there to check their speed.

Then it is very easy from there to Sir John's Run. In fact it is a little down grade all the way.

They get coal there as a general proposition, or water if they want to.

After pulling out of Sir John's Run until they get around the curve, or Round Top as they call it, it is not very hard from there to Millers.

At Millers they start on what they call the low grade which is .3 of 1% grade. It is about 10 miles from there to the top of the hill.

There, with 4,750 tons the fireman is called upon to work I would say 50% or 60% of his time shoveling coal and raking the fire. That is where he gets his hard work.

Then they go to the top of the hill, for two or three miles comparatively level, and then they drift down to Peckham, another helping station where they get one or two Mikado engines to help them up the Hobbs grade, which is about nine or ten miles long. From there they can practically drift into Brunswick.

Mr. Lee: That is, the fireman has a chance to recuperate going down the hills?

Mr. Carroll: Yes.

Mr. Lee: How about the Newcastle Division? Is that practically a level grade?

Mr. Carroll: On the Newcastle Division Westbound they haul the same tonnage, 4,750 tons. That division is 147 miles long.

Leaving Newcastle Junction it is practically a drag from there to Ravenna, and in that distance they raise that train about 275 feet. That is when they get there they are 275 feet higher with that train than they were when they left Newcastle Junction. On the Cumberland Division I believe Brunswick is about 200 feet lower than Cumberland, the point which they leave with that train. And on that division when they had hard pulls they had assistance.

On the Newcastle Division the grade is not to exceed .3, therefore they can drag them up all those grades, or could have up to this year.

At Cuyahoga Falls, just east of Akron, they reduce about 1,000 tons to Warwick, where they stop and fill out again. From Warwick to Lodi it is practically level; it is not very hard. There they hit a 3/10ths grade 13 miles long. They have to break them up there, and then they dip down Nova Hill, and from there into Chicago Junction it is not very hard. There is one grade about three miles long, and if they are allowed to run, the momentum carries them half way up that grade.

Mr. Lee: From your description, Mr. Carroll, would you consider the work of a fireman on a Mikado engine on the Newcastle Division harder for a day's work than you would on the Cumberland Division, with the same engine.

Mr. Carroll: Yes, sir.

Mr. Lee: The engine is using steam more continuously on the Newcastle Division than on the Cumberland Division?

Mr. Carroll: More continuously, yes, sir. They make a little better time over the Newcastle Division, that is, per hour on duty, than on the Cumberland Division, but I lay that more to the density of traffic being lighter; they do not have to pull into so many side tracks and they keep working steadier.

Mr. Lee: You may cross-examine.

CROSS EXAMINATION:

Mr. Carter: I understood you to say that those reports are not the reports of an observer or expert, but simply the reports of the engineers.

Mr. Carroll: Yes, sir. I believe they put up a bulletin to the engineers, asking them to make a report of that kind.

Mr. Carter: What proportion of the trips are here reported—of all the trips made, what proportion are here reported?

Mr. Carroll: 309 trips made; 67.6 per cent. reported, or 209 trips.

Mr. Carter: You said you didn't know anything about the remaining 33⅓ per cent.?

Mr. Carroll: No, sir. I don't know how they ran.

Mr. Lee: It merely shows a tendency?

Mr. Carter: When did you say these superheater, stoker fired engines, were put in service?

Mr. Carroll: It was distributed over a period of about two months.

Mr. Carter: When did you put them in service, October and November of last year?

Mr. Carroll: About the first of October, the first of them went in.

Mr. Carter: Do you think that these engines are popular with the firemen?

Mr. Carroll: I believe they are since they are regularly assigned to them. In fact, I heard one fireman who had been firing a yard engine come up and ask Mr. Wilmer—he said he wanted it again.

Mr. Carter: Didn't you have great difficulty in keeping firemen there last winter, on that Division?

Mr. Carroll: We had after we pooled the engines. They were regularly assigned for a while, and we were using gas coal slack and did not get very good results, due to the fires clinkering, and then they went to soft coal and business got pretty brisk and would not stand for the engines laying eight hours waiting for the rest, and then we pooled them and then we did get into trouble.

Mr. Carter: You think where engines are pooled it is much more difficult for firemen to fire their engines than where they are regularly assigned to engines.

Mr. Carroll: When we pooled these engines there were firemen put on them to fire, who had not seen a stoker, who were unfamiliar with them, and even the engineers were on some; and when we got an engineer that didn't know anything about it, and a fireman that didn't know anything about it, together, and told them to go over the road, there was lots of trouble to be expected.

Mr. Carter: The point I wanted to bring out and I understood you to say was that the firemen preferred having regular engines than pool service.

Mr. Carroll: They did, on those engines.

Mr. Carter: The pool service, therefore, seems to have increased the labors of the fireman.

Mr. Carroll: On those engines.

Mr. Carter: The firemen would not stay there—they quit when the engines were pooled, didn't they?

Mr. Carroll: For the simple reason that there were men getting engines that had a stoker on who didn't know anything about them, and they were doing damage to them; whereas, when they had them regularly, they knew how to handle them, and they were always the same; they were always ready to go out and work.

Mr. Carter: Is there a difference between the different engines; for instance, a man getting an engine and using it to-day, would get another engine to-morrow—or would there be any difference in the stokers?

Mr. Carroll: There would be a difference in the condition of them. If a fellow had come in and neglected the stoker in some way or other, and didn't say anything, and the round house didn't inspect it—neither inspected it, there might be trouble.

Mr. Carter: I agree with you that the pooling of engines is a hardship to firemen anywhere. Presuming that in the old days they did not pool the engines and now they do, wouldn't that create a hardship on the firemen that they did not formerly suffer.

Mr. Carroll: Of course, a man is apt to get an engine that is a little different from another; that is, her condition is a little different; it might affect him a little, or very much.

Mr. Carter: I understood you to say that because you pooled your engines; that is, for instance, that was thought desirable, that you could not keep firemen on that division, the Cumberland Division.

Mr. Carroll: They could not fire the engine with the stoker because they didn't know how, and we didn't have men enough to put out to educate them.

Mr. Carter: Why could not a man learn in the pool just the same as with a regular engine, if you have so many engines equipped?

Mr. Carroll: We took the engines and put them in by degrees, and we put men out to instruct a few firemen. When they would become proficient, we would put a couple of more engines on and put those proficient men on with a green man to break him in, and we intended to keep that up until they were educated, but we took and threw fifty engines into a pool with probably fifty firemen catching them, that did not know the first thing

about them, and also with engineers that did not know anything about them, and, therefore you sometimes had two green men on an engine. Sometimes you had one pretty good man and one green man. You can't expect a man to get the same thing out of an engine running it that he does not know anything about.

Mr. Carter: Haven't you always had more or less trouble in keeping firemen on the B. & O. up in the mountains there?

Mr. Carroll: Well, I don't know, you know. I am not handling that end of it, as a general rule. I understand on the Cumberland Division they have had trouble two or three years, when business picked up.

Mr. Carter: Then all you knew about the conditions there is that in this particular instance, it was because the engines were put in a pool?

Mr. Carroll: That was my opinion of it. I was out and rode those engines.

Mr. Carter: You compared the old 16's with the new E-24's and E-27's. Is it not a fact that any new engine is preferable to any old engine, from a fireman's point of view?

Mr. Carroll: I have heard some very great kicking on it once in a while, until they got accustomed to it, got to like it.

Mr. Carter: Why do they call old engines "scrap heaps." I am talking about the enginemen's pet name for them; why do they use language that you have to put in print by "—— —— —— old scrap heap? Give me something to go out on"?

Mr. Carroll: I don't know why they call them that.

Mr. Carter: Probably it is because they like the old engine, is it not?

Mr. Lee: Don't they say that about the new engines?

Mr. Carter: Very seldom.

Mr. Carroll: Yes, I have heard fellows make the remark, "Why don't you jack the cab up and put an engine under it"?

Mr. Carter: Well, I will not pursue the question any further on that line.

Mr. Carroll: That doesn't say there was not an engine under it, and a good one, too.

Mr. Carter: Now, if you do not want to answer this question, do not answer it: Why is the work harder on the Newcastle Division? I don't insist on your answering it if you dislike it.

Mr. Carroll: Well, in riding over it, I believe, where they haul the same tonnage, the grades are such that they could haul the same tonnage over nearly the entire division and it is a slow drag, and they are allowed to drag along, and they raise that train without assistance a great deal higher than they do on the Cumberland Division where they get assistance on the heavy grades. They do not have any drifting down the hill to the extent that the Cumberland Division had.

Mr. Carter: Why is it harder, you say, on the Cumberland Division?

Mr. Carroll: I did not say it was harder on the Cumberland Division.

Mr. Carter: I mean why is it easier on the Cumberland Division?

Mr. Carroll: They take the same tonnage, and when they get to Brunswick they are 200 feet lower with it than when they started, and where they do boost it up over the hill they get assistance to do it, except on the low grade.

Mr. Carter: Then if they cut down the grades so as to make it unnecessary to have pushers, the work of the fireman is increased, according to your theory?

Mr. Carroll: What is that?

Mr. Carter: According to your theory—

Mr. Carroll: It is no theory at all.

Mr. Carter: —if they would cut down the grades—

Mr. Carroll: It is no theory at all.

Mr. Carter: Well, according to your idea, if they cut down the grades so they do not have to have these pushers, it is harder work for the fireman?

Mr. Carroll: Not in all cases, no, sir.

Mr. Carter: According to the argument you advanced in the beginning, is it true? But I confess I could not make you agree with me.

Mr. Carroll: I will just show you where it would not be if they do it, and where it is not now, where they are changing the line, if you want to hear it?

Mr. Carter: No, I do not care to hear it.

Mr. Lee: Just a minute, Mr. Caroll,—

The Chairman: Maybe Mr. Lee would like to hear it.

Mr. Lee: Mr. Carter is most interested in it. If all the

firemen on the Cumberland Division were instructed with the stoker and the engines were stoker engines, would you object to pooling the engines?

Mr. Carroll: No, sir, not after they have become thoroughly familiar with them.

Mr. Lee: You made a special study of these stoker engines, did you not, in service?

Mr. Carroll: I went out and made a number of trips and talked with the men operating them, the round-house forces, the people who built the stoker, and we got together, and we have eliminated lots of trouble. And they are, as I understand, improving every day.

Mr. Lee: Thank you, Mr. Carroll.

The Chairman: What are these stoker engines doing now?

Mr. Carroll: Hauling freight up and down the Cumberland Division; 50 of them there out of a total of 75 or 80, on that division.

Mr. Phillips: They are Mikados?

Mr. Carroll: They are Mikados, superheating Mikados, yes, sir.

Mr. Phillips: What are the dimensions? That is, cylinder size and weight on the drivers?

Mr. Carroll: The cylinders are 26 by 32; got 190 pounds of steam; tractive power 54,000; weight 223,000 on drivers; total of 282,000.

(Witness excused.)

THOMAS L. BAILEY, called as a witness, having been duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your position?

Mr. Bailey: Road Foreman of Engines on the Pennsylvania Lines west of Pittsburg, E. & A. Dvision?

Mr. Lee: E. & A. Division?

Mr. Bailey: E. & A. Division.

Mr. Lee: Where does your territory extend?

Mr. Bailey: Conway, Erie, Ashtabula, Alliance and Oil City.

Mr. Lee: How long have you been in that position?

Mr. Bailey: 13 years.

Mr. Lee: What were you before that?

Mr. Bailey: Engineer.

Mr. Lee: And before that fireman?

Mr. Bailey: Fireman.

Mr. Lee: You are familiar with the runs of the firemen in passenger and freight service over your territory?

Mr. Bailey: Yes, sir.

Mr. Lee: You are familiar with the time they are required to report for duty?

Mr. Bailey: Yes, sir.

Mr. Lee: Do your crews run between Pittsburgh and Erie?

Mr. Bailey: Passenger crews and a couple of freight crews.

Mr. Lee: Although a portion of the time they are off your territory?

Mr. Bailey: Yes, sir.

Mr. Lee: How long before the scheduled leaving time of the passenger train at the Pittsburgh station are your men required to report for duty?

Mr. Bailey: Two hours.

Mr. Lee: At Pittsburgh?

Mr. Bailey: I believe that is an hour and a half instead of two hours.

Mr. Lee: Why are they required to report so long ahead of time, Mr. Bailey?

Mr. Bailey: It is approximately a mile from the Allegheny engine house to the Pittsburgh station and there are only four tracks to get the engines over there, and they have to go over on the same tracks that all the passenger trains go on, and it requires considerable time to get them back and forth and be sure that you get them over there on time.

Mr. Lee: It is on account of the congested condition at that point?

Mr. Bailey: Yes, sir.

Mr. Lee: How many tracks cross the river?

Mr. Bailey: Four.

Mr. Lee: And across the bridge?

Mr. Bailey: Two.

Mr. Lee: At Erie how many hours before leaving time have these men to report?

Mr. Bailey: An hour and a half.

Mr. Lee: Why is that?

Mr. Bailey: They have to take the train from Dock Junction, which is about a mile and a half to the Lake Shore depot. They have to go out on the Lake Shore track and are required to make a shift of the passenger train on account of having to leave the mail car at the Lake Shore depot.

Mr. Lee: This hour and a half that they have to report ahead of time has been going on for a long time?

Mr. Bailey: Yes, sir.

Mr. Lee: And that is on account of the physical condition surrounding the work at those two points?

Mr. Bailey: Yes, sir.

Mr. Lee: The same conditions exist at other points on your division?

Mr. Bailey: No, sir.

Mr. Lee: Those are the only two points?

Mr. Bailey: Those are the only two points.

Mr. Lee: But do you know whether similar conditions exist at any other points on the Pennsylvania Lines West?

Mr. Bailey: No, I could not answer that.

Mr. Lee: Then in that case, Mr. Bailey, if men were allowed time in excess of one hour after reporting for duty before they left, these men in each and every case would receive thirty minutes overtime?

Mr. Bailey: Yes, sir.

Mr. Lee: Do you know of any way that that could be prevented?

Mr. Bailey: I do not see how it could be prevented at Pittsburgh. I suppose the company could put on a shifter at Erie and take the train down and make that shift on the mail car and baggage car and the engine could probably get down in half an hour.

Mr. Lee: There might be ways, but there are no ways you think of whereby the fireman and engineman could take the engine at the same place they do to-day and go to the starting point?

Mr. Bailey: No, not much less than they are required to.

Mr. Lee: That has always been considered part of the man's work in the run?

Mr. Bailey: Yes, sir.

Mr. Lee: And that hour and a half enters into his overtime?

Mr. Bailey: Yes.

Mr. Lee. Mr. Bailey, I wish you would describe to the Board, the fluctuations in your freight traffic at the Lakes, in the way of the coal and the ore.

Mr. Bailey: The E. & A. Division is a mineral road. The traffic is principally iron ore, coal and coke.

The business is liable to fluctuate very much, due to the boats being late in getting in. Or sometimes when they come down to the lakeport, there is a storm and the boat cannot get in. Sometimes we have a number of crews at the lakeport.

The same condition prevails at Conway where we get coal, and it requires the crews to lie over there, and hold the power at the lakeports on account of the boats not getting in regularly, and also at times on account of that diversion of the boats. Instead of bringing in the boat at the port where it was originally intended, it is sent to some other port.

We have trouble at Conway with the coal not coming regularly. We will have power sent down there to take coal or coke out, and something goes wrong at the mine, or the miners do not work, and we have power lying over at Conway.

Mr. Lee: That is, the railroad has no control over the boats coming in with the ore?

Mr. Bailey: Absolutely no control.

M. Lee: Or coming in or going out with the coal?

Mr. Bailey: No, sir.

Mr. Lee: They might expect a boat at Ashtabula, and get their crews up there for the order from that boat, and the boat be diverted, without the knowledge of the railroad?

Mr. Bailey: Exactly; that is, not in sufficient time to change the routing of the power.

Mr. Lee: Have you any idea how large those boats are?

Mr. Bailey: The large ones, about ten thousand tons.

Mr. Lee: That would be about 250 cars?

Mr. Bailey: Yes.

Mr. Lee: And the cars have to be ready so as to take that stuff out pretty promptly as a rule?

Mr. Bailey: Yes, they have got to keep it away from the boats.

Mr. Lee: And keep the yards from getting choked?

Mr. Bailey: Yes.

Mr. Lee: And so as to be able to discharge the boat?

Mr. Bailey: Yes.

Mr. Lee: If this held away from home terminal article went in, would that seriously affect the cost of operation up there, to your knowledge?

Mr. Bailey: I do not know that I would say it would seriously affect it. It would result in paying quite a bit of terminal overtime, though.

Mr. Lee: A tremendous amount of held-away overtime?

Mr. Bailey: Yes, quite a bit of it.

Mr. Lee: On account of matters over which the railroad has no control?

Mr. Bailey: No control at all.

Mr. Lee: The railroads do not control the amount of coal mined?

Mr. Bailey: Not in the last, not so far as I know, anyway.

Mr. Lee: Do you know anything about the number of consignees that they have up there at the lakes?

Mr. Bailey: No, I do not, but I know there is quite a lot of them; I have just glanced at them.

Mr. Lee: That necessitates the keeping of a large number of crews on hand?

Mr. Bailey: Yes, a great many of those crews.

Mr. Lee: And those crews have to be gotten back and forth?

Mr. Bailey: Yes.

Mr. Lee: Whenever the boats come in or go out?

Mr. Bailey: Yes, in many cases.

Mr. Lee: You may cross-examine.

The Chairman: Mr. Carter, you may take the witness.

CROSS EXAMINATION:

Mr. Carter: You have been on this division a long while, have you not?

Mr. Bailey: Yes.

Mr. Carter: Do you believe the work now on these big engines is harder for the firemen than it was years ago on the little engines?

Mr. Bailey: Yes, if you go back years enough.

Mr. Carter: I mean to say, do you not think that gradually with the increase of power and tonnage, there has been an increase in labor?

Mr. Bailey: Yes, a gradual increase.

Mr. Carter: You spoke of the delivering of these engines and so forth and it being necessary to call the crews in advance for that. If you had road hostlers to handle these engines, perhaps like they do on the New York Central, then you would not have to call these crews an hour and a half or two hours in advance, would you?

Mr. Bailey: No, sir, provided he was an engine man. We would not let a hostler take an engine out on the main track on the E. & A. Division.

Mr. Carter: If you had what you call a road hostler, why could he not take it out? You heard the testimony about the New York Central?

Mr. Bailey: Mr. Carter, I did not understand him to say that he was a promoted man, examined on rules and so forth.

Mr. Carter: No, he is a man that understands the rules of the yard, the signals, and so forth. He looks out for the safety of the train. He has to pass all those examinations, practically an egineer's examination.

Mr. Bailey: If he could pass the engineer's examination and had a fireman, he could do that?

Mr. Carter: You spoke of the business fluctuating on account of the lake freezing up, and the flucuations in the lake traffic. That or any other depression in business is a hardship on the company, is it not?

Mr. Bailey: I did not say on account of the lake freezing up. I said the boats were sometimes diverted, or a storm would come up, or the boats would get delayed, and they would run the crews to the lakeport to take the ore away, and then they got the crews in there, the boat would not come when expected, or would not come at all.

Mr. Carter: If the firemen are delayed now at the lakeport

because of these unforeseen circumstances, it decreases the earnings of the firemen, does it not?

Mr. Bailey: Certainly.

Mr. Carter: And increases their expenses away from home?

Mr. Bailey: Certainly.

Mr. Carter: Then if the rules were changed as requested here, it would be the company that would pay these expenses instead of the firemen, would it not?

Mr. Bailey: Yes, sir, certainly.

Mr. Carter: It is just simply an effort on the part of the firemen to relieve themselves of this burden of waiting?

Mr. Bailey: Well, I suppose that is what they call it.

Mr. Carter: If the firemen think the company is better able to stand that extraordinary expense than the firemen are they naturally would make this request, would they not?

Mr. Bailey: Yes, very likely.

Mr. Carter: You do not think firemen should be held away from home?

Mr. Bailey: Not any more than is necessary.

Mr. Carter: In the case of some roads, lake conditions have nothing to do with it, but suppose bulletins are posted that forbid the starting out of any train without full tonnage, and that results in firemen being held away from home for long periods of time, does not that also decrease the earnings of the firemen, and increase their living expenses?

Mr. Bailey: Certainly, anything that would delay firemen at a terminal, would decrease their earning capacity.

Mr. Carter: I guess that is all.

Mr. Atterbury: Mr. Bailey, was the Conway yard in operation in 1902?

Mr. Bailey: Yes.

Mr. Atterbury: What was your standard engine running between Erie and Conway at that time?

Mr. Bailey: The H-4.

Mr. Atterbury: And what is your standard to-day?

Mr. Bailey: The H-8-A and H-8-C.

Mr. Atterbury: What was the rate in 1902?

Mr. Bailey: What do I understand by the rate?

Mr. Atterbury: The fireman's rate.

Mr. Bailey: I cannot give you that.

Mr. Carter: Is it any easier to fire the H-4 than it is to fire the H-8?

Mr. Bailey: Oh, my, no; the firemen on this lake run between Conway, Erie and Ashtabula, are not shovelling nearly as much coal to-day as they did in 1902 on the H-4 engine. That is due to the design of the engine, the greater grate area.

Mr. Atterbury: What is the tonnage to-day as compared to 1902?

Mr. Bailey: About the same. I cannot give you that exactly, but it is about the same tonnage.

Mr. Atterbury: What is the fireman's rate to-day?

Mr. Bailey: He gets $3.80 from Conway to Erie.

Mr. Atterbury: What is the mileage?

Mr. Bailey: 126 miles.

Mr. Atterbury: Does he make any more overtime to-day than he did in 1902?

Mr. Bailey: Not so much.

Mr. Atterbury: Is he paid for more than he was in 1902?

Mr. Bailey: Well, I suppose there are conditions that have entered into it that make the firemen's wages more than they were in 1902; such as, if they are called they get more time for that. If they have to stay in the roundhouse, they get paid to-day because they lose their run. The same thing, if they are called for the yard, and we cut off part of the day, they get the day's pay. There are a number of things that enter into the firemen's wages to-day, that increase them over what they were in 1902; and they do less work now, particularly in the heavy freight service on the E. & A. Division. In those days they were expected to clean the engine, which they are not to-day.

The Chairman: You said the fireman does less work now, and gets more pay?

Mr. Bailey: On these particular runs, what we term our heavy through freight runs between the lake ports and Conway.

The Chairman: How about the slow freight?

Mr. Bailey: Those are slow freights. Those are heavy mineral trains. We have some short runs out of Lawrence Junction on which, I think, the firemen are doing quite a little bit more work than they were in 1902, because we had some quite small engines that ran out of Lawrence Junction in 1902, where we practically have no small engines in through freight to-day.

The Chairman: Is it true, as a general proposition on that division, that the firemen are getting more pay and doing less work?

Mr. Bailey: Oh, my, yes.

Mr. Lee: I did not hear that answer.

Mr. Bailey: I say yes.

Mr. Lee: Do you remember what was the weight on drivers of the H-4?

Mr. Bailey: 156,200 pounds.

Mr. Lee: And the weight on drivers of the H-8-C?

Mr. Bailey: I had that copied down, and I have it here; it is 205,500.

Mr. Lee: Mr. Bailey, did the firemen on your division get paid for preparatory time in 1902?

Mr. Bailey: Just the same, I think in that respect as it is to-day. They got paid from the time they were required to report for duty.

Mr. Lee: That is all.

The Chairman: The witness is excused, and we will take a recess until 2 o'clock.

(Whereupon, at 12:30 P. M., a recess was taken until two o'clock P. M.)

After Recess, 2 P. M.

E. R. McBAIN, called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your position?

Mr. McBain: I am Superintendent of Motor Power of the Lake Shore, Chicago & Indiana Southern and Indiana Harbor Belt.

Mr. Lee: How long have you been in that position?

Mr. McBain: Three years.

Mr. Lee: What were you previously?

Mr. McBain: Assistant Superintendent of Motive Power for the last two years.

Mr. Lee: Were you ever Road Foreman?

Mr. McBain: I was, yes, sir.

Mr. Lee: Engineer?

Mr. McBain: Yes, sir.

Mr. Lee: Locomotive fireman?

Mr. McBain: Yes, sir.

Mr. Lee: Did you ever make a statement, Mr. McBain, that the firing of locomotives was past human endurance?

Mr. McBain: No, sir.

Mr. Lee: Do you think it is fact?

Mr. McBain: No, sir.

Mr. Lee: You do not think a fireman's job is a bed of roses?

Mr. McBain: No.

Mr. Lee: But you do not think it past human endurance?

Mr. McBain: No, sir.

Mr. Lee: He does work hard at times?

Mr. McBain: Yes, sir; unquestionably.

Mr. Lee: You had some tests made, Mr. McBain, of the various classes of engines in freight and passenger service on the Lake Shore?

Mr. McBain: Yes, sir.

Mr. Lee: I would be glad if you would explain those to the board.

Mr. McBain: These tests were made during the month of February with a view of ascertaining just how the freight and passenger locomotive of the present time compared with the present freight and passenger locomotive of the period of 1900 and 1902, along there. Now, we arranged to make a series of runs, three round trips between Buffalo and Youngstown in passenger service; that is for one class of engines, the J-40 engines, the engine of 1900. Then we used the engine of 1904 for three round trips between Buffalo and Cleveland, and the engine of 1911 for three round trips between the same points, that is the passenger.

Mr. Lee: Have you additional copies of those?

Mr. McBain: I have, yes, sir (producing papers). The idea of these tests was to determine actually how much more coal the present engine was burning than the engine of the earlier period of 1900 and 1902 per locomotive mile or in any other way we could figure it. And I find that on the runs between Youngstown and Buffalo we used the J-40 engines, as shown in the first col-

umn there on the second sheet, two of them, one between Buffalo and Ashtabula and another between Ashtabula and Youngstown, the total mileage of the run being about 192 miles. For the purposes of comparison we considered this class of engine 100%. Commencing from the top of the thing, it will be noticed the average cars per train on those runs between Youngstown and Buffalo was seven cars, which we call 100% for comparison.

Mr. Lee: Which sheet are you reading from?

Mr. McBain: The second sheet.

Mr. Lee: At Eastern Division?

Mr. McBain: Yes, sir, proceed.

Mr. Lee: The miles are 192. Average actual running time four hours. Average time over the road 4 hours 28 minutes. Average coal per trip in pounds 19,360. Average pounds fired per mile 101. Average pounds fired per running hour 4840. Average pounds fired per hour on the road, 4,337.

Now, in following right over on the sheet to the right, we start in on the runs between Cleveland and Buffalo, where we have one of the 4715 Class, J-41 type of 1904. Tractive power 28,600 pounds, 113% of that of the 100% engine we just read about. Weight on drivers 168,000 pounds. Per cent. of weight as compared with 100%, 125.4%. The average cars on these trains on these runs were six.

Mr. Atterbury: May I ask, I notice you have not given the weights of the cars or anything of that sort. Are these cars of exactly the same type so that the weight of the train is relatively in proportion to the number of cars?

Mr. McBain: It would be. Now exactly, I would not say exactly, Mr. Atterbury, but they are of the same type practically; there may be a steel one or two, I cannot say as to that.

Mr. Atterbury: Then these percentages practically represent the weight, do they?

Mr. McBain: Yes, sir. Those are high class trains between Buffalo and Cleveland.

Mr. Atterbury: And your average pounds fired per mile — that is per engine mile, is it?

Mr. McBain: Yes, sir. Miles run, 192. I will have to make a correction there, gentlemen. I had not noticed that before. That engine was on the run between Youngstown and Buffalo too, that 4715. Average actual running time 3 hours and 55 minutes for the three trips. Average time over the road 4 hours and 22

minutes. Average coal per trip in pounds, 20,840. Per cent. of the 100 per cent. engine 107.6. Average pounds fired per locomotive mile 109. Average pounds fired per running hour, 5,340 or 110 per cent. of the amount consumed by the 100 per cent. engine. Average pounds fired per hour on the road, 4,772, which is 110 per cent. of the coal consumed by the 100 per cent. engine. Now, all of the engines so far talked about were saturated steam engines. The next engine shows a record for three trips between Buffalo and Cleveland. That is a K-2-L engine, type of 1907, saturated steam, weighing 29,900 pounds on drivers, which is 118 per cent. of the 100 per cent. engine.

Mr. Atterbury: Make that "tractive power" instead of "weight on drivers."

Mr. McBain: "Tractive power," yes. I beg your pardon. Weight on drivers 170,700 pounds. The average cars hauled was 8. The miles run in these tests was 183. The average actual running time was 3 hours and 51 minutes. The average time over the road was 4 hours and 7 minutes. The average coal per trip, in pounds, was 19,120. The average pounds fired per mile was 104.4. The average pound fired per running hour was 5,060. The average pounds fired per hour on the road was 4,645.

The next column deals with three round trips between Buffalo and Cleveland, an engine of approximately the same class, 4817, K-2-B engine, the 1911 type, equipped with superheater. Tractive power 29,900 pounds. Weight on drivers 170,700 pounds. Average cars in the three trips, 9. Average actual running time 3 hours and 41 minutes. Average time over the road 4 hours and 9 minutes. Average coal per trip, in pounds, 17,280. Average pounds fired per mile 94.5. Average pounds fired per running hour 4,700. Average pounds fired per hour on the road 4,162.

The next column has to do with the K-3-B engine, a type developed in 1911. The runs were between Buffalo and Cleveland, three round trips as in the other cases. This is a superheater locomotive. Tractive power 31,700 pounds. Weight on drivers 173,000 pounds. Miles run 183. Average actual running time 3 hours and 38 minutes. Average time over the road 4 hours and 11 minutes. Average coal consumed per trip in pounds 12,560. Average pounds fired per mile 68.7. Average pounds fired per running hour 3,460. Average pounds fired per hour on the road 3003.

As I stated, the purpose of these tests in the first place was to determine for our own information just what the difference in fuel consumption, if any existed, there was between the engines of 1902 and along there, and the latest development, the type of 1911; and it will be noticed, if you follow the percentages of all the items; for instance, following the item of percentage of train hauled, the average coal per trip in pounds, the average pounds fired per mile, beginning with that one, you will note that the type of 1902 or thereabouts burned 101 pounds per mile, while the later development of 1911, hauling a train of the same weight, burned 68.7 per cent. of that. Taking the next item, average pounds fired per running hour, it will be noted in one case, the case of the 100 per cent. engine burning 4,840 pounds per hour, and in the case of the 1911 engine, 3,460 pounds per hour, with the same train. Average pounds fired per hour on the road in the case of the 100 per cent. engine, 4,337, as against 3,003 pounds with the 1911 engine.

Mr. Lee: The weight on drivers of that earlier engine, the 100 per cent. engine is what?

Mr. McBain: 134,000 pounds.

Mr. Lee: What is the weight on drivers of the K-3-B, the 1911 engine?

Mr. McBain: 173,000 pounds.

Mr. Lee: What is the next one?

Mr. McBain: I will follow the passengers through on the Michigan Division. The balance of the passenger runnings were made on the Michigan Division between Elkhart, Indiana, and Toledo, Ohio. The first column on the left shows the performance of the J-40 engine, the type of 1900, and we use that in this case as 100 per cent., the same as in the other. With a train of six cars—will I read all of this tractive power and everything? It is the same class of engine.

Mr. Lee: It might be well, to get it into the record.

Mr. McBain: All right, sir. This is the type of 1900—

Mr. Lee: Unless it is the desire of the Board that this be printed in the record.

The Chairman: Whichever way you prefer, Mr. Lee, about that. They can go into the record and then you can ask about them.

Mr. Lee: Have it printed in the record?

The Chairman: Yes.

(The papers referred to by Mr. Lee are as follows):

LAKE SHORE & MICHIGAN SOUTHERN RAILWAY CO.

Results of Coal Tests—Michigan Division.

Freight Service—Superheater vs. Saturated.

Date, 1913.....	February	February	February	February	February
Engine Number	5710	5762	5640	5624	4003
Class	G42	G43	G6	G6	H7
Type of	1900	1901	1907	1911	1913
Kind of Steam.....	Saturated	Saturated	Saturated	Superheater	Superheater
Tractive Power	35,100	36,800	47,200	47,200	56,000
Percent.	100	104.8	134.5	134.5	159.5
Weight on Drivers.....	149,000	158,000	214,500	214,500	245,000
Percent.	100	106.0	144.0	144.0	164.4
Average Cars	43	41	65	60	70
Average Tonnage	1499	1585	1961	2335	3203
Percent.	100	105.7	130.8	155.8	213.7
Miles Run	131	131	131	131	131
Average Actual Running Time	8′ 35″	8′ 16″	7′ 31″	8′ 01″	7′ 30″
Average Time Over Road	11′ 56″	11′ 31″	10′ 17″	11′ 08″	9′ 51″
Average Coal Per Trip in Pounds.....	33,000	26,200	30,800	31,800	25,700
Percent.	100	79.4	93.3	96.4	77.9
Average Pounds Fired Per Mile.	252	200	235	243	196
Average Pounds Fired Per Hour on Road..	2760	2280	4040	2860	3430
Percent.	100	82.6	146.4	103.6	124.3
Average Pounds Fired Per Running Hour...	3842	3158	4100	3968	3428

LAKE SHORE & MICHIGAN SOUTHERN RAILWAY CO.

Results of Coal Tests—Eastern Division.

Freight Service—Superheater vs. Saturated.

Date, 1913	February	February	February	February	February	February
Engine Number	5724	5842	4731	5601-5605	5660-5662	4001
Class	G42	G43	J41	G6 G6	G6 G6	H7
Type of	1900	1901	1904	1907	1911	1913
Kind of Steam	Saturated	Saturated	Saturated	Saturated	Sup'rheat	Sup'rheat
Tractive Power	35,100	36,800	28,600	47,200	47,200	56,000
Percent.	100	104.8	81.5	134.5	134.5	159.5
Weight on Drivers	149,000	158,000	170,000	211,500	211,000	245,000
Percent.	100	106	114.1	141.9	141.6	164.4
Average Cars	48	42	44	52	62	82
Average Tonnage	1716	1508	1166	2009	2115	2375
Percent.	100	87.9	67.9	117.1	123.2	138.4
Miles Run	179	179	179	179	179	179
Average Actual Running Time	12′ 52″	10′ 16″	8′ 20″	12′ 08″	10′ 17″	11′ 41″
Average Time Over Road	21′ 04″	15′ 16″	11′ 14″	19′ 10″	17′ 36″	19′ 22″
Average Coal Per Trip in Pounds	42,200	39,600	31,580	39,360	31,180	41,720
Percent.	100	93.8	74.8	93.3	73.9	98.9
Average Pounds Fired Per Mile	236	221	177	220	174	233
Average Pounds Fired Per Hour on Road	2005	2593	2822	2054	1771	2155
Percent.	100	135.8	147.8	107.6	92.7	107.4

LAKE SHORE & MICHIGAN SOUTHERN RAILWAY CO.

Results of Coal Tests—Eastern Division.

Passenger Service—Superheater vs. Saturated.

Date, 1913.....	February	February	February	February	February
Engine Number	4685-4681	4715	4887	4817	4903
Class J40H-J40H		J41C	K2L	K2D	K3B
Type of	1900-1900	1904	1907	1911	1911
Kind of Steam.....	Saturated	Saturated	Saturated	Superheater	Superheater
Tractive Power	25,300	28,600	29,900	29,900	31,700
Percent.	100	113	118.2	118.2	125.3
Weight on Drivers.....	134,000	168,000	170,700	170,700	173,000
Percent.	100	125.4	127.4	127.4	129.1
Average Cars	7	6	8	9	7
Percent.	100	85.7	114.3	126.8	100.0
Miles Run	192	192	183	183	183
Average Actual Running Time	4′ 00″	3′ 55″	3′ 51″	3′ 41″	3′ 38″
Average Time Over Road	4′ 28″	4′ 22″	4′ 07″	4′ 09′	4′ 11″
Average Coal Per Trip in Pounds.....	19,360	20,840	19,120	17,280	12,560
Percent.	100	107.6	98.8	89.3	64.9
Average Pounds Fired Per Mile.....	101	109	104.4	94.5	68.7
Average Pounds Fired Per Running Hour...	1840	5340	5060	4700	3460
Percent.	100	110.3	104.5	97.1	71.5
Average Pounds Fired Per Hour on Road...	4337	4772	4645	4162	3003
Percent.	100	110	107.2	96	69.2

LAKE SHORE & MICHIGAN SOUTHERN RAILWAY CO.

Results of Coal Tests—Michigan Division.

Passenger Service—Superheater vs. Saturated.

Date, 1913.....	February	February	February	February	February
Engine Number	4652	4726	4865	4827	4897
Class	J40	J41	K2	K2	K3
Type of	1900	1904	1907	1911	1911
Kind of Steam.....	Saturated	Saturated	Saturated	Superheater	Superheater
Tractive Power	25,300	28,600	29,900	29,900	31,700
Percent.	100	113	118.2	118.2	125.3
Weight on Drivers....	134,000	170,000	170,700	170,700	173,000
Percent.	100	126.8	127.4	127.4	129.1
Average Cars	6	9	10	9	9
Percent.	100	150	166.7	150	150
Miles Run	133	133	133	133	133
Average Actual Running Time	3′ 30″	3′ 06″	3′ 01″	2′ 55″	2′ 59″
Average Time Over Road	4′ 21″	3′ 27″	3′ 19″	3′ 13″	3′ 16″
Average Coal Per Trip in Pounds.....	12,640	13,780	14,400	12,640	10,800
Percent.	100	109	113.9	100	85.4
Average Pounds Fired Per Mile.....	95	104	108	95	81
Average Pounds Fired Per Running Hour..	3608	4440	4780	4340	3620
Percent.	100	123.1	132.5	120.3	100.3
Average Pounds Fired Per Hour on Road..	2905	3995	4342	3930	3307
Percent	100	137.5	149.5	135.2	113.7

Mr. Lee: Take your Michigan Division, Mr. McBain, and just give us the result of the average coal per trip of that J-40 and the K-3, and also generally.

Mr. McBain: We will commence with the tractive power. In the case of the J-40 it is 25,300; in the case of the K-3, it is 31,700. Weight on drivers of the J-40, 134,000; of the K-3, 173,000. The cars hauled with the J-4 were six, and with the K-3, nine. These are averages for three round trips, you understand. The miles run were the same in all cases, 133. The average actual running time with the J-40 was three hours and thirty minutes; with the K-11, it was two hours and 59 minutes. The average time over the road with the J-40 was 4 hours and 21 minutes, and with the K-11 it was 3 hours and 16 minutes. The average coal per trip, in pounds, with the J-40, was 12,640; with the K-3 engine, it was 10,800. The average pounds fired per mile with the J-40, 95; with the K-3 engine, 81. The average pounds fired per running hour with the J-40 engine, 3608; with the K-11 engine, 3620. Average pounds fired per hour on the road with the J-40, 2905; with the K-3, 3307. That completes the passenger tests.

In addition to that we made three round trips on the Eastern Division with types of engines as follows: The G-42, G-43, G-6 with the superheater and without, and the H-7 engine, the Mikado, the latest development. The same type of power was used on both divisions. On the Eastern Division we used the G-42 type as 100 per cent, as we did in the passenger tests, for convenience in comparison. The G-42 engine is saturated steam; tractive power, 36,100 pounds; weight on drivers, 14,900 pounds. Average cars, 48; that is the number of cars in the train. Average tonnage, 1.716. Miles run, 179. Now, there may be a mistake of three or four miles in that; it may be 174 or 175, but the boys put it in here at 179. The other figures are correct, however.

Mr. Lee: The same mileage was used in each case?

Mr. McBain: Yes, sir.

Mr. Atterbury: That is Sheet 4?

Mr. McBain: Sheet 4.

Mr. Lee: Eastern Division?

Mr. McBain: Eastern Division, yes, sir. The average actual running time with the G-42 engine was 12 hours and 52 minutes.

The time over the road was 21 hours and 4 minutes. I want to make an explanation here. That required two crews; that is, one crew between Buffalo and Erie, and the other crew between Erie and Collinwood.

Mr. Lee: This is two crews then, this 1252 and 2104?

Mr. McBain: Yes, sir.

Mr. Lee: Does it represent two crews all the way through?

Mr. McBain: It does every test on the Eastern Division; yes, sir.

Mr. Lee: On the Eastern Division these six columns all represent two crews?

Mr. McBain: Two crews, yes, sir. The average coal per trip, in pounds, for this G-42 engine was 42,200. Average pounds fired per mile was 236. The average pounds fired per hour on the road was 2,005. Shall I compare that with the 1911 engine, or do you wish me to go through with them all?

Mr. Lee: You might compare that with the two 1911 engines, the G-6 and H-7.

Mr. McBain: The next one is the G-6 engine with superheater. That is the type of 1911, the last of the G-6's that were put in. That engine has 47,200 pounds tractive power, 211,000 pounds on the drivers. Her average number of cars per train was 62. The average tonnage per train was 2,115. Miles run, 179,—the same as in the other cases. The average actual running time was 10 hours and 17 minutes. Average time over the road, 17 hours and 36 minutes. Average coal per trip, in pounds, 31,180. Average pounds fired per mile, 174. Average pounds fired per hour on the road, 1,771. Now, go over to the next column to the right, which is the H-7 engine of 1913. This engine has a superheater. The tractive force is 56,000 pounds. The weight on the driver is 245,000 pounds. The average cars per trip were 82. Average tonnage per train was 2,375. Its miles run was 179, as in the other cases. The average actual running time was 11 hours and 41 minutes. Average time over the road, 19 hours and 22 minutes.

Average coal per trip in pounds 41,720. Average pounds fired per mile 233. Average pounds fired per hour on the road 2155.

Mr. Lee: From this statement, Mr. McBain, this Mikado burned substantially the same amount of coal at G-42?

Mr. McBain: Yes, substantially the same.

Mr. Lee: With the Mikado weighing 245,000 pounds on the drivers and the G-42 weighing 149,000 on the drivers?

Mr. McBain: Yes.

Mr. Lee: How about these Michigan Division tests?

Mr. McBain: They were made with the same classes of power under the same conditions for the same purpose.

Mr. Lee: You may just read from the average coal per trip from pounds down?

Mr. McBain: With the engine 5710 of the G-42 Class type of 1900, saturated steam, the average pounds of coal per trip was 33,000. Average pounds fired per mile, 252. Average pounds fired per hour on the road, 2,760. Average pounds fired per running hour 3,842.

Mr. Lee: Now for the H-7?

Mr. McBain: With the H-7, on the same run in the same district, that is a superheater engine with a tractive force of 56,000 pounds; weight on drivers 245,000 pounds; average tonnage 3,203.

Mr. Lee: Average coal per trip?

Mr. McBain: Average coal trip 25,700 pounds. Average pounds fired per mile 196. Average pounds fired per hour on the road 3,430. Average pounds fired per running hour 3,428.

Mr. Lee: That shows that for the trip with the big engine weighing 245,000 pounds on the drivers as against the smaller engine weighing 149,000 on the drivers, there was something like 7,300 pounds less coal shoveled?

Mr. McBain: Yes.

Mr. Lee: That there was 56 pounds per mile less coal shoveled?

Mr. McBain: Yes.

Mr. Lee: There was 400 pounds per hour running time less coal shoveled?

Mr. McBain: Yes.

Mr. Lee: While it does show an increase of coal shoveled per hour on the road. That I presume is on account of the G-42 standing still a good deal longer than the Mikado?

Mr. McBain: Yes, and the Mikado made better time over the division. If you will notice, her actual time was 7 hours and 30 minutes as against 8 hours and 35 minutes for the G-42.

Mr. Lee: That is, the running time was about an hour better while the actual time on the road was 2 hours better?

Mr. McBain: Yes.

Mr. Lee: Indicating that the G-42 laid up more perhaps?

Mr. McBain: Yes.

Mr. Lee: Do you say, Mr. McBain, that these tests would be typical of the same engine for the same class of service over the same territory?

Mr. McBain: Yes.

Mr. Lee: You would consider these tests, in your usual line of work, as typical?

Mr. McBain: Yes.

Mr. Lee: Will you state to the Board how you arrive at the coal consumption?

Mr. McBain: On the Michigan Division we weighed the coal. The computation was made by actual weights. We have weighing scales on the Michigan Division.

On the Eastern Division we measured the coal by the cubic foot, calibrating the tenders before the tests were started and knowing just what the cubical contents was for each. Before any coal was taken, the coal was leveled off and a record made of it, and after the coal was taken the remaining coal was leveled off and another record made of it, so that we got very close to the actual cubical contents of the tender. We have not weigh scales on the Eastern Division, and that is the reason why we had to resort to measurements.

Mr. Lee: From your knowledge and experience, Mr. McBain, and from any tests or observations you have made, would you consider that the weight on drivers would be a measure of the fireman's work?

Mr. McBain: No, sir.

Mr. Lee: Do you consider that under the existing conditions engines weighing over 200,000 on the drivers should have two firemen at all times in through freight service?

Mr. McBain: No, sir.

Mr. Lee: Why not?

Mr. McBain: There is no occasion for anything of the kind. When you say why not, the reason is this, that the work on the fireman, necessary for firing any engine that we have in our district, even including our 245,000 engines, is well within the capacity of the average young man.

Mr. Lee: Would you say that taking through freight service as a whole, that the work depended on the class of service and working conditions surrounding that service?

Mr. McBain: Very much, yes, sir.

Mr. Lee: Or the conditions surrounding the run?

Mr. McBain: Very much, yes, sir.

Mr. Lee: Then you would not think that there was any one factor that would determine the amount of work a fireman does, such as the weight on drivers?

Mr. McBain: No, sir, I would not.

Mr. Lee: You may cross-examine.

CROSS EXAMINATION:

Mr. Carter: In this blueprint test here, engine 5,724, had 1,716 tons?

Mr. McBain: Yes.

Mr. Carter: How near was that to her full rating?

Mr. McBain: I cannot tell off-hand. I can find out from Mr. Freeman; I think it is about 75 per cent.

Mr. Carter: I understand 2,000 tons was the rating.

Mr. McBain: I can find that out for you. I haven't it right here.

Mr. Lee: Which one is that?

Mr. Carter: The first column. Now, comparing that with the Mikado, 2375, what was her average rating, or what is her rating.

Mr. McBain: Those engines have not been on our line but a couple of months, and I do not remember just what the rating is, but I think it is about 3,800 tons.

Mr. Lee: These were not selected trains.

Mr. McBain: No.

Mr. Lee: These were regular service trains?

Mr. McBain: These were regular service trains.

Mr. Carter: What I want to bring out is, it appears from what I understand that the smaller engine in this comparison was loaded to perhaps her maximum limit, or very heavy, while the Mikado engine is now pulling over 6,000 tons, while in this test she only pulled 2,375 tons.

Mr. Lee: Where are you reading from—I see, the last page.

Mr. Carter: The last page.

Mr. McBain: The reason for that is that the G-42 engine had but 48 cars, while the H-7 engine had 82 cars.

Mr. Carter: These are flat tons on here, are they not?

Mr. McBain: Equated.

Mr. Lee: Those are adjusted tons?

Mr. McBain: Those are adjusted tons, yes, sir.

Mr. Carter: The point I want to bring out is, is it not a fact that in any service, if a smaller engine is taxed to her capacity or the tonnage is so that she cannot be worked economically, that a reduction in the saving of coal can be shown at any time, by taking a larger engine and pulling the same tonnage, where the steam can be used more expansively.

Mr. McBain: That might or might not be true. We do not consider, and I do not consider in this case that the G-42 engine was overloaded. I will find out what the tonnage was. I think it is about 2,500 tons. Mr. Freeman, will you get that tonnage for the G-42 on the Eastern Division?

Mr. Carter: Presuming that on the Lake Shore with its high class passenger trains, on account of increased traffic and heavy steel cars and so forth, you found it was difficult to make the time with the engine that had been in use, and she had the same pounds in her, was beaten over the back—you know what I mean?

Mr. McBain: Yes.

Mr. Carter: Under those conditions would not that engine burn coal less efficiently than if she had a lighter tonnage?

Mr. McBain: Decidedly so.

Mr. Carter: Presuming that you have had this identical experience, that you got a larger engine, say a Pacific engine, if you like, to supplant a ten wheeler, and on the same train with this larger engine you showed a reduction in the amount of coal burned?

Mr. McBain: Yes.

Mr. Carter: Is not that true?

Mr. McBain: Yes, sir, that is true.

Mr. Carter: Then this statement here would be a natural conclusion, that with the smaller engine, 5,427, with a tonnage of 1,716 tons, you would naturally expect the Mikado to burn less coal with anything like the same tonnage.

Mr. McBain: No, Mr. Carter, you are getting freight and passenger mixed in there. I was trying to follow you on a passenger engine.

Mr. Carter: I have the table freight results of coal, this is on the Eastern Division, tests of superheated versus saturated.

Mr. McBain: Yes.

Mr. Carter: The first column is engine 5,724?

Mr. McBain: Yes, sir, that is right, 5,724 on the Michigan Division or on the Eastern Division.

Mr. Carter: The other engine is 4,001.

Mr. McBain: Yes.

Mr. Carter: I called the wrong number. What I mean to say is that even without a superheater would we not expect that big Mikado to handle that same tonnage or practically the same tonnage more economically than the smaller engine?

Mr. McBain: No, sir, not necessarily.

Mr. Carter: Is not that the experience in passenger business, where they put on bigger engines?

Mr. McBain: Not wholly due to the size of the engine. The modern locomotive is a different proposition to what it was in 1900, in that the boiler is built in better proportion to the engine; it has the advantage of having a superheater, which was not used in 1900, and which makes a vast difference in the amount of coal, and in the efficiency of the locomotive; and besides, the engine of 1913 is a better draughted engine, more economically draughted so that the rate of combustion of the coal burned in the fire-box is very much slower than it was in the 1900 engine. Even with the same number of cars, that would be true.

Mr. Carter: In order to put my question a little differently, let us presume that we have a Mikado equipped with a superheater of a certain design, weighing 150,000 pounds on drivers and she is in a service where she is overloaded; that is, she has got a tonnage on her so that she cannot make the best of the coal consumption; you have to keep her in a corner, or cannot hook her back as quickly, as you could, because of the excess tonnage. Now, on that same run with that tonnage, we take another engine of identically the same modern character, but which weighs 175,000 pounds on drivers and hitch her on to the same train. Would not the heavier engine give better results on the same train than the 150,000 pound engine that was overloaded?

Mr. McBain: Yes, any engine that is overloaded cannot be economically operated.

Mr. Carter: That is the idea.

Mr. McBain: There is no dispute on that.

Mr. Carter: Now if you take that heavier engine and overload her in the same manner, then she would develop a higher ability to burn more coal.

Mr. McBain: Most decidedly, but it would not be in the same ratio as the engine of 1900 was affected, because of the better design of the locomotive, and the more improved appliances now used.

Mr. Carter: Do you believe, Mr. McBain, that if the engines to-day were built on the same order, we will say, as they were at those times, and were doing the same kind of work; that is, were as efficient as they ought to be, that it would be possible for a man to fire them?

Mr. McBain: I don't know that I get your question, Mr. Carter.

Mr. Carter: Presuming that these modern developments had not been adopted, and put on these huge locomotives, would it be possible for a fireman to fire them now?

Mr. McBain: Yes, for the reason that my report, from my record, shows that the engine used before the Mikado came into existence, before the old G-42 engine was relegated to branch service, was even a more economical engine with increased tonnage, and burned less coal than the G-42. It was a better designed locomotive, had a wider firebox and larger grate area. Very much better heating surface in proportion to the size of the cylinder.

Mr. Carter: You believe that large grate area is essential to economical combustion?

Mr. McBain: Well, there is a question about that, large enough.

Mr. Carter: Large enough. If an engine had been designed in the beginning to burn a certain amount of coal or to evaporate a certain amount of water, anything that would reduce that grate area in that way,—in the way of a clinker, or anything of that kind, which would reduce it by one-third, or reduce to two-thirds the original grate area, that would reduce the efficiency of that engine?

Mr. McBain: Possibly. It would do one thing or the other.

You would have to burn the part of the grate that was open at the higher rate of combustion, in order to make up for the lost grate surface.

Mr. Carter: How would you reach that?

Mr. McBain: Probably by having an increased draft in the front end.

Mr. Carter: Reducing the nozzle?

Mr. McBain: Reducing the front end.

Mr. Carter: Do you remember the rise and fall, not of the Roman Empire, but of the compound locomotive?

Mr. McBain: Yes, sir; I do not admit, Mr. Carter, that it has ever fallen. My experience with compounds has been happily very different to the average motive power man.

Mr. Carter: Hasn't everything been claimed for the compound, so far as the saving of coal is concerned, that has been claimed for any other device?

Mr. McBain: Yes, and with good reason.

Mr. Carter: The fact is that under ideal conditions the compound locomotive will save from 15 to 20% of the coal?

Mr. McBain: Under good, fair operating conditions.

Mr. Carter: Under good, fair operating conditions a compound locomotive will save that over a simple locomotive—it will save just as much coal—is just as much a coal saver as is the superheating device?

Mr. McBain: Oh, I would not say that.

Mr. Carter: Largely so?

Mr. McBain: Of course it is along up there.

Mr. Carter: Did you ever hear of any railroad company using the saving of coal reached through a compound locomotive as the reason that a fireman should work cheaper?

Mr. McBain: I don't know that I have, Mr. Carter, no, sir.

Mr. Carter: Now, I quoted the other day Mr. Hogan—you know him well?

Mr. McBain: Yes, sir.

Mr. Carter: And at the same time I said that Mr. Dan McBain agreed with him largely.

Mr. McBain: Yes, sir.

Mr. Lee: You said it a little bit stronger than that.

Mr. Carter: How did I say it?

Mr. Lee: "Suppose I told you that the firing of these locomotives had passed human endurance."

Mr. Carter: I will say, that when I said that, I meant Mr. Hogan.

Mr. Lee: You said, "You know Mr. Dan McBain," and Mr. Desalis said, "I do," and you said, "Suppose he told you that the firing of these locomotives had passed human endurance."

Mr. Carter: Didn't I precede that reading by saying it was from Mr. Hogan?

Mr. Lee: No, you said that a page to the front.

Mr. Carter: I will read what I said about Mr. Hogan.

Mr. Lee: Read all of it too.

Mr. Carter: I am going to read all of it that is here.

Mr. Lee: Go ahead. You didn't before.

Mr. Carter: Mr. Hogan said something—I am reading from the Railway Age Gazette of June 18th, I think it is the daily edition.

Mr. Lee: I will give you the proceedings you can read from.

Mr. Carter: Won't you let me read this, it sounds good, it sounds fine.

Mr. Lee: So it does to us.

The Chairman: Who is Mr. Hogan?

Mr. Lee: Mr. Hogan occupies the same position with the New York Central as Mr. McBain does with the Lake Shore.

Mr. McBain: No, he is assistant superintendent.

Mr. Carter: Assistant superintendent with the New York Central, and Mr. McBain is on the Lake Shore; both New York Central Lines. Mr. Hogan said—

This is what I read the other day and perhaps wrongfully credited to Mr. McBain.

Mr. Lee: No. you did not, you credited that to Mr. Hogan.

Mr. Carter: This is what Mr. Hogan says: "One of the most important reasons for this association and the mechanical men in this country encouraging those advancing the stoker is that it will enable us to employ young men as firemen with a greater degree of intelligence than we can to-day. It was almost beyond human endurance for a firemen to work on a locomotive particularly on a freight locomotive, and maintain the maximum pressure on a division of 150 miles. The object of all railways at the present time is to build locomotives of the greatest capacity possible, and in order to get good efficiency from these locomotives

I believe we must have a mechanical stoker. We are going to have men in the future for firemen that will give us engineers such as we should have. We must lessen the burden of the fireman. I certainly believe that the time is not far distant when all roads, particularly the Trunk Lines, where they have to haul heavy tonnage, will be obliged to equip their locomotives with stokers in order to get the full efficiency from them." I read that the other day and I will confess when I first read it I got that mixed up with something I am going to read from Mr. McBain.

Mr. Lee: I would like you to read here sometime, if you have no objection, from the official report.

Mr. Carter: Now if he will just let me finish—

Mr. Lee: Go ahead. I will read that afterwards.

Mr. Carter: I will give him a chance to read all he wants to, because I want to say, gentlemen, that this is very enlightening. I have burned the midnight oil in trying to find out what everybody said on this subject and it will be my purpose, if I am permitted to do so, to give the Commission the benefit of my research.

Mr. Lee: I would suggest that you read from the official document of the Association where that remark was made, instead of from an abridged report.

Mr. Carter: I must confess that I did not have a copy of the report of the American Master Mechanics Association when this was read. Unfortunately, about the time the official report of the American Master Mechanics Association was issued, a friend of mine by the name of Mr. Lee was keeping me very busy and I did not have time to read the origanal document.

Are those about your observations?

Mr. McBain: Now, are you speaking about my remarks or Mr. Hogan's remarks?

Mr. Carter: Mr. Hogan's. You think he has probably overreached it?

Mr. McBain: Well, I will tell you—

Mr. Lee: If he was properly quoted?

Mr. McBain: Yes, if he was properly quoted. There is no question about that. It is in the record.

Mr. Carter: You think he was improperly quoted?

Mr. McBain: There is no doubt about it, Mr. Carter.

Mr. Carter: Here (referring to Railway Age Gazette) is where I got it from.

Mr. McBain: That is a copy of the Daily. You see that is taken right hit and miss and put in the hands of a stenographer and written up. But what Mr. Lee has there is the official record of the meeting, stating exactly what he said.

Mr. Carter: I think we have it but I have never had time to look at it.

Mr Lee: Read it right from here, if you want to.

Mr. Carter: I would rather do my own reading. You can read *that.*

Mr. Lee: Help yourself.

Mr. Carter: I might find something in there you cannot find.

Mr. Lee: You might. You are perfectly welcome to it.

Mr. Carter: Do you want to read that now or after a while?

Mr. Lee: Afterward.

Mr. Carter: Now, I will take the proceeds of the American Master Mechanics Association of 1910, and this time I won't depend upon what the Railway Age Gazette said.

Mr. Lee: That is good.

Mr. Carter: Now, Mr. McBain, they are talking about stokers. "Mr. President, in listening to the speech before the meeting, it occurs to me that we ought not to lay too great stress on the matter of economy. I believe it will be agreed by almost every person present that what we are after at present is to get something that will do more than a man will do toward supplying fuel to one of the modern locomotives. For the last 10 or 15 years there have been tremendous"—I accent the "tremendous." I don't know whether you did or not—"tremendous increases in the weight of equipment and an effort has been made to keep up with that weight of equipment in designig locomotives and to haul it at increased speeds. Having those things in mind I would suggest that the Association for the time being lose sight of the economy feature. It has been my greatest trouble for the past year or two, to have enough coal burned. I have found that in racing the big Pacific type of engines, with heavy trains, the difficulty we had was in getting a man who would put coal into the fire box fast enough. The fireman was working about as hard as he thought he ought to work, and what the engine would give with that was all right and what we didn't get we had to stand for. In view of that it would seem that we ought to work for an

efficient stoker regardless of the economical feature and take care of the economical feature after we have succeeded in getting something that would take the place of the best men we can produce on the locomotive at the present time and do better than he can."

Mr. McBain: All very true, Mr. Carter. That was just exactly as I said.

Mr. Carter: Now, I read from page 265 of the Traveling Engineers Association, and, gentlemen, the reason I like to read what Mr. McBain says is that in the old days one of my best friends, in making the Locomotive Firemens' Magazine the best mechanical publication on earth, was Mr. Dan McBain. I want to say to you what he wrote for that magazine helped me and helped make good engineers out of thousands and thousands of firemen. And that is what I meant the other day when I said I had a great regard for Mr. McBain.

Now, I will quote from the Traveling Engineers' Convention. Mr. McBain said, or at least he is quoted as having said, —it may be that the quotations are wrong—

"In speaking of fuel economy and evaporating records made, there is a vast difference between a little 18 x 24 engine being nursed over a division of 128 miles, that a good ox team would almost make the time over, as compared with the Twentieth Century Limited or any of those runs between Chicago and New York City that I am familiar with, where the big locomotive, 22 x 28 inch cylinders and its 4,600 feet of heating surface, must be forced to its last pound and last inch of efficiency for every mile of the way. There is the place, gentlemen, to effect your fuel economy, on these trains and the heavy tonnage freight trains of modern practice."

It was that I wanted to read, and I wanted to show the difference between the opinion of a Superintendent of Motive Power and a Road Foreman of Engines.

Mr. McBain: In explanation of that last quotation, you read there, the fact should not be lost sight of that this talk was in an address made before the Traveling Engineers' Association at Niagara Falls, New York, in 1910, I think. There was a gentleman came on with a bunch of statistical stuff that he had gathered from a test made, I think, on the Erie Railroad, and when I had listened to the thing a little while I found out that

his record was all made from a little run of two or three cars running between a certain point to another point and back. I should judge, from my memory of the thing, that the work the engine had to do was less than half the capacity of the engine that they had doing it, although it was one of the smallest engines owned by the Erie. So I thought it was an unfair thing to come in and put up before the Association, a lot of data of that kind that had no bearing whatever on modern practice in locomotive service. That was when those remarks were made. I was talking then just as I was in 1910 at the Master Mechanics' Association. I was talking as a matter of encouragement to the road foremen of engines, and lauding the man who was trying to do things that were up to date, and discrediting, if you please, the man who was trying to put something before that convention that was not up to date, and had no bearing on up to date operations. That was my reason.

As regards the remarks made at the Convention in Atlantic City, to start off with, I will say that I left home instructed to do everything and say anything that was necessary for the encouragement of the men who were putting their time and brain power into the development of the locomotive stoker. I felt that way without being told by any person to do it. I thought that was a laudable undertaking, and one deserving the full support of the Association, and that was why I spoke as I did on that occasion.

Mr. Lee: This means, as I read it, Mr. McBain, that no matter who the man is, you want to get more coal in than any 6, or 8, or 10 of them can put in.

Mr. McBain: I want something better than the best man we have.

Now, the other inference from that would be that unless the developers of the stoker could bring their engine up to do better work than the best of our men, there was not a field for it. We wanted something better than the best man we could produce. That is what I had in mind when I spoke.

Mr. Lee: That is what it says here?

Mr. McBain: Yes.

Mr. Carter: Now, to correct any injustice, if any injustice has been done. I am going to read from the Proceedings of the American Railway Master Mechanics' Association for 1912, page

87. Mr. C. H. Hogan of the New York Central & Hudson River Railroad said:

"On the district over which I have supervision there are no locomotives equipped with stokers. About two years ago I made a trip over a 100 mile division on a Mallet locomotive equipped with a Street stoker, and the performance was very satisfactory. Since that time I understand there has been quite an improvement made in the stoker. One of the most important reasons for this Association and the mechanical men of this country encouraging those who are bringing out and trying to develop the stoker is that it will enable us to employ a class of young men as firemen who will be possessed of a greater degree of intelligence than we are able to employ to-day, and the result will be a more intelligent class of engineers in the near future. It is almost beyond human endurance for a fireman to fire a locomotive 150 miles in freight service to-day, and maintain the maximum pressure where the locomotive is loaded to the maximum tonnage, and in as much as it is the object of all railroads to build locomotives with the greatest capacity possible, we, in order to get the full efficiency of these locomotives over a long division, I believe, will have to come to a mechanical stoker."

Now, if there is any difference between them, I cannot see that it makes any difference.

Mr. Lee: There is a very decided difference. It says, "And maintain the maximum pressure where the locomotive is loaded to the maximum tonnage."

Mr. Carter: Do you mean to tell me that firemen are not required to maintain the maximum pressure to-day?

Mr. Lee: Not when the train is not loaded to the maximum tonnage.

Mr. Carter: I want to say that it has been in this arbitration proceeding, that we have learned that trains are not loaded to what is supposed to be their maximum tonnage. I understand that there is a theoretical maximum tonnage that is never developed in practice. I think that was fully covered in 1911, when Prof. Gauss's experiments, and the experiments of the Illinois University were dwelled upon, and it was decided that the theoretical maximum tonnage was always higher than the practical maximum tonnage.

Mr. McBain: That has not been my experience, Mr. Carter.

Mr. Carter: I think that was the opinion of those who discussed it, and they said that there were conditions met in practice that were not met with in the theoretical test, because the conditions in the theoretical test were considered normal, were taken as normal, while in practice they were often abnormal. Now, by the way, you had a stoker—

The Chairman: Are both of you gentlemen satisfied with the outcome of this?

Mr. Carter: I am.

Mr. Lee: I am satisfied we have gotten it all in the record. As Mr. Carter read this last, it is correctly read. As he read it previously, it was not correctly read.

The Chairman: I should like to know if what you said, Mr. McBain, meant that you thought that the capacity of the firemen had been taxed to its limit by these modren locomotives?

Mr. McBain: No, sir, I did not.

The Chairman: That is not what you meant to say?

Mr. McBain: No, sir.

Mr. Lee: And he did not say it.

Mr. McBain: I think anybody who is fair cannot make anything else out of it than this: What I said was, that I was putting it up to the stoker men who were developing stokers, to get something better than the average men that we have now.

The Chairman: Than the best men you have now?

Mr. McBain: Yes, better than the best. I put it a little higher than the average.

The Chairman: What did you want with anything mechanical that was better than the best man, if you had not found out what the best man could do.

Mr. McBain: Of course we had to set a limitation some place in a talk of that kind. As I said before it was largely a matter of encouragement to the developers of the stoker. I was not the only one that spoke on the subject.

The Chairman: I judge if any of these others are called as witnesses Mr. Carter will ask them about what they said.

Mr. Carter: As I say, it is far from my intention to twit Mr. McBain, even if I tried to be funny. I imagine that Mr. McBain is about in the situation of Mahomet when he said, "Oh, that mine friend might write a book."

The Chairman: I thought it was Job that said that.

Mr. Carter: I thought it was Mahomet. That shows I am not a Biblical student.

Mr. Lee: Still economical with the facts, sir.

Mr. McBain: I would like to make a little further explanation, Judge, and gentlemen, with regard to the remarks I made about the Pacific type of locomotive. it was just as I said, very unsatisfactory to me, because we could not burn on those engines enough coal, because the engines were not draughted right. The fireman put in what he thought they ought to have, and he was right; he knew more about that than I did. The fireman was keeping up steam to the full capacity of the draughting apparatus of the engine. It was not possible to burn more than six or seven, or seven and a half tons of coal on a 120 mile division. Our idea was to have those engines give 25 per cent better work, which they are doing now, since this draughting arrangement has been developed. That is the reason I said I could not get enough coal burnt on those engines. We could not burn enough coal to evaporate enough water, because the draughting apparatus was just that bad.

The Chairman: Are you willing to go this far, that if there is any man working on the train that is approximating human endurance, he is probably the fireman?

Mr. McBain: Yes, sir, by all means.

Mr. Lee: That is the fireman is the hardest worked man, physically?

Mr. McBain: Yes, sir.

The Chairman: I think everybody admits that.

Mr. Carter: Didn't you try out the Street stoker for several years?

Mr. McBain: Yes, sir.

Mr. Carter: Now, accepting, and we will accept that under favorable conditions it does work, how did you find it after giving it a thorough trial?

Mr. McBain: Now, the stokers that we had, Mr. Carter, I will tell you very frankly, were not satisfactory. They were not satisfactory because they failed repeatedly. They failed in one way or another, sometimes due to the usage given by our men, and sometimes due to weaknessess on the part of the machine. The Lake Shore Railroad, before I became employed

by it, put on three of those stokers for the purpose of helping the development of the thing. That is the reason for it; we were willing to stand that much of the expense of developing the stoker. And they were not satisfactory. We took them off. But I want to say further, now we are having some more locomotives built that are coming to us with the Street stoker that we are satisfied will be a satisfactory device.

Mr. Carter: I want to read what was said about those stokers by Mr. Franey. Pardon me if I read from this paper again—If I am wrong they will correct me from the official proceedings—Mr. Franey is reported as having said, at the meeting of the American Master Mechanics Association in 1910, a good deal about the perfection or the approach to perfection of the Street stoker on the Lake Shore road. I won't read it all—it is tiresome: "I personally fired an engine fifty miles during the month of March. The engine had a load of 3,400 tons. At the time I started out it was early in the season and I had on a heavy overcoat and the weather in the morning was cool, but during the day the temperature changed to about 70 degrees, which is quite warm. I fired the engine for fifty miles with one hand, wearing a winter overcoat. The engine hauled 3,400 tons. We had several delays on the road. I did not feel very uncomfortably warm, any more than I would had I been sitting on a chair."

Notwithstanding the overcoat and the warm weather, these stokers are gone, are they not?

Mr. McBain: Yes, sir.

Mr. Carter: Now, Mr. McBain, if you do not know anything about the financial returns of these modern engines, why I do not want you to answer these questions. I am still quoting from that unreliable source, presumed to be, the Railway Age Gazette of April 12, 1912, with regard to the increased power of locomotives equipped with superheaters. Now, I will not read all; I will just glance through it: "On the New York Central, Lake Shore and Big Four, there was an immediate increase in train load without a corresponding increase in the loading per car which, to a large extent, counteracted the effect on the cost of conducting transportation of increased wages." That is I understand it, that the cost of the heavier tonnage of

these superheaters had counteracted all of the effect of the increase.

In the case of the Lake Shore this was a larger factor in actually reducing the cost of transportation $1,198,000 in spite of the increase in wages in 1910." Now, we will skip again: "Inquiry as to the means by which the increased cost of labor employed in train movement was partially or wholly or even more than wholly offset on the various lines has elicited the information that an extensive adoption of the superheater on locomotives of the system," that means that the New York Central Lines, "has made possible a large increase in the capacity per locomotive, making it practicable to haul additional cars per train at proportionately lower cost, and with a large saving in engine mileage, which was also appreciably affected by the reduced need for double-headers."

Again: "The average train load on the Lake Shore, which in the past has been heavy, was increased last year from 594 tons of revenue freight to 635 tons."

Is that statement in The Railway Age Gazette in accordance with the facts?

Mr. McBain: I cannot say, Mr Carter.

Mr. Carter: Well—

Mr. McBain: I have seen the report, and if I had it I would be able to check it, but I cannot say offhand.

Mr. Carter: I believe that is all.

Mr. Atterbury: Mr. McBain, this engine No. 4652, what did the fireman get for that in 1900?

Mr. McBain: I think he got $1.90 a day. I have the record here some place I think. (Referring to papers) I cannot tell you in 1900, but the furthest back I can go is 1902.

Mr. Atterbury: Was that on this engine?

Mr. McBain: Yes, sir, in 1902 the firemen got two cents per mile or $2.00 per 100 miles or less.

Mr. Atterbury. Then he got $2.66 for this run, did he?

Mr. McBain: Yes, he got $2.66 for that run of 133 miles.

Mr. Atterbury: What did he get for the 4897 in 1911, or what does he get to-day for the same run?

Mr. McBain: $3.19.

Mr. Carter: What is the weight of that engine?

Mr. Atterbury: The weight on drivers is 173,00.

Mr. Lee: What rate per mile does he get to-day, do you know, Mr. McBain?

Mr. McBain: He gets 2.4 cents per mile at the present time.

Mr. Lee: On the K-3 locomotive?

Mr. McBain: Yes, sir.

Mr. Atterbury: Then he gets 20% more than he did in 1902, does he?

Mr. McBain: Yes, sir.

Mr. Atterbury: $3.19?

Mr. McBain: $3.19 would be his pay over that 133 miles division, paid on the mileage basis.

Mr. Atterbury: How about your Eastern Division, why is it 192 and 192 and then 183?

Mr. McBain: Those 192 runs are between Youngstown and Buffalo.

Mr. Atterbury: And what are the others?

Mr. McBain: Between Buffalo and Cleveland.

Mr. Atterbury: Is the service comparable at all?

Mr. McBain: It is, very much.

Mr. Atterbury: How about the rate?

Mr. McBain: Sir?

Mr. Atterbury: Does this same 2.4 cent rate apply?

Mr. McBain: Yes, sir.

Mr. Atterbury: Now get into your freight, on your 131 miles, what was your rate there in 1902?

Mr. McBain: 133 miles you mean; that is on the Michigan Division?

Mr. Atterbury: Yes, your third sheet. Mine shows 131 miles run.

Mr. McBain: I did not notice that. There is some little movement around the yard that did that, I suppose.

Mr. Atterbury: And what was your freight rate for 1902?

Mr. McBain: The freight rate for 1902 was $2.25.

Mr. Atterbury: $2.25?

Mr. McBain: For the large engines, yes, sir; and $2.10 for the small engines.

Mr. Carter: Is that the same engine, 173,000 pounds on drivers?

Mr. McBain: Yes, that was considered a large engine at that time.

Mr. Carter: I mean was it a different locomotive?

Mr. Atterbury: I am on the third sheet.

Mr. McBain: He is speaking of the J-40.

Mr. Carter: Can you give the weight of the J-40?

Mr. Atterbury: G-42 I am asking about, 149,000 pounds.

Mr. Carter: That is the freight engine.

Mr. Atterbury: Yes. You say $2.25 was the rate then?

Mr. McBain: Yes, sir.

Mr. Atterbury: What is the rate to-day on the H-7 engine?

Mr. McBain: $2.95.

Mr. Atterbury: $2.95?

Mr. McBain: Yes, sir, per 100 miles or less.

Mr. Atterbury: That was the same as with the $2.25, was it not?

Mr. McBain: Yes.

Mr. Atterbury: Did you do any cleaning in 1900 or 1902?

Mr. McBain: I believe they did do a little, but I am not very well informed on the Lake Shore. I was not with the Lake Shore at that time.

Mr. Atterbury: On this Eastern Division, that is the sum of two runs, is it?

Mr. McBain: Yes, sir; the sum of two crew's work; that is, it is one long division, two crews used each way. You mean the sheets? They are the sum of three lists.

Mr. Atterbury: No, but the fourth sheet, 179 miles, is apparently the sum of two runs?

Mr. McBain: Yes.

Mr. Atterbury: What was the fireman's rate for those two runs in 1900?

Mr. McBain: Two firemen were paid 100 miles, making 200 miles paid for the 179 miles.

Mr. Atterbury: What did they get?

Mr. McBain: $2.95 per 100 miles.

Mr. Atterbury: In 1900?

Mr. McBain: I beg pardon, I thought you were speaking of 1903. They got the same rate exactly.

Mr. Atterbury: They got the $2.25 rate?

Mr. McBain: Yes, sir.

Mr. Atterbury: Then it cost $4.50 in 1900?

Mr. McBain: They were paid 200 miles, $4.50 for the through run in 1900.

Mr. Atterbury: That is, the two men would get $4.50?

Mr. McBain: Yes, sir. I would just like to ask a question about that. I would like to ask Mr. Freeman, they paid 100 miles each side of Erie in 1900, didn't they?

Mr. Freeman: Yes, there were 15 constructive miles both ways.

Mr. McBain: That made practically 100 miles.

Mr. Freeman: They paid for 100 miles in 1902?

Mr. Phillips: What does the G-42 pay now?

Mr. McBain: They pay $2.95 for all engines 20 x 28 and larger.

Mr. Atterbury: That shows then about 30% increase in wages on those runs?

Mr. Lee: I think it shows a little more than that. I understand we are to put a witness on a little bit later who is more familiar with the rates. Mr. McBain did not have charge of the actual rates, but we will put a witness on a little later who knows all about the rates.

Mr. McBain: I would rather you would do that.

Mr. Carter: Then you would rather I would ask another witness those questions?

Mr. Lee: On rates?

Mr. Carter: Yes.

Mr. Lee: Mr. Carter, all right.

Mr. Lee: On this small engine over here on the fourth page, that burned 19,000 pounds of coal on the trip, it would have one fireman under this request—that burned 33,000 pounds, I should say?

Mr. McBain: Yes.

Mr. Lee: While the engine H-7, 245,000 pounds on drivers, that only burned 25,000 pounds, would have two firemen under this request?

Mr. McBain: Yes.

The Chairman: You said the fourth page?

Mr. Lee: Yes, the first engine that burned 33,000 pounds of coal on the trip would have one fireman, but the engine that burned 25,000 pounds would have two firemen.

The Chairman: You have a different sheet than I have.

Mr. Lee: I beg pardon, the third sheet. The engine that burned 33,000 pounds of coal on this same trip would have one

fireman, but the engine that burned 7,000 pounds less coal would have two firemen under this request. Is that correct, Mr. McBain?

Mr. McBain: That is right, Mr. Lee.

Mr. Carter: Mr. McBain, does not practically the same engine, so far as weight and type are concerned, often vary greatly in the amount of coal it burns?

Mr. McBain: Oh, within a reasonable amount, yes. You mean through a defect in the boiler or a defect in the engine?

Mr. Carter: Not only a defect in the condition of the engine but perhaps a defect in the condition of the coal.

Mr. McBain: Well, possibly.

Mr. Carter: For instance, if it could be shown that engine 1410 burned 18 tons of coal to-day and engine 1411 burned 25% less coal next week with practically the same tonnage, would you consider that a reason for making different rates of pay, because one engine happened to burn less coal than another?

Mr. McBain: Well, no, I do not know that that is quite a fair question, but I will say this to you in reply, that there might be such a variation for several reasons: In the first place the one engine that burned a large amount of coal might have a flue leaking, or a pipe leaking in the front end, which made it harder to steam, and consequently more coal would be burned. It might also be due to the fact that the effort necessary to propel that train for one reason or another, probably wind resistence or a hard run of the train, might make the difference.

Mr. Carter: Bad coal?

Mr. McBain: Bad coal to a certain extent would affect the thing, beyond any doubt.

Mr. Carter: The point I want to bring out is, there is no hard and fast amount of coal that can be consumed by any engine. For instance you might take one of these engines that you say are so efficient and put 2,000 tons behind it on a certain part of the division to-day, and it is possible that six months from to-day it might burn more or less coal?

Mr. McBain: Yes.

Mr. Carter: That is what I mean, there is nothing hard and fast about it?

Mr. McBain: No, there are certain variables there which you have to recognize.

Mr. Carter: Will you tell me when these tests were made? It does not appear here.

Mr. McBain: Well, it is in the supporting date. They were made in the month of February. You will notice they are marked Eastern Division and Michigan Division. The Eastern is between Buffolo and Cleveland and Youngstown and Buffalo, and the Michigan Division is between Toledo and Elkhart.

Mr. Carter: Were these successive trips, or at different times?

Mr. McBain: They were made successively. We had a crew of testers out on the job following the thing up.

(Witness excused.)

J. P. FREEMAN, called as a witness, and having been duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your position?

Mr. Freeman: Trainmaster on the Lake Shore, what is known as the Toledo Division, between Cleveland and Toledo.

Mr. Lee: How long have you been Trainmaster?

Mr. Freeman: Since November, 1911.

Mr. Lee: What were you previous to that?

Mr. Freeman: Road Foreman of Engines.

Mr. Lee: Previous to that?

Mr. Freeman: Locomotive engineer.

Mr. Lee: And fireman?

Mr. Freeman: And a fireman.

Mr. Lee: Are you familiar with the rates paid in 1902 and 1912, Mr. Freeman?

Mr. Freeman: Fairly, yes, sir.

Mr. Lee: Have you the rates there for the Eastern Division?

Mr. Freeman: I believe I have.

Mr. Lee: For 1902 for the run between Cleveland and Buffalo, did one fireman take that run through in 1902?

Mr. Freeman: 1903 is the first one I have got. In 1902 one fireman fired the freight trains from Collinwood to West Seneca, 171 miles.

Mr. Lee: One man?

Mr. Freeman: One man.

Mr. Lee: That is in 1902, 171 miles?

Mr. Freeman: Yes.

Mr. Lee: You paid mileage at that time?

Mr. Freeman: Mileage for engines having 19½ inch cylinders or greater, $2.35 per 100.

Mr. Lee: What type was the G-42?

Mr. Freeman: G-42 was in service at that particular time.

Mr. Lee: Did that have 19½ inch cylinders or greater?

Mr. Freeman: It had greater than 19½, 20.

Mr. Lee: What rate was paid?

Mr. Freeman: $2.35 per 100 miles.

Mr. Lee: 2.35 cents per mile?

Mr. Freeman: Per mile, yes, sir.

Mr. Lee: That is $4.02 for the trip.

Mr. Freeman: About $4.02 for the trip. Do you want the overtime?

Mr. Lee: Did you pay overtime then?

Mr. Freeman: Overtime was paid after 13 hours.

Mr. Lee: Overtime after 13 hours at what rate?

Mr. Freeman: Pro rata of the $2.35.

Mr. Atterbury: That is 23½ cents per hour.

Mr. Freeman: 23½ cents an hour.

Mr. Lee: What are they paid on the Mikado engines?

Mr. Freeman: To-day?

Mr. Lee: Or has that rate been adjusted?

Mr. Freeman: To-day on the Mikado engines they pay $2.95 per hundred miles.

Mr. Atterbury: Is that the G-6 or the H-7?

Mr. Freeman: The H-7.

Mr. Atterbury: $2.95 a hundred miles?

Mr. Freeman: Yes.

Mr. Atterbury: Are there two men on?

Mr. Lee: The run is split at Erie as I understand.

Mr. Freeman: Yes, the run is split at Erie.

Mr. Lee: And they each get 100 miles?

Mr. Freeman: Yes.

Mr. Lee: For running 85 miles.

Mr. Freeman: Yes.

Mr. Lee: That is $5.90 at the present time.

Mr. Freeman: Yes.

Mr. Lee: What is the overtime limit?

Mr. Freeman: Ten hours.

Mr. Lee: For each man?

Mr. Freeman: For each man.

Mr. Lee: At 29½ cents?

Mr. Freeman: Yes.

Mr. Atterbury: Then the railroad really pays $5.90 now for what it paid $4.02 for in 1902.

Mr. Lee: Yes. The overtime limit has been dropped; although the overtime limit is very hard to calculate on a split run, because you do not know how much each fellow makes. On the straight figures they were paying $4.02 in 1902, against $5.90 at the present time.

Mr. Freeman: At the present time.

Mr. Carter: Is that the same engine?

Mr. Freeman: No.

Mr. Lee: I larger engine?

Mr. Freeman: A larger engine.

Mr. Lee: What would they pay on the same engine? You have got the same engine?

Mr. Freeman: Yes, we have got the same engine in local service.

Mr. Lee: What do they pay on the G-42 per mile?

Mr. Freeman: On the G-42 per mile, they pay the same rate.

Mr. Lee: $2.95?

Mr. Freeman: $2.95.

Mr. Lee: Does that answer your question, Mr. Carter?

Mr. Carter: When you get through I will ask him.

Mr. Lee: Are you sure as to that rate, Mr. Freeman?

Mr. Freeman: I will read it to you: "Through freight service, engines having cylinders 20 inches in diameter or greater, $2.95."

Mr. Lee: What size cylinder has the G-42?

Mr. Freeman: I believe they are 21 inches, without being positive about it.

Mr. Lee: You may cross-examine.

CROSS EXAMINATION:

Mr. Carter: What I want to get at is this. Pick out some engine that was in service in 1903. That is the earliest you have, isn't it?

Mr. Freeman: The earliest record we have here of wages is 1903.

Mr. Carter: What did you pay on some certain engine then which same engine you now have in service?

Mr. Freeman: We paid that rate on the G-42 engine and the G-43 engine, and we have the same in service now.

Mr. Carter: What was the rate for 100 miles then?

Mr. Freeman: In 1903?

Mr. Carter: In freight service.

Mr. Freeman: In freight service $2.35 on that class of engine.

Mr. Carter: $2.35?

Mr. Freeman: $2.35 per hundred miles.

Mr. Carter: The increase is 60 cents which would be a little over 25 per cent. increase—25 per cent. and a fraction.

Mr. Freeman: Yes.

Mr. Atterbury: Paying 179 miles in 1902, as I understood the witness, and you are paying 200 miles to-day?

Mr. Lee: Yes.

Mr. Carter: What I was trying to find out is, what was the rater per 100 miles—there are plenty of divisions where they have 100-mile runs?

Mr. Freeman: Some of our divisions, yes.

Mr. Carter: What I want to know, Mr. Freeman is, can you tell me what the rate per 100 miles was, without any specific run?

Mr. Freeman: $2.35.

Mr. Carter: What is the rate per 100 miles now?

Mr. Freeman: To-day?

Mr. Carter: Yes, on that same engine.

Mr. Freeman: On that same class of engine, $2.95.

Mr. Carter: That would be about 25% increase during this period?

Mr. Freeman: Yes, somewhere about that; I have not figured it out closely.

Mr. Carter: What are you working on to-day, a ten hour basis?

Mr. Freeman: 10 miles per hour.

Mr. Carter: If you were 16 hours on the road, you would get a day and six hours overtime?

Mr. Freeman: Or 160 miles.

Mr. Lee: That is to-day?

Mr. Freeman: That is to-day.

Mr. Carter: I mean to say, if it was a 100 mile division you would get a day's pay and 6 hours overtime?

Mr. Freeman: Yes, which would mean 160 miles.

Mr. Carter: Do you remember the rules in effect then about getting pay both for the hours and the miles if you made overtime?

Mr. Freeman: I don't quite understand that question, Mr. Carter.

Mr. Carter: Well, presuming you say you were on a 120 mile division, and you made it in 16 hours, you would get 120 miles' pay for the overtime after 12 hours? That is, you get a double rate of overtime like is now in effect on the New York, New Haven & Hartford?

Mr. Freeman: Well, the overtime in 1902, on our division, commenced after you were 13 hours in service.

Mr Carter: Isn't it a fact you get double pay; that you got paid for the miles and the overtime too?

Mr. Freeman: That would depend on how long you were in service, and at what period your overtime started.

Mr. Carter: For instance, you got $2.35 for 100 miles, if you made 120 miles you would get $2.82 for the 120 miles, and if you were 14 hours going out, you would get two hours overtime besides.

Mr. Freeman: You would get one hour overtime on our road.

Mr. Lee: To-day you would get two?

Mr. Freeman: To-day you would get two—no, to-day you would get three.

Mr. Lee: That is a 120 mile run, Mr. Freeman.

Mr. Freeman: Oh, that is right, to-day you would get two hours.

Mr. Carter: That is all.

Mr. Phillips: This overtime question has got me all mixed up. I understood you to say you had a division of 171 miles.

Mr. Freeman: 171 miles division. That is, from Collinwood to West Seneca.

Mr. Phillips: In 1902 they got overtime after 13 hours?

Mr. Freeman: After 13 hours, yes, sir.

Mr. Phillips: Then if you were 16 hours on the road you would get 201 miles or the equivalent of that?

Mr. Freeman: Yes, you would get 3 hours overtime.

Mr. Phillips: What would you get if you were 16 hours on the road there now?

Mr. Freeman: You would not get anything. You would have to be 17 hours on the road now before you would get any overtime now.

Mr. Phillips: Then the 25% increase is practically offset by the difference in the method of computing overtime, isn't it?

Mr. Freeman: Not on that particular division, because the division is cut in two at the present time, and we are paying 15 miles constructive mileage.

Mr. Phillips: Wouldn't those men have to be 20 hours on duty, the two of them, before they would get any overtime?

Mr. Freeman: Both men?

Mr. Lee: And each of them?

Mr. Phillips: You are counting the money against one man, and of course you must count time against the other man.

Mr. Lee: Yes.

Mr. Lee: It is a fact though, that they are getting thirty miles, constructive mileage, from which the company gets no returns?

Mr. Freeman: Every train that goes over the division the fireman gets 30 Miles constructive mileage which the company gets no return from at all.

Mr. Phillips: About what time do they make that in?

Mr. Freeman: In 1906.

Mr. Phillips: I know. But I mean about what time does it take them to make that?

Mr. Freeman: The average time that our firemen are getting over the road, average up the slow freight and the fast freight, and take three good months and three poor months, it will average about 8½ hours a day, or 8½ hours making those trips.

Mr. Phillips: Does that include his preparatory work?

Mr. Freeman: Yes. 45 minutes preparatory time.

Mr. Phillips: Makes about ten miles an hour?

Mr. Freeman: Yes, sir.

Mr. Phillips: 85 miles.

Mr. Freeman: Just about.

Mr. Lee: Did you have any preparatory time in 1902, or did the men's time start from the time they left or were supposed to leave.

Mr. Freeman: We had thirty minutes in 1902, as against 45 at the present time.

Mr. Lee: You have more to-day than you had then?

Mr. Freeman: Fifteen minutes more preparatory time.

Mr. Lee: That will be all, Mr. Freeman.

(Witness excused.)

WILLIAM C. HAYES, was called as a witness, and having been duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your business?

Mr. Hayes: Superintendent of locomotive operation, Erie Railroad.

Mr. Lee: What were you previous to that?

Mr. Hayes: Division superintendent.

Mr. Lee: Previous to that?

Mr. Hayes: Superintendent of the employment bureau.

Mr. Lee: Previous to that?

Mr. Hayes: Assistant mechanical superintendent.

Mr. Lee: Were you ever a locomotive engineer?

Mr. Hayes: Yes, sir.

Mr. Lee: A fireman before that?

Mr. Hayes: Yes, sir.

Mr. Lee: You have general oversight of the operation of locomotives on the system-fuel economy?

Mr. Hayes: Yes, sir.

Mr. Lee: How long have you been on the Erie Railroad, Mr. Hayes?

Mr. Hayes: Since September 1, 1901.

Mr. Lee: Are you familiar with the type of locomotives used on the Erie Railroad in 1902?

Mr. Hayes: Yes, generally.

Mr. Lee: What types were used at that time in slow freight service?

Mr. Hayes: The class H-9, H-10, H-11, H-12, H-13, H-14 and I think the H-16, H-17, and H-18; all Consolidated locomotives.

Mr. Lee: Those were the types in that time?

Mr. Hayes: Yes, sir.

Mr. Lee: Which of those different types did you have the most of?

Mr. Hayes: They were pretty well divided up among the different classes in the H engines.

Mr. Lee: What do these egnines weigh on the drivers?

Mr. Hayes: From 130,000 to 160,000 pounds.

Mr. Lee: What does the H-12 weigh?

Mr. Hayes: About 160,000.

Mr. Lee: How about the H-18?

Mr. Hayes: The H-18 weighs 180,000.

Mr. Lee: What type of engines do you have in service on the Erie Railroad to-day, in slow freight service?

Mr. Hayes: We have what is known as H-19, H-20, H-21, and the N-1 locomotive, besides a few large Mallet compounds.

Mr. Lee: Those are not used in the slow freight service, the Mallet?

Mr. Hayes: No. Those are in hill service only.

Mr. Lee: The N engines are the Mikado?

Mr. Hayes: The Mikado.

Mr. Lee: What do the H-21's weigh on the drivers?

Mr. Hayes: One hundred eighty some thousand pounds.

Mr. Lee: Are you sure of that Mr. Hayes?

Mr. Hayes: Yes. The H-21's you say?

Mr. Lee: H-21?

Mr. Hayes: Yes, sir. I think I can give you that definitely.

Mr. Lee: All right, I wish you would.

Mr. Hayes: 178,600.

Mr. Lee: What will the Mikado engines weigh on the drivers?

Mr. Hayes: 237,000 pounds.

Mr. Lee: What class engine did you have on the Susquehanna Division in slow freight service in 1902?

Mr. Hayes: What is known as the G-8.

Mr. Lee: The H-8, did you have any of those?

Mr. Hayes: Yes, but not on the Susquehanna Division.

Mr. Lee: What kind of engines are you usuing on the Susquehanna Division in the same service to-day?

Mr. Hayes: H-21's principally.

Mr. Lee: Have you got the rate of pay that was paid on slow freight trains on the Susquehanna Division in 1902?

Mr. Hayes: Yes, sir.

Mr. Lee: I wish you would let us have it, with the class of engine?

Mr. Hayes: Unfortunately I am not able to give you the classification, only in a general way. I wasn't able to secure that. Do you want some copies of that statement to distribute?

Mr. Lee: Yes.

Mr. Hayes: I tried to bear in mind what you said to me.

Mr. Lee: Yes, that is all right.

Mr. Hayes: And we have worked out all of that data, and you will find it on the next page, showing the percentages of increase.

Mr. Lee: We will take that up as we go over it.

Mr. Hayes: Have I given you enough copies?

Mr. Lee: Yes, I think so. Now, Mr. Hayes, will you tell us how this statement was prepared.

Mr. Hayes: These figures with reference to coal consumption were secured from the locomotive performance sheet for the purpose represented.

The Chairman: You may let this go into the record.

Mr. Lee: Yes.

The Chairman: Let it be copied in.

Mr. Lee: Very well.

(The statement referred to is as follows):

Statement showing data as to rates paid Firemen, Coal consumed, etc., in "Junk" Service on the Susquehanna Division of the Erie Railroad—Susquehanna to Hornell,—140 miles. 1902 compared with 1912 schedules.

	1902	1912
Pounds of coal consumed per locomotive mile, "Junk" service, fiscal years ending June 30, as indicated	180	219
Pounds of coal consumed per 1000-ton miles, "Junk" service, fiscal years ending June 30, as indicated	147	132

Engines used, together with number, class, tractive power and weight on drivers, in "Junk" service, Susquehanna Division.

Number	Class	Tractive Power lbs	Weight on Drivers lbs
54	M-21	39,969	176,400
1	H-13	34,141	179,000
8	H-4	24,952	131,300
1	H-3	24,952	125,400
12	G-8	23,671	118,500
76			

Rates paid Firemen in "Junk" service on the Susquehanna Division, for the years as indicated.

1902—Susquehanna Division; allowance 140 miles. Overtime after 16 hours, and then certain mileage allowances for the other runs between intermediate points, overtime basis included.

1902

RATES OF PAY—1902

Cents Per Mile

	Passenger Service, (All Engs)	Engines 130,000 pounds, or less, on drivers	Engines over 130,000 pounds on drivers	Way Freight and Pick up.
First Year	1.90	1.90	1.90	1.90
Thereafter	2.10	2.12	2.30	2.50

Rate of pay for hostlers per day, $2.25

1903—Rates advanced for firemen in "Junk" service, as follows:

Engines 130,000 lbs. on drivers to 2.25
" 130,000 to 150,000 lbs. on drivers to . 2.35
" 150,000 lbs. and over on drivers to ... 2.70

1903—Way freights and pick up:

Engines 130,000 lbs. on drivers to 2.45
" 130,000 to 150,000 lbs. on drivers to .. 2.55
" 150,000 lbs. and over on drivers to ... 2.70
through

Ten hours on freight service—twelve hours on other freight service shows a reduction of two hours in the length of the day's work of the first named service.

This represents an advance over 1902 rates in actual money paid firemen as follows:

"Junk" Service	Engines 130,000 pounds, or less, on drivers.	Engines over 130,000 pounds on drivers
1902	2.12	2.30
1903	2.25	2.50
Increase	.15	.20
Per cent. of increase	6.15%	8.69%
Way Freight and pick up		
1902	2.30	2.30
1903	2.45	2.70
Increase	.15	.40
Per cent. of increase	6.52%	17.39%

1909—Rates of pay as follows:

Engines 150,000 or over on drivers, including 6-12 and 6-16 classes $2.95

All other engines 2.60

This represents a further increase in rates as indicated by the following table:

	Engines 150,000 pounds, or over, on drivers.	All other engines
1903 (Junk)	2.50	2.25
1909	2.95	2.60
Increase	.45	.35
Per-cent. of Increase	18.00%	15.55%

Increase since year 1902, indicates as follows:

1902 (Junk)	2.30	2.12
1909	2.95	2.60
Increase	.65	.40
Per-cent. of Increase	28.26%	22.64%

Rates indicated for 1909, are those now in effect, with the exception of the Mikado locomotive, for which a special rate is established, as follows:

Engineers, $5.15 per day of 100 miles, or less.
Firemen, $3.25 per day of 100 miles, or less.

100 miles, or less,—ten hours, or less, constitute a day's work, with overtime pro-rata.

Mr. Hayes: This is for the junk service only.

Mr. Lee: That is what the slow freight service is called?

Mr. Hayes: Slow freight service.

Mr. Lee: What does that show?

Mr. Hayes: It shows for the fiscal year ending June 30th, 1902, 180 pounds per locomotive mile; for 1912, 219 pounds.

Pounds of coal consumed per 1,000 ton miles in the same class of service in 1902, 147 pounds; per thousand ton miles in 1912, 132 pounds.

Mr. Lee: Then you give next the number of engines in service?

Mr. Hayes: Tractive power and weight on drivers.

Mr. Lee: Of what date is that classification?

Mr. Hayes: This is given as of December 31, 1912. You do not care to have me read all of this?

Mr. Lee: I do not think it is necessary, unless the Board desires.

Mr. Hayes: The rate paid to firemen in junk service on the Susquehanna Division for years is indicated.

In 1902 the Susquehanna Division allowance was 140 miles; overtime after 16 hours, and then certain mileage allowances for other runs between intermediate points, overtime basis included pro rata.

The rates of pay are taken from our quoted schedule. The rate per engines over 130,000 pounds on drivers, $1.90 for firemen for the first year; $2.30 for the second year.

Mr. Lee: Is that in freight service?

Mr. Hayes: That is in junk freight service, yes. The first year for engines 130,000 pounds or less on drivers was $1.90 the first year, and $2.12 the second year.

In 1903, under that same schedule, the rates were advanced for firemen in junk service as follows:

Engines 130,000 pounds on drivers, the rate was advanced to $2.25 per 100 miles or less for a day's work; 130,000 pounds to 150,000 pounds on drivers, advanced to $2.35; 150,000 pounds and over on drivers, $2.50. Do you want the item of way freights?

Mr. Lee: No, just take the junk service for comparative purposes.

Mr. Hayes: This represents from 1902 rates in actual money paid to the firemen as follows; in junk service:

Engines 130,000 pounds or less on drivers, an increase of 13 cents, or 6.13 per cent.; over 130,000 pounds on drivers, advance from $2.30 to $2.50, or an advance of 20 cents, or 8.67 per cent. I want to be corrected if that is wrong, because my figures here are blurred.

Mr. Lee: That is right. Now, in 1909?

Mr. Hayes: In 1909, engines 150,000 pounds or over on drivers, including G-12 and G-16 classes, $2.95; all other engines $2.60. This represents a further increase in rates, as indicated by the following table.

In 1903, in junk service $2.50; in 1909, $2.95, an increase of 45 cents, a percentage increase of 18 per cent. The other engines

which are quoted in the $2.60 rate represent an advance of 22 cents, or 15.55 per cent.

Mr. Lee: You compare the same service in 1902 with 1909?

Mr. Hayes: Yes, sir.

Mr. Lee: Let us have that.

Mr. Hayes: In 1902, in junk service, $2.30; in 1909, $2.95; an advance of 65 cents in the rate and a percentage increase of 28.26 per cent. The other engines quoted on the $2.60 rate is an advance from $2.12, or 48 cents, showing 22.64 per cent, increase.

Mr. Lee: Those are substantially the same rates as in effect to-day.

Mr. Hayes: Those are substanaitlly the rates that are now in effect except the Mikado rate which is a special rate that was established for engineers and firemen when those engines were introduced in service, and they represent, for firemen, $3.25 a day for 100 miles or less.

Mr. Atterbury: What is the engineer's rate with the $2.95 rate for firemen?

Mr. Hayes: I think it is $4.75.

Hr. Atterbury: That is the minimum eastern rate.

Mr. Hayes: I thought I had the engineer's rate here, but I haven't.

Mr. Atterbury: What was the engineer's rate when the firemen's rate was $2.30?

Mr. Hayes: That I am not sure of either, without consulting the record, but they had different rates according to the different divisions. Some of the earlier rates were based on the trip.

Mr. Atterbury: You got the $4.75 on the recent award, did you, Mr. Hayes—that is your minimum rate?

Mr. Hayes: Yes, sir.

Mr. Atterbury: $2.95 firemen's rate and $4.75 engineer's rate, isn't it?

Mr. Hayes: That is my understanding of it. The Mikado rate is $5.15 for enginemen.

Mr. Lee: Mr. Hayes, a firemen on the Susquehanne Division made a statement to this Board that on the run from Hornell to Susquehanne, and from Susquehanne to Hornell, they burned 22 to 24 and 26 tons—burned 22 to 24 and 26 tons. What do you know about it?

Mr. Hayes: I think that fireman is very badly mistaken, or else it is an exceptional trip, the exceptional trip that proves the universal rule entirely the other way.

Mr. Lee: What have you showing that 22 to 24 and 26 tons is not typical of the Susquehanna Division?

Mr. Hayes: I have got a tabulated statement prepared here showing the coal consumption for the firemen on the Susquehanna Division in junk service for six months ending December 31st.

Mr. Lee: Have you got it there?

Mr. Hayes: I haven't got any extra copies of that.

Mr. Lee: Will you read from the copy you have?

Mr. Hayes: This by the way, Mr. Lee, isn't what I consider a complete statement, as I intended to include in this mileage, the hours and the tonnage hauled on these trips, so as to complete the statement.

Mr. Lee: This shows, however, the amount earned by the firemen running in this service and the average number of tons burned per trip.

Mr. Hayes: Yes, sir.

Mr. Lee: As to these six men, how were they picked out?

Mr. Hayes: They were selected by the supervisor of locomotive operation from quite a large number of men that are employed in that line of service that are constantly engaged on those runs.

Mr. Lee: Do you know how he picked them?

Mr. Hayes: No, I don't know how he picked them out any more than I know that there was no selection made any more than to get six men, and we might have had sixteen or twenty-six or thirty-six or any number just the same, if we had taken the time to work it up.

Mr. Lee: This shows the average wages for the six months?

Mr. Hayes: Yes, sir.

Mr. Lee: And the average tons of coal burned per trip?

Mr. Hayes: The average number of trips made, the average amount made per trip, the tons of coal burned per month, and the average tons burned per trip, showing the averages and the highest and the lowest, for the six men for six months. We thought that would be a fair schedule to present. This appealed to me, as I listed to the statement of Mr. Turck, one of our

Susquehanna Division fireman, as not being fair to himself or to any of the other men on his division, or perhaps if that was not so, he was not very well informed concerning what other men were doing who were working there, and I thought it would be well to get a statement for six men, covering the amount earned per trip and per month and the average for six months. I will read that to you if you desire.

Mr. Lee: I think if you just read the averages on the right hand side, and then, if the Board pleases, we will put this in the record.

Mr. Hayes: Fireman E. P. Brickley averaged $77.05, made 19 trips at $4.06 per trip and burned 251.8 tons of coal, as an average for the six months.

Mr. Lee: Per month?

Mr. Hayes: Per month, or an average per trip of 13.2 tons.

The Chairman: What period was that, the month ending December 31st?

Mr. Hayes: December 31st. You will find it at the head.

Mr. Lee: For six months, Judge.

Mr. Hayes: Ending December 31st, 1912—that covers six months.

Fireman W. A. Codner, averaged $86.64, made 21.1 trips. averaged $4.09 per trip, burned 270.8 tons of coal or an average of 12.8 tons per trip.

Fireman F. Chamberlain, averaged $88.47 per month, made 21.6 trips at an average per trip of $4.08, burned 293.5 tons, or an average of 13.5 tons per trip.

Mr. Carter: This statement, when it goes into the record, will show the length of the trips, will it?

Mr. Lee: 140 miles.

Mr. Hayes: Wherever there is anything that needs to be worked out, we can present it later.

Mr. Carter: I was wondering how long these trips were.

Mr. Lee: 140 miles, isn't it?

Mr. Hayes: 140 miles.

Mr. Lee: Any other information that Mr. Hayes doesn't happen to speak of, we will be very glad to furnish.

Mr. Atterbury: This goes into the record, doesn't it?

Mr. Lee: Yes, sir, as it stands. Go ahead, Mr. Hayes.

Mr. Hayes: Fireman J. E. Loohn, averaged $67.04, made

16.5 trips at an average of $4.06 per trip. Burned 240.1 tons of coal, or an average of 14.5 tons per trip.

Fireman B. C. Marean, averaged $79.40, made 20.6 trips at $3.48 per trip; burned 263.3 tons of coal for a month, or an average of 12.7 tons per trip.

Fireman R. J. Washburn earned $81.18, made 19.5 trips, at $4.16 a trip, burned 260.6 tons as an average for the six months, or per trip for six months, 13.4 tons.

Now, the lowest that was burned was 12.7 tons and the highest and the only one of those was 19 tons. That shows you that in that six months, for those six men, there was only one trip that exceeded the general average.

The Chairman: Will you give the stenographer a copy of this?

Mr. Lee: Yes, sir, we will give him a copy, with the Board's permission, to be put into the record.

(The statement referred to by Mr. Lee is as follows):

Statement showing data as to wages earned, coal used, etc., by six individual firemen, as indicated below, on the Susquehanna Division of the Erie Railroad, for the six months ending December 31, 1912:

SLOW FREIGHT SERVICE.

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Average
Fireman E. P. Brickley:								
Amount earned	$74.85	$90.39	$89.21	$77.01	$55.27	$75.56	$462.29	$77.05
Trips made	20	21	21	20	15	17	114	19
Avg. Amt. per trip	3.74	4.32	4.25	3.85	3.68	4.44	4.06	4.06
Tons Coal burned per Mo	254	284	287	261	182	243	1511	251.8
Avg. Tons burned per trip	12.7	13.5	13.7	13.0	12.1	14.3	13.2	13.2
Fireman W. A. Codner:								
Amount earned	$80.72	$94.55	$92.80	$84.59	$83.21	$83.98	$519.85	$86.64
Trips made	16	24	23	21	23	20	127	21.1
Av. Amt. per trip	5.05	3.94	4.03	4.03	3.62	4.20	4.09	4.09
Tons Coal burned per Mo	258	282	276	266	270	273	1625	270.8
Avg. Tons burned per trip	16.1	11.7	12.0	12.7	11.7	18.1	12.8	12.8
Fireman F. Chamberlain:								
Amount earned	$96.55	$84.24	$103.68	$97.32	$71.36	$77.67	$530.82	$88.47
Trips made	24	18	23	23	17	25	130	21.6
Avg. Amt. per trip	4.02	4.68	4.51	4.23	4.19	3.11	4.08	4.08
Tons Coal burned per Mo.	313	285	365	300	242	256	1761	293.5
Avg. Tons burned per trip	13.0	15.8	15.8	13.0	14.2	10.2	13.5	13.5

Fireman J. E. Loohn:

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Average
Amount earned	$76.27	$73.97	$72.24	$62.83	$65.22	$51.72	$402.25	$67.04
Trips made	19	19	17	15	17	12	99	16.5
Avg. Amt. per trip	4.01	3.89	4.25	4.12	3.84	4.31	4.06	4.06
Tons Coal burned per Mo.	243	251	237	234	247	229	1441	240.1
Avg. Tons burned per trip	12.8	13.2	13.9	15.6	14.5	19.0	14.5	14.5

Fireman B. C. Mareau:

Amount earned	$75.92	$55.99	$77.85	$95.12	$79.64	$91.85	$476.37	$79.40
Trips made	19	18	23	22	19	23	2124	20.6
Avg. Amt. per trip	3.99	3.11	3.38	4.34	4.19	3.99	3.84	3.84
Tons Coal burned per Mo.	250	195	247	322	262	304	1580	263.3
Avg. Tons burned per trip	13.1	10.8	10.7	14.6	13.8	13.2	12.7	12.7

Fireman R. J. Washburn:

Amount earned	$93.95	$72.39	$83.00	$104.15	$57.44	$76.15	$487.08	$81.18
Trips made	22	18	21	24	14	18	117	19.5
Avg Amt. per trip	4.23	4.02	3.95	4.34	4.10	4.23	4.16	4.16
Tons Coal burned per Mo.	310	241	272	327	161	253	1564	260.6
Avg Tons burned per trip	14.1	14.5	12.9	13.6	11.5	14.1	13.4	13.4

Total Amount Earned in Six months as per above detail	$2878.66
Total number trips made Six months as per above detail	711
Total Tons coal burned Six months as per above detail	9482
Average amount earned per trip, as per above detail	$ 4.0487
Average tons coal burned per trip as per above detail	13.3

3-17-1913.

Mr. Atterbury: What was the statement of fireman Turck, that you quoted?

Mr. Hayes: Fireman Tuck's statement as I now recall it was —at least, he gave me this impression—that the average consumption of fuel per trip over the Susquehanna Division, in junk freight service was 22, 24 and 26 tons per trip. Now, that impression went out, that he meant every trip that was within those limits.

Mr. Lee: I will read the testimony, with the Board's permission: "Mr. Carter: About how much coal do you burn on that 140 mile division?

"Mr. Turck: Anywhere from 22 to 24-26 tons.

"Mr. Carter: How much?

"Mr. Turck: 22, 24, 26 tons.

"Mr. Carter: Ordinarily?

"Mr. Turck: Yes, sir."

Then also further over, the Chairman asked Mr. Turck some questions:

"The Chairman: Do you handle an average of 24 tons of coal, every run you make?

"Mr. Turck: Not every run, no; it will vary from 22, 24 to 26.

"The Chairman: 22, 24, 26, with 24 as the average?

"Mr. Turck: Yes, it will average 24 tons, that is trip in and trip out.

"The Chairman: That is, 48,000 pounds of coal that you handle in making one of those runs?

"Mr. Turck: Yes,—"

Mr. Lee: You had some figures, Mr. Hayes, for coal consumption on the Susquehanna Division?

Mr. Hayes: I don't know just what you mean, Mr. Lee; I have got all kinds of figures; what do you refer to?

Mr. Lee: The coal consumption on the Susquehanna Division. It was among those papers that you just gave me.

Mr. Hayes: Oh, yes. I think I gave you that, did I not?

Mr. Lee: I just handed it back to you, Mr. Hayes.

Mr. Hayes: I know, but that was the first statement I read.

Mr. Lee: Oh, was that in this first statement?

Mr. Hayes: Right at the top of the page, is it not? Was that what you referred to?

Mr. Lee: That is this statement (referring to paper).

Mr. Hayes: Is that what you refer to?

Mr. Lee: That is what I refer to. Let me have those papers again.

Mr. Hayes: I have some figures here, Mr. Lee, the result of a test was made by the Supervisor of Locomotive Operation, Mr. Robertson, Chairman of the General Committee of Firemen on the Susquehanna, and myself, riding a number of Consolidation engines in junk service, or a majority of the trips, very heavy junk tonnage rating. They are truly representative of some of the figures that can be made.

Mr. Lee: These (indicating)?

Mr. Hayes: No, I have them here. You have not got a copy of them, unfortunately.

Mr. Lee: Let us have them then.

Mr. Hayes: I have only one copy. I thought perhaps this might be a good place to introduce it, unless you object?

Mr. Lee: No, go ahead.

Mr. Hayes: You do not want the details? You just want the results?

Mr. Lee: That is all.

Mr. Hayes: Yes. On December 1st, with Engine 1650, one of our H-21's, a Consolidation locomotive, with a tonnage of 8,060 M's we burned 1,194 scoops of coal or 152 pounds per locomotive mile from Binghamton to Hornell. The same engine, with a different engineer on December 16—the Hornell way train; that was picked out as one of the hardest runs on the Susequehanna Division; with 5,181 M's we burned a total of 1,378 scoops of coal, or 176 pounds per locomotive mile. The next day, from Hornell to Susquehanna, with Engine 2,023, also an H-21 Consolidation locomotive we burned 1,295 scoops of coal per trip, 138 pounds per locomotive mile, with a tonnage of 8,603 M's or would be 4,300 tons. The next day, the 18th, from Susquehanna to Hornell, we burned 1,228 scoops of coal, or at the rate of 117 pounds per locomotive mile, with 8,603 M's. So you see we kept the tonnage rate right up to the maximum limit. While I think of it, I might say that my instructions to the engineer, as well as to the Supervisor of Locomotive Operation, was to keep the train force into as high speed as they could all the time, so as to get over the road with a heavy tonnage in the minimum length

of time. December 19th, from Hornell to Susquehanna, we burned 1,412 scoops or 151 pounds per locomotive mile with 4,579 M's.

The next day, from Hornell to Susquehanna, 1,256 scoops were burned, or at the rate of 135 pounds per locomotive mile, with a tonnage of 6,618 M's. This was the Hornell way train with 8,000 M's over a portion of the division.

Those are representative figures ,and they were made for a special purpose, at the request of our general superintendent to determine if possible whether or not the firmen on the Susquehanna Division were overworked; and it was concluded by the full committee that so far as those trips represented the work performed on teh Susquehanna Division, the firemen were in no way overworked.

Mr. Atterbury: What Committee?

Mr. Hayes: This committee that was making observations; the Supervisor of Locomotive Operation, the General Chairman of Firemen's Committee and myself.

This was a committee that was appointed by the General Superintendent to look into it, and to ride a sufficient number of trips over the division until we were convinced with reference to the work performed by the firemen. We made those trips that are recorded here, and the verdict was that the firemen were not at all overworked so far as we could observe.

Mr. Lee: Do you have Mallet compounds running on the hill above Susquehanna?

Mr. Hayes: Yes.

Mr. Lee: They have been there how long?

Mr. Hayes: They came there in 1907. I cannot remember just what month.

Mr. Lee: How many firemen are there on those engines?

Mr. Hayes: There is only one fireman.

Mr. Lee: Have you always had one fireman on those engines?

Mr. Hayes: No, we have tried it in all ways. We tried it with two firemen.

Mr. Lee: Why are you not running two firemen on there now?

Mr. Hayes: Because we found that when the two firemen were assigned, one of them was laying off and letting the other do the work; and after that matter had been investigated sufficient-

ly, we took the second fireman off and other arrangements were made.

Mr. Lee: Why did you put him on in the first place?

Mr. Hayes: At the request of the firemen, or by conference of the firemen's committee with the management.

Mr. Lee: And then you found that the second man was stopping at the bottom of the hill and not going up at all?

Mr. Hayes: They were actually going up the hill with the one fireman, just the same. We thought at first, when we began to investigate it, that he was only dropping off to get something to eat, or for some other special purpose; but when it become a regular pratice that the men were actually playing pool in the Y. M. C. A. instead of assisting the other fireman up the hill, we did not think it was at all necessary, and he was taken out of the service.

The Chairman: There are two kinds of pool on your road?

Mr. Hayes: Yes, I should say there were two kinds of pool on every railroad.

Mr. Lee: You may cross examine.

CROSS EXAMINATION.

Mr. Carter: Turning to the first statement, Mr. Hayes, have you it in your hand there?

Mr. Hayes: Yes. Have you a copy of it.

Mr. Carter: I have a copy here. I note that you say, there, that the pounds of coal consumed per locomotive mile is this Junk Service in the fiscal year ending June 30, 1902 were 180, and in 1912, 219 pounds?

Mr. Hayes: Yes.

Mr. Carter: That shows an increase of 21%?

Mr. Hayes: Yes.

Mr. Carter: Now in junk freight you say the wage in 1902 was $1.90 and in 1912 $2.30, an increase of 21%?

Mr. Lee: Quote it right.

Mr. Carter: I do not understand that. Let us get it clear. Please pick out some engine in junk freight in 1902 that was also in service in 1912?

Mr. Hayes: I cannot pick out the individual engines, but I can give you the classification.

Mr. Carter: What I mean to say is, give me the rate of pay on some engine in 1902.

Mr. Lee: Some class of engine.

Mr. Carter: No, I mean the rate of pay per 100 miles for some fireman?

Mr. Lee: Per class. You do not mean a particular engine?

Mr. Carter: Yes, I mean some engine. Pick out some engine that was in service in 1902 and tell me what the rate per 100 miles was in 1902?

Mr. Hayes: I should say as I now recall it that it was one of the G-8 engines that are running in the 800 class, because the G-8 engines in 1902 were almost entirely assigned to the Susquehanna Division.

Mr. Carter: What was the rate per 100 miles in 1902?

Mr. Hayes: The rate per 100 miles in 1902 on engines 130,000 pounds or less on drivers was $1.90 for the first year and $2.12 for the second year.

Mr. Carter: We will take $2.12. Now how much was paid on that same engine in 1912 in the same class of service?

Mr. Hayes: These 1912 engines are 150,000 pounds or more on drivers, including the G-12 and G-16 engines.

Mr. Carter: Is that the same engine you spoke of before?

Mr. Hayes: No.

Mr. Carter: It is a bigger engine, is it?

Mr. Hayes: Yes, sir, a larger engine.

Mr. Atterbury: The first you spoke of was a G-8 was it not?

Mr. Hayes: Yes.

Mr. Atterbury: What did you pay for the G-8's in 1902?

Mr. Hayes: In 1902 the rate was $1.90 and $2.12.

Mr. Atterbury: Now we will take the $2.12. What would you pay for that engine if it was in exactly the same service today? I think that is what Mr. Carter wants.

Mr. Carter: That is what I want.

Mr. Hayes: If it was in exactly the same service I think it would come under the head of all other engines, according to the increased rate in here, which would be $2.60.

Mr. Carter: $2.60. Do you know what increase in percentage that would be.

Mr. Hayes: No, I do not.

Mr. Lee: It is stated on that paper?

Mr. Carter: I have not been able to find that. $2.12 against $2.60, that is an increase of 22%. Now we have got back to where we started from. The increase in coal burned was 21% and the increase in wages was 22% according to that.

Mr. Lee: On different engines.

Mr. Hayes: On a different class of engines entirely. I think I can account for that increased consumption of coal very nicely Mr. Carter.

Mr. Lee: Heavier tonnage?

Mr. Hayes: Very much heavier tonnage, of course.

Mr. Carter: What I am trying to get at is, were there not different conditions in 1902 from what they are now? Didn't you allow them constructive mileage ten miles for cleaning fires, etc., etc.?

Mr. Hayes: There were some conditions of that kind prevailing at that time, that were all wiped out later on by—

Mr. Carter: And when did you change from the constructive mileage trip rate system to the mileage system?

Mr. Hayes: I think it was about 1902 that that was done.

Mr. Carter: On December 1st, 1906?

Mr. Hayes: Well, I would not be sure about that. That is something I would have to look up the record on before I could give an answer.

Mr. Lee: 1906 is correct.

Mr. Carter: December 1st, 1906?

Mr. Hayes: Maybe you are right about that.

Mr. Lee: That is correct.

Mr. Carter: You probably have not the schedules there to refer to, and it would not be fair to ask about them, but it is my understanding that when they changed from the old style to the mileage basis, while they increased the rate per mile, they took a great many constructive mileage runs away from them, and many other privileges.

Mr. Hayes: Yes, sir. At that time there were a great many runs which were overpaid as well as some that were underpaid. It was a levelling up process as well as a leveling down process.

Mr. Carter: Now, to go back, you made some statements there, I haven't it here, but it would be in the record, about men earning $4.16 per trip and others $4.34 per trip, was it on different engines or different trips?

Mr. Hayes: No, I think that was probably due in away, to casting off a small fraction, where the difference in the trip, you can see so nearly corresponds, I am inclined to think that is the way in which the discrepancy may be accounted for.

Mr. Carter: How many firemen have you in service on that Susquehanna Division?

Mr. Hayes: I could not say exactly. Mr. Barnes, how many firemen have we in service on the Susquehanna Division?

Mr. Barnes: I should judge about 150.

Mr. Hayes: 150?

Mr. Barnes: About that many.

Mr. Carter: You took six out of 150, and one of these burned 19 tons of coal, I believe you said.

Mr. Hayes: One of those burned 19 tons of coal.

Mr. Carter: Is it not possible out of the 144, that they might have burned 22 tons?

Mr. Hayes: The other 144, after you had cast off enough for the yard service, and for the first class runs or preference runs, would dwindle down to about 50 crews.

Mr. Carter: About 50?

Mr. Hayes: Yes, sir.

Mr. Carter: Then the other 44, if one man out of six is shown to have burned 19 tons, is it not possible that one man out of the 44, that are not reported, might have burned 22?

Mr. Hayes: It is possible, oh, yes, but not at all probable. All things are possible, you know, or most things of that kind.

Mr. Carter: I note in quoting the amount of coal burned on the test trips, it seems to be much less than in the trips— or may be I am mistaken, it is very hard to compare it— I see that in 1912 the pounds of coal consumed per locomotive mile were 219. How much does it show in these test trips?

Mr. Lee: These are not test trips, are they?

Mr. Hayes: No, they are not test trips.

Mr. Carter: Were not those test trips

Mr. Hayes: No, those were not test trips. They were selected at random. I could not tell you for the life of me how they were selected.

Mr. Carter: I thought Mr. Robertson was on there for some purpose?

Mr. Hayes: Oh, that is a different proposition.

Mr. Carter: I am talking about the trips Mr. Robertson was on.

Mr. Hayes: All right; we will get that data then.

Mr. Carter: About how much per mile did they burn on those trips in 1911?

Mr. Hayes: About an average of 140 pounds, and a very good showing, too.

Mr. Carter: Your average for 1912 is 219 pounds?

Mr. Hayes: Very true.

Mr. Carter: Would not that indicate there had been that much increase in one year?

Mr. Hayes: No; but it does indicate that when an official investigation is made, you can always get down to the lowest possible limit. When supervision is close, you will find there is a very material reduction in fuel consumption, and that was the case when the men were firing those locomotives, and even with the hard work performed by those engines, so it could not be said that there was anything done to defeat the purpose of the investigation, they showed a remarkable reduction in fuel consumption.

Mr. Carter: 140 and how much?

Mr. Hayes: I just gave you an approximate average.

Mr. Carter: Well, approximately?

Mr. Hayes: It probably would be more than that, but I said 140, just to start you off.

Mr. Carter: 150, you said. 150 would be 69 per cent.—well, it is almost 50 per cent. of the coal on these trips that you referred to; they burned almost 50 per cent. less coal than you show for the average of all engines in 1912.

Mr. Hayes: Yes, sir.

Mr. Carter: Would you believe that the trip before you rode on the engine that they burned this big lot of coal?

Mr. Hayes: I would. I have seen it done so many times, and have a record of it so many more times being done that I would say that it was a very easy matter for a man to get up to almost any average that he wanted to, because some men shovel coal into a firebox indiscriminately.

Mr. Lee: It is 25 per cent, instead of 50?

Mr. Carter: 25 is it? 69 is what percentage of 150? 75 is 50 per cent. How much is 69?

Mr. Atterbury: Yes. But 219 is the base.

Mr. Carter: No, if they burned 150 on the test trip I asked if he thought they burned 50 per cent. more on any other trip?

Mr. Lee: I thought you said the other way.

Mr. Carter: No, sir.

Mr. Lee: 50 per cent. less is what you said, I believe.

Mr. Carter: Well, 50 per cent. more then.

Mr. Lee: Really about 33 per cent.

Mr. Carter: How much would this coal cost? Would it not pay to hire a man to ride on all locomotives if they burned fifty per cent. more when the man was not on the locomotive than when he was there.

Mr. Hayes: Close supervision certainly would be very beneficial. I wouldn't say it would pay to put a man on every locomotive. But the closer you can make your supervision the better results you are going to secure.

The Chairman: Are you going to stay here tonight, Mr. Hayes?

Mr. Hayes: I live in this neck of the woods, your Honor.

The Chairman: Well, we will continue this examination to-morrow morning.

Mr. Carter: I am through.

The Chairman: Are you?

Mr. Carter: Yes.

The Chairman: We will adjourn until 9 o'clock to-morrow morning.

Mr. Carter: Oh, Mr. Hayes, I want to ask you some questions.

Mr. Hayes: All right, I will answer them.

The Chairman: He will be here in the morning.

Mr. Carter: He will be here in the morning. I want to ask some questions on some other things.

(Whereupon at 4:40 P. M. the hearing was adjourned until Tuesday, March 25th, 1913, at 9:00 A. M.)

PROCEEDINGS.

ARBITRATION

between the

EASTERN RAILROADS

and

THE BROTHERHOOD OF LOCOMOTIVE FIREMEN AND ENGINEMEN

Submitted to Arbitration, under the Erdman Act,
By Agreement Dated Feb. 18, 1913

AT WALDORF ASTORIA HOTEL
New York

March 25, 1913.

HULSE & ALLEN, Official Reporters,
115 Broadway,
New York.

New York, March 25, 1913.

Met pursuant to adjournment at 9:10 a. m.

Present—parties as before.

WILLIAM C. HAYES, resumed.

The Chairman: You have the witness, Mr. Carter.

Mr. Carter: Mr. Hayes, by referring to page 1371 of yesterday's proceedings, Mr. Lee asked you:

"Why did you put him on in the first place?" meaning the second fireman on that pusher service. In reply you said:

"At the request of the firemen, or by conference of the Firemen's Committee with the management."

"Mr. Lee: And then you found that the second man was stopping at the bottom of the hill and not going up at all?

"Mr. Hayes: They were actually going up the hill with one fireman just the same. We thought at first, when we began to investigate it, that he was only dropping off to get something to eat, or for some other special purpose; but when it became a regular practice that the men were actually playing pool in the Y. M. C. A. instead of assisting the other firemen up the hill, we did not think it was at all necessary, and he was taken out of the service."

Mr. Hayes: If by "taken out of the service" it is understood that that means he was discharged, that should be corrected, because he was not.

Mr. Carter: I understand what that means. I think we all understand what that means. You did not mean that he was dismissed, but that he was taken out of that particular service?

Mr. Hayes: That particular line of service.

Mr. Carter: I think that is understood by everybody. Now if you can, without betraying any confidence, please give us the source of your information. I know that you did not know that yourself. Somebody told you that. Was it a road fireman of engines?

Mr. Hayes: I do not just recall, but I think I witnessed that very proceeding myself.

Mr. Carter: How many times?

Mr. Hayes: Only once.

Mr. Carter: Can you give the name of the man please?

Mr. Hayes: I cannot now.

Mr. Carter: You do not remember that?

Mr. Hayes: No.

Mr. Carter: But you only witnessed it once?

Mr. Hayes: I only witnessed it once. Just let me look up the record here. I think I have some data on the subject. This data does not give any records of how many times the engines went up the hill without the two firemen being at work, while that was the practice.

Mr. Carter: Mr. Hayes, how many hours did those two firemen work?

Mr. Hayes: The two firemen worked twelve hours.

Mr. Carter: Worked 12 hours?

Mr. Hayes: Yes.

Mr. Carter: Do you remember the average number of trips they would make in 12 hours?

Mr. Hayes: Sometimes only one, sometimes two, sometimes three.

Mr. Carter: Sometimes four?

Mr. Hayes: No, sir; there was the limit in 12 hours. If they made three trips every 12 hours they were doing splendidly, about as quickly as we could get those large engines around and assign them to trains.

Mr. Carter: Are you sure of that?

Mr. Hayes: Am I sure of that?

Mr. Carter: Yes.

Mr. Hayes: I think the record will substantially prove it. I would not be sure enough from recollection to state positively.

Mr. Carter: I thought perhaps you were depending upon some other informant for that?

Mr. Hayes: No, sir.

Mr. Lee: You were the superintendent?

Mr. Hayes: I was the Superintendent of Locomotive Operation. I was on the ground at the time myself and was personally supervising the work performed by the Mallets.

Mr. Carter: If one man went up the hill and the other man rested, and then the other man went up the hill and the first

man rested, if they performed their work at the same expense to the company, would that have been objectionable?

Mr. Hayes: That appeared to be objectionable, yes, because the second man was put on for the purpose of assisting the other to perform work that it was claimed was too hard for one man to perform in the same time.

Mr. Carter: The company fixed the rate of $2.45 a day for each of the two men for a 12-hour day. That is, you paid two men then $4.90 for working 12 hours. Is that true?

Mr. Hayes: That is substantially true.

Mr. Carter: Now, how much do you pay to men for working 12 hours, under the different arrangement?

Mr. Hayes: We pay two men now $2.70.

Mr. Carter: You pay them $5.40?

Mr. Hayes: Yes, sir. $2.70 for a six hour day.

Mr. Carter: And twice a six-hour day would be a 12-hour day and twice $2.70 would be $5.40?

Mr. Hayes: Yes, sir.

Mr. Carter: Now, I understand the company objected, when there were supposed to be two men on the engine for 12 hours continuously, for one man stopping off to rest while the other man went up the hill and made a trip?

Mr. Hayes: Yes, sir.

Mr. Carter: Why does not the company object now on account of a fireman resting six hours, while a fireman is working six hours, and then change off? What is the difference, except you are paying them more money now than you did then? They change off now every six hours, for the 12 hours, and then, I understand you to say, they changed off every trip?

Mr. Hayes: No, I would not say they changed off every trip, because I could not substantiate that.

Mr. Carter: Presuming they change off for some trips?

Mr. Hayes: That was the impression that prevailed at the time, that that was being done continually, and we found enough instances to warrant that assumption.

Mr. Carter: Now, presuming that is all right, without denying it,—you paid two men $4.90 for working 12 hours?

Mr. Hayes: Yes.

Mr. Carter: And both men were on?

Mr. Hayes: 12 hours, yes.

Mr. Carter: You objected to one lying at the bottom of the hill, while the other was making a trip; you changed that, and you put one man on for six hours, and then relieved him entirely, and put another man on for six hours, and are now paying him more money?

Mr. Hayes: No, Mr. Carter. You misinterpret that entirely. The idea was that we did not care to have our men, understand, really standing in the light of presuming or assuming to do work that they did not perform. When a man was paid for going up the hill, why, he was not paid for playing ball in the Y. M. C. A. or for performing some other duty that was peculiar to himself.

Mr. Carter: Presuming that this Commission permits us to have two men on through freight service on the large engines, and after this goes into effect some observer finds one man seated on the seat box or even lying down in the caboose, trying to recuperate, while the other man is standing in front of the fire-box, would you consider that a good reason for pulling off the extra man?

Mr Hayes: Yes.

Mr. Carter: You want both men to work all the time?

Mr. Hayes: No, no, Mr. Carter. Now, don't try to switch that around, because that is not fair.

Mr. Carter: Suppose one man were sitting on the seat-box?

Mr. Hayes: What we wanted at that time, and what we insisted on having was that if the work was too hard for one man, that the second man should assist and should spell him in going up the hill when the work was the hardest. Now, then, the work on the large engines was so severe, that, from one cause and another, one man could not perform it, and it required two men; and that was agreed upon between the firemen and the company, then the two men ought to be present upon that engine all of the time, and the fireman that was placed there to assist should be there as an assistant, and not lying down in the caboose because there would not be any such thing as the point of human endurance being reached where a man would be stretched out on the back of the tank, or in the coal pile, as you say, or in the caboose. Now, I have been through all stages of that, Mr. Carter.

Mr. Carter: Now, what change did you make? You pulled

the two men off the 12 hour day and you put one man on a six hour day, did you not?

Mr. Hayes: That is all conceded, the schedule performance shows that.

Mr. Carter: You thought that was fair to the company?

Mr. Hayes: I would not consider it fair to the company, but the company considered it fair to themselves, and of course I am not there to criticize.

Mr. Carter: And therefore, to-day they work a man on that pusher service on that hill, on that engine, only six hours?

Mr. Hayes: Yes, and I think he has got a snap.

Mr. Carter: Now, presuming that this Commission concludes that the companies object to paying two firemen on the locomotives, do you believe it would be better for them to establish a six hour day, or a sixty mile day, on these large locomotives, and to pull the men off every six hours?

Mr. Hayes: That would be a question for the Commission to determine.

Mr. Carter: It would not be as practicable as it would in the pusher service?

Mr. Hayes: Now, Mr. Carter, don't try to twist that. I said I would leave that entirely for the Commission to determine, and I am not going to answer any such question as that, in that way.

Mr. Carter: The fact remains, Mr. Hayes, that to-day you are having two men do the same 12 hours work, except you are having them work six hours at a time?

Mr. Hayes: That has been so stated several different times.

Mr. Carter: Presuming one man went up the hill for six hours and the other man was relieved and was found at the bottom of the hill resting, that would not be any reflection on the man, would it?

Mr. Hayes: Why, Mr. Carter, I have answered that question.

Mr. Carter: Now, let me see about some of these official tests you had. I haven't got the paper here now, but I will ask you from memory—(paper handed to Mr. Carter). At the head of this table you show that the pounds of coal consumed per locomotive mile in junk service for the fiscal year ended June 30th, as indicated, was 219 pounds. That includes the drifting and the up-hill?

Mr. Hayes: That includes everything.

Mr. Carter: Everything?

Mr. Hayes: Yes, in junk service.

Mr. Carter: For instance, if a freight train, in what we call slow freight service and what the Erie calls junk freight service, burns so much coal in going up a hill, and burn no coal in going down a hill, you would average it all?

Mr. Hayes: Average it up.

Mr. Carter: How much do you suppose that these junk trains would burn in this service counting only the time that they were going up a hill, if they burned 219 pounds?

Mr. Hayes: That data was made up for a level division where the hill is on the 'hind end of the locomotive.

Mr. Carter: You believe the cutting down of the grades made harder work for the firemen?

Mr. Hayes: No, I do not.

Mr. Carter: Why is it so much higher on a level division?

Mr. Hayes: You are comparing the conditions in one period with another, that is altogether different. That was our object in preparing that statement, we wanted to show what was done in 1902, when the engines were loaded very much lighter than they are at the present time, and the larger engines are pulling almost twice the tonnage at this time than they were at that period and are burning just a trifle more coal.

Mr. Carter: I don't think the Commission got that statement.

The Chairman: Before you go any further, please explain what you mean by the expression that "the hill is on the 'hind end of the engine."

Mr. Hayes: That is where the gradient of the railroad is level or approximately so, and you lengthen out your train, or increase your train load very materially on that account.

The Chairman: How does that change the hill?

Mr. Hayes: It places it behind instead of in front of the engine. That is only another way of putting it; a quaint way of putting it.

Mr. Phillips: The railroad way.

Mr. Hayes: Really, the good old Anglo Saxon way of putting it.

The Chairman: There might be no hill at all, but a dead level road.

Mr. Hayes: A dead level road and still with the load behind the engine, it would make it go at a very slow speed and work just as hard as with a lighter load on a heavier grade.

Mr. Lee: Isn't what you mean that instead of the engine going up a hill where it would have to exert a pretty good force to haul a light load, that it is going along on a level grade but overcoming resistance of a heavier train behind it, which really amounts to the same thing.

The Chairman: He just means that the load is behind the engine.

Mr. Hayes: Yes, sir.

Mr. Carter: Let me ask the question again. As I understood Mr. Hayes to say that this 219 pound applied to all divisions, some of which were level grades and not so hilly—

Mr. Hayes: This is only for the Susquehanna Division.

Mr. Carter: All parts of the Susquehanna Division?

Mr. Hayes: Yes, sir.

Mr. Carter: And therefore the coal consumed per locomotive miles is higher, taking all the Susquehanna Division instead of taking this one hill?

Mr. Hayes: There are no hills on the Susquehanna Division.

Mr. Carter: Then where the hills aren't, why, they burn more coal than where the hill is?

Mr. Hayes: The conditions were changed on the Susquehanna Division by the introduction of larger engines and more attention paid to the loading, so that they were closer to their maximum loading when that change was taken than it was possible in 1902. That can be proven by all of the statistics that we have.

Mr. Carter: Well, Mr. Hayes, I do not want to importune you, but I only wanted to show that you set forth in this statement, taking the entire Susquehanna Division and all the locomotives, that the pounds of coal consumed per locomotives mile in junk service for the fiscal year ending June 30th, was 219 pounds, and you show on this hill on these test trips it was very much less than that. Now—

Mr. Hayes: Is there anything in there about the hills on the test trips? If there is—

Mr. Carter: Was not that the hill, that these test trips were made on?

Mr. Hayes: I should be glad to know if—

Mr. Carter: I beg your pardon. I thought you were speaking of the test trips. Did you not make some test trips?

Mr. Hayes: We made some test trips, and Mr. Robertson right by your side was there and—

Mr. Carter: Clear over the division?

Mr. Hayes: Clear over the division, yes, sir.

Mr. Carter: If you go clear over the division these official test trips would show a lesser consumption of coal than in practice?

Mr. Hayes: Yes, sir.

Mr. Carter: Let us presume that all of these test trips that are made show the superheater saved so much coal for the fireman; really the saving in the coal was owing to the fact that the fireman was under supervision of the investigating officer, and it would not be the superheater that saved it, would it?

Mr. Hayes: Do not try to pervert that, because it is not fair, and it is not so. There is an actual saving in coal consumed by the use of the superheater.

Mr. Carter: What I want to show is that you have discovered that, disregarding the superheater, when official test trips are made there is always a great saving in coal, regardless of everything else?

Mr. Hayes: In every coal test that I have ever made, in every one that I have ever received a report on, that has been the case.

Mr. Carter: Then it is possible that these official tests which were made with the superheater, showing a saving in coal consumed, might have been because of the official observations rather than the superheaters; is not that true?

Mr. Hayes: No, I would not say that.

Mr. Carter: All right.

Mr. Hayes: But it is in addition to that fact.

Mr. Carter: Now, you said a while ago, and I thought the Commission overlooked it, that in this comparison of 1902 and 1912 you said with comparatively little increase in coal they are hauling an immensely greater tonnage or words to that effect?

Mr. Hayes: Yes.

Mr. Carter: You think the conditions have greatly changed then, from 1902 to 1912?

Mr. Hayes: I certainly do.

Mr. Carter: Have you any stokers on the Erie Railroad, Mr. Hayes?

Mr. Hayes: Well, fortunately or unfortunately, as the case may be, we have not.

Mr. Carter: Have you not tried out honestly and conscientiously several types of stokers?

Mr. Hayes: We have; we spent quite a considerable amount of money in trying to develop the stoker.

Mr. Carter: And at times you found that stokers did save a good deal of coal and at times would make 100% trips, did you not?

Mr. Hayes: We never found a stoker, in the stokers that were attempted to be developed by the Erie Railroad, that would make any saving in coal. It would relieve the work of the fireman because the stoker would introduce the coal and the fireman would be busy with other duties.

Mr. Carter: Why did you discard the stoker; on account of the expense of maintenance?

Mr. Hayes: No, because we did not develop it to the extent of determining that question.

Mr. Carter: But I believe, if I remember right, the Erie Railroad has been perhaps more diligent in an attempt to develop them than most roads, going away back to where you began?

Mr. Hayes: Perhaps your experience would justify that statement.

Mr. Carter: My experience is limited to what you and others said at the Association of American Master Mechanics Conventions.

Mr. Hayes: Sir?

Mr. Carter: My experience is limited to what representatives of your road have said at meetings of the American Master Mechanics Association, Mr. Gremling, Mr. So and So, Mr. So and So and yourself.

Mr. Hayes: Yes.

Mr. Carter: And the Erie has conscientiously tried to develop the stoker?

Mr. Hayes: I should say that they had, yes, sir.

Mr. Carter: And I think the records will bear that out?

Mr. Hayes: Yes, sir.

Mr. Carter: And yet to-day you have abandoned the stoker; is not that true?

Mr. Hayes: That is true.

Mr. Carter: Now, Mr. Hayes, we will take it for granted that a superheater working under ideal conditions, does save coal with the same tonnage, without question; are there not many objectional features to the superheater?

Mr. Hayes: None have developed on the Erie Railroad in over a year's use of superheater engines; and we have about 135 in service at this time, yes, 150 in service at this time.

Mr. Carter: Have you not found a great deal of trouble with those superheaters?

Mr. Hayes: We have not. In fact, it is exceptional. We have found some trouble in keeping superheat tubes and units clean, but it is nothing that cannot be overcome by attention at the terminal. It is only when neglect occurs, which sometimes does creep in, that we have any trouble whatever with the superheat locomotives.

Mr. Carter: You were at the Master Mechanics Convention, the last meeting, were you not?

Mr. Hayes: I was.

Mr. Carter: If I am misquoting, please call my attention to it.

Mr. Lee: I will.

Mr. Carter: I will read from page 248 of the proceedings of the Railway Master Mechanics Association, quoting Mr. W. C. Hayes of the Erie Railroad with regard to superheaters, and I am going to read it all, not because I want to read it all, but I want to ask if he still agrees to it.

The Chairman: The same Mr. Hayes?

Mr. Carter: Yes, I want to see if he agrees with it. I would not read it all, gentlemen, but I do not want to be excused of leaving out a period.

"Mr. W. C. Hayes (Erie R. R.)—

During the discussion.

"The Vice President: We would like to hear from Mr. Hayes, of the Erie

"Mr. W. C. Hayes (Erie R. R.): I do not know that I have

anything to say concerning the use of superheater engines that will be interesting at this time. I rather think that our experience is so limited, that we have secured but very little data of value concerning the operation and maintenance of superheater locomotives.

"While the paper itself treats more particularly of the construction of the superheater locomotive and the detail defects that may occur in the locomotive, there is nothing in the report that pertains to the operation of the superheater, and that is the viewpoint from which I would like to hear the superheater locomotive discussed.

"There is no doubt in the mind of the speaker that this is one of the questions that is more alive to-day in locomotive practice than any other one pertaining to large locomotives, and it is being considered mainly from the point of view of the saving that can be made, particularly with regard to the use of fuel, as well as perhaps increasing the efficiency of the locomotive to its highest degree. We have, as I said before, no data that will sustain the position that I have had in mind from what little experience we have had with the superheater locomotive, and in seeing these engines in service. The Erie Railroad, with which I am at present connected, has thirty-five Mikado type of engines equipped with the Schmidt type of superheater now in service on one of its heavy operating divisions; it is a heavy, hilly, choppy railroad, and recently the speaker located at a point where he could see the greatest number of these engines in service in the shortest possible space of time, so as to be able to see whether or not they were loaded to the maximum, so that we could get the maximum service out of the locomotives, in the amount of tonnage hauled. I stationed myself where I could observe the engines on the controlling grades in two directions, and in four or five days we had half a dozen engines which gave up their trains on account of serious defects that developed in superheat applied to these locomotives, so that they were unable to continue further with their trains, and had to run in light.

There are certain claims being made as to the savings that accrue from the use of superheat. Figuring on that from purely a fuel standpoint, and admitting the claims that the superheat people make for locomotives equipped with a superheater, which is placed at 25 or 30 per cent., if the value of a locomotive is

figured at about what operating people generally concede to be right, it occurred to the speaker that the saving in all directions and increased efficiency of the locomotive as well, added to that of the fuel which might be saved, would be more than absorbed in the cost of the maintenance of the superheater. If that is true, it is a serious phase of the superheater problem. If it is not true, and the defects that have been thus far developed can be remedied so that they will not recur, and you can keep your superheater locomotives in operation continuously and constantly, then, no doubt, it is one of the greatest savers both in fuel and efficiency of the locomotive that ever has struck the American railroads, and it is a result well worthy of all of the best efforts that can be put forth in its advancement."

That is your opinion, is it not?

Mr. Hayes: That was my opinion at that time.

Mr. Carter: I will tell you why I read that.

Mr. Lee : What page did you read from?

Mr. Carter: Pages 248 and 249 of the "Proceedings of the American Railway Master Mechanics' Association for 1912."

Mr. Hayes: That was based upon actual observation—

Mr. Carter: I beg your pardon. There is some more of this, which I left out. You were interrupted by another speaker, and then proceeded as follows, on page 251:

"Mr. Hayes: In answer to the gentleman's question, I would say that the troubles occurring on the engines to which he has just made reference covered a variety of things—leakages in the superheat tubes, in the headers, in the superheat units, and things of that character—so that the engine would not steam, and had to give up its train on the road; which, to my mind, would make the superheater a very expensive engine to operate when all things were considered. Does that answer the gentleman's question?"

"Mr. Pilcher: What design of superheater was it?"

"Mr. Hayes: The Schmidt type of superheater is the one that we have applied to several passenger engines of the Pacific type, the largest type of engine we have in passenger service, and they individually give a very good account of themselves, making a magnificent saving. But when you take the whole general proposition into account, so far, after an experience of six months, with 35 Mikado engines, we have not been able to

see an equivalent saving, neither have we any figures, as far as that is concerned, on the division equipped with those engines, as compared with the Consolidation, which, prior to the introduction of the Mikado engine, has been the 100 per cent. locomotive in use."

My purpose in reading that is to recall to your mind a similar experience I imagine you had with the compound locomotive. That is my only purpose. You remember when the compound locomotive was first introduced that it was a great coal saver? Do you remember?

Mr. Hayes: I do.

Mr. Carter: In fact, as well as in theory, does not the compound locomotive save coal?

Mr. Hayes: No, I do not think so.

Mr. Carter: Do not most authorities say so?

Mr. Hayes: Most authorities claim that, but in practice and interests that I personally have conducted I have proven in 99 out of every 100 cases that the simple locomotive, if operated properly, beats the compound locomotive.

Mr. Carter: Now, to show how doctors disagree—

Mr. Hayes: Let me go just a little bit farther. Mr. Samuel Baldwin, of the Baldwin Locomotive Works, at one time instituted a test on the Baltimore & Ohio Railroad between 13 Blue Line passenger engines that we had at that time, of 15, on the Philadelphia Division, between two locomotives of that class, where a compound engine was run, with a heavy passenger train, against an engine of exactly the same size, running in the same class of service—in fact on the same trains— alternating daily, as I now recall it, and at the close of the test covering six or eight trips the simple locomotive had beaten the compound something like 18.24 per cent. on fuel alone; and we put 9 cars on a train that was scheduled for five cars, so as to work the compound where it was claimed its greatest efficiency occurred—with a heavy train understand,—and then the simple engine of course with the same train.

Mr. Carter: Could it not possibly have been that draughting had something to do with the failure of the compound in this instance; proper draughting, I mean.

Mr. Hayes: It could have been possible. But both were

such excellent steamers at that time that they were blowing off all the time.

Mr. Carter: Not trying to pit one of the companies' witnesses against the other, I think Mr. McBain said yesterday, he still held, that the compound locomotive was a great coal saver, regardless of opinions expressed by others. What we want to show by—

Mr. Hayes: The best answer to that question would be that all, or nearly all, of the railroads in this country have gone back to the simple locomotive.

Mr. Carter: Now, you remember the rise of the compound locomotive, how eager the railroads were to purchase them everywhere; you know what happened on all railroads, because you were a student of the question; you know what they were doing. Was it not a fact that it was believed that a great problem had been solved when the compound locomotive was introduced?

Mr. Hayes: That was the general theory at that time.

Mr. Carter: And the records will show that gradually the increased percentage of compound locomotives—in fact, most of the new locomotives purchased were compounds.

Mr. Hayes: I do remember that.

Mr. Carter: Then after all the roseate pictures that were painted—

Mr. Hayes: All the what kind of pictures?

Mr. Carter: The pretty pictures—

Mr. Hayes: Oh!

Mr. Carter: —that were painted of what the compound would do, from all these tests, and, by the way, I could introduce hundreds and hundreds of them, where all these tests were made that thoroughly demonstrated to the mind of the man making the test, that these compounds were saving an immense amount of coal. Then it was found, after years of practice, that there was a fly in the ointment?

Mr. Hayes: Exactly.

Mr. Carter: And they have abandoned them? Is not that true?

Mr. Hayes: That is true.

Mr. Carter: My purpose, gentlemen, was to show that even the most conscientious and most learned railway officials of the highest degree sometimes reach conclusions that subsequently

they rescind or take back. We are trying to show that the superheater craze is nearly akin to the old compound locomotive craze. That is my purpose.

The Chairman: Your main object is to satisfy the Commission, I assume, that while the compound engine was used as an argument against the advance increase in wages to the firemen then, the superheater ought not to be used against an advance now?

Mr. Carter: That is just the question I want to ask now. When the compound came in and the coal saving was demonstrated by numerous tests, except it seems that you tested a little bit more carefully than most of them; it seems that you caught on, in the beginning, to what they caught on to later on; but presuming, that this coal saving was as claimed, did you ever hear of the compound locomotive being advanced as a reason why a fireman should not get as much money on that engine as any other?

Mr. Hayes: No, no.

Mr. Carter: That is all.

Mr. Lee: Is that all, Mr. Carter?

Mr. Hayes: But if you are really trying to bring out that the superheater ought not to be considered because of a reduction in fuel, I think you are mistaken.

Mr. Carter: Suppose it can be shown that they did claim a reduction of fuel, and do claim, many of the leading mechanical authorities—which we shall introduce and show—a great saving in coal.

Mr. Hayes: I think that that can be substantiated.

Mr. Lee: What do you say to the compounds coming back again?

Mr. Carter: The compounds are coming back, or have come back with a Mallet engine, and largely because of the fact that the Mallet is two engines with one boiler, and they use the steam at high pressure in the high pressure cylinders, exhaust it through the leading engine, if you like to call it that way, the leading articulated part—

Mr. Lee: You like to call it that.

Mr. Carter: —and use it again in another cylinder, and for use it was claimed that the compound was a benefit in the Mallet. I am willing to confess that it is. I am willing to con-

fess that a compound does show economy in coal, because it uses steam expansively; it first uses it high pressure, exhausts it down to a lower pressure, into a big cylinder at a still lower pressure; it uses steam twice. The compound locomotive uses steam twice in railroad service like the triple and quadruple expansion engine uses it in marine service. There is no question but that the compound idea is not only correct in theory but in practice. But, when you put it on a locomotive, the conditions are so changed, the space is so limited, that you cannot do with the compound in locomotive practice what is recognized should be done in marine and stationary practice everywhere. Now, the point that we brought out in this, is that Mr. Hayes has given close thought to this superheater matter, he gave close thought to the compound matter, and it appears peculiar enough, that he has reached practically the same conclusion in both. He reached it, however, in the compound matter, before the other gentlemen did, and now they have come to him. In regard to the compounding of Mallets, the latest development is that the simple Mallet is so much more powerful than the compound Mallet that if they can get two firemen on the engine, as we are asking, you will find that the simple Mallet will displace the compound Mallet; or if they get a successful stoker. Now, it follows that the simple Mallet is more powerful than a compound Mallet because in a simple Mallet you use the mean effective pressure in all four cylinders instead of only two, and then use a lower pressure in the low pressure cylinders. I think Mr. Cavey said the other day that in practice on that hill they used their Mallets simple about 75 per cent. of the trip. Why? Because they developed so much more power. Now, how it was possible for a fireman to fire a Mallet engine working simple any considerable distance, or any considerable speed, I cannot conceive. But if they will put a successful stoker on a Mallet, a stoker that will supply 6,000 pounds of coal an hour if need be, or two firemen that can do the same thing—while one of them is laying flat on his back on the seat box the other fellow is shoveling; changing off—they will change the compound Mallet to the simple Mallet and are doing it now, and those who have tried the simple Mallet are advocating it in preference to the compound Mallet because we find they develop a higher tractive power with the same engine, and they pull more tonnage, and tonnage is a

desideratum. That is my purpose in comparing the compound with the superheater. We have identically the same conditions to-day, the same claims, the same results of official tests with the superheater that we had a few years ago with the compound.

Mr. Lee: The same criticism was made of the airbrake.

Mr. Carter: Gentlemen, I am glad that was brought out. In that instance it was the railroads that said the airbrake wasn't worth a tinker, and they now confess it was a success. In the compound matter they first said it was a success and now they say it is not worth a tinker.

Mr. Lee: Oh, no, they do not. Counsel may have a chance to discuss that a little later. (Addressing the witness.) You were quoted I believe on the question of stokers and superheaters. You are always open to conviction on these things?

Mr. Hayes: Sure thing. Certainly. We are looking for a chance to be convinced.

Mr. Lee: And has your company abandoned the stoker idea or simply suspended experiments for the time being, pending development?

Mr. Hayes: Suspended experiments pending development. That is the manner in which I understand the stoker question is taken care of now.

Mr. Lee: The statement was made the other day that crews are tied up very frequently under the 16 hour law on the road on the Susquehanna Division. I believe, you looked into that matter after that statement was made, and I would be glad to have you state what you found.

The Chairman: Will you give us what the statement was, and who made it?

Mr. Lee: I will read it. It is at page 389 of the record. Fireman Turck was on the stand at the time. He was asked: "What do you know about crews being tied up under the 16 hour law?" He replied: "Well, I know a little something about it." "Do they ever tie up crews under the 16 hour law on your road?" "Very frequently."

Mr. Hayes: We have the record here, Mr. Lee, showing for 12 months the number of crews tied up on the Susquehanna Division, each month, in the average. Will I read it?

Mr. Lee: What is the total number for the year?

Mr. Hayes: The average for the year is 4¼ trips a month, or one per week.

Mr. Lee: Have you any idea of the number of trips run over that division, Mr. Hayes?

Mr. Hayes: This was a total of 51 trips.

Mr. Lee: I mean the total number of trips.

Mr. Hayes: No, I have not. I have never gone into that question. The total number of trips made by the crews, you mean? We have a gentleman here, a Road Fireman of Engines for the Susquehanna Division who might be able to answer that question definitely.

Mr. Lee: There are quite a number of trains though, aren't there?

Mr. Hayes: There was quite a number of trains, yes, sir.

Mr. Lee: Would you say there would be 100 trains a week?

Mr. Hayes: 100 trains in a week?

Mr. Lee: Yes.

Mr. Hayes: Oh, yes. I would say there would be probably 300 trains or more in a week.

Mr, Lee: That would make this then about one-third of 1%?

Mr. Hayes: What?

Mr. Lee: That would make this then about one-third of 1%?

Mr. Hayes: We figured about ½ of 1%.

Mr. Lee: A very small number?

Mr. Hayes: A very small number.

Mr. Lee: On these special trips that a good deal of talk has been made about, Mr. Hayes, this coal consumed per locomotive mile, that was the actual coal consumed while the engine was working?

Mr. Hayes: Yes, sir, and did not provide, as I recall it for the amount of coal necessary to take care of the engine at terminals. That was simply a test of the work performed by the firemen.

Mr. Lee: And this 219 tons of coal, that includes the coal burned and used at terminals on all kinds and classes of engines?

Mr. Hayes: Yes, sir.

Mr. Lee: That is the average in junk service?

Mr. Hayes: That is the general average on the division.

Mr. Lee: Mr. Hayes, is it, in your opinion, as hard to fire an engine to-day as it was when you were firing an engine?

Mr. Hayes: I don't think so.

Mr. Lee: Why is that?

Mr. Hayes: Because I think I shoveled fully as much coal when I was firing a locomotive and worked harder in every way for a great deal less money than the firemen in the ten years that we have quoted have received.

Mr. Lee: Did you have to do a whole lot of additional stunts?

Mr. Hayes: We had a large amount of cleaning to do. Engines in the days when I was firing were completely covered with brass, both inside and outside the cab, and it was required of the fireman that he keep that in a highly polished state, and of course there was considerable rivalry between the firemen as to who would keep the cleanest engine, and it required a large amount of work. So that, together with the amount of coal shoveled, which I think at most all times was fully as great as now, that the work of the fireman in those days for $1.87 per 100 miles, and all of the overtime went in on the next day—didn't get paid for it at all—that the work of the fireman was very much harder, much more severe than it is at the present time. Firemen have been relieved of all of that now, a small fraction of it only remaining.

Mr. Lee: This Susquehanna Division we are talking about, Mr. Hayes, is that the heaviest traffice division of the Erie?

Mr. Lee: That is one of the heaviest traffic divisions, that and the Cincinnati Division are considered the two heaviest operating divisions we have; that is, from an operating standpoint.

Mr. Lee: That is all.

Mr. Carter: Mr. Hayes, I do not want you to think that I importuning you, but I am coming back at my friend, Mr. Lee.

Mr. Hayes: I don't think anything about it. Just ask anything you want to.

Mr. Carter: It is not to worry you, but to worry Lee.

Mr. Hayes: Sir?

Mr. Carter: My purpose is not to worry you, but to worry Mr. Lee.

Mr. Hayes: Oh, all right. You can't worry me, and you can keep after Mr. Lee as much as you want to.

Mr. Carter: When did you fire an engine?

Mr. Hayes: When did I fire one?

Mr. Carter: Yes.

Mr. Hayes: In the early 70's.

Mr. Carter: In the early 70's?

Mr. Hayes: Yes, sir.

Mr. Carter: You beat me a little bit. I fired in the late 70's. What sized engine did you fire?

Mr. Hayes: The largest engine that I fired was a 19x26, I think.

Mr. Carter: What was the grate area?

Mr. Hayes: Well, I will give that up, because those engines are out of commission, and out of date entirely.

Mr. Carter: Did it have the grate area of these larger engines of to-day?

Mr. Hayes: It probably did not.

Mr. Carter: And that engine would burn as much coal with that limited grate area as these large engines of to-day?

Mr. Hayes: I didn't say that, did I?

Mr. Carter: Well, would it be possible to burn as much coal in those little engines as you do to-day?

Mr. Hayes: It does not seem possible, Mr. Carter; but here is the point; I fired on the Western Division of the Lake Shore & Michigan Southern, and was promoted there, and it became part of my duty at times to fire between Elkhart and Toledo, on their heaviest division there, and I have burned as much coal going over that 131 mile division as I think they do now with their larger engines, in order to be able to maintain maximum steam pressure.

Mr. Carter: Mr. Hayes, what proportion of the trips made on the Erie Railroad where they run into 16 hours, do they actually tie up the train at the end of 16 hours?

Mr. Hayes: Why, I take it that in all cases where they are approaching 16 hours.

Mr. Carter: No, not in all cases; they have reasons, you know, for exceeding 16 hours at times.

Mr. Hayes: Yes, excepting where they can take advantage of that to get the train into the terminal.

Mr. Carter: What proportion of the trains that exceed the 16-hour limit, or would exceed the 16-hour limit, if not tied up—I will ask it another way—

Mr. Hayes: This same proportion here.

Mr. Carter: You misunderstand me. Out of 100 trains that would exceed the 16-hour limit, if not for the law, about

how many are tied up, or rather how many are run on because of excuses given under the law?

Mr. Hayes: Well, I could not give that, but a very small proportion.

Mr. Carter: A very small proportion are run in spite of the law.

Mr. Hayes: I do not think they would try to do anything in spite of the law.

Mr. Carter: Don't misunderstand me. I do not mean that the companies are violating the law, but I say there is a very small proportion of the trains run over the 16-hour law?

Mr. Hayes: I should say yes.

Mr. Carter: Now, I had a statement prepared for the Erie Railroad last May, and the last data I had was the railroads' report for March; and in order to get as complete and fair a statement as possible, I went back to July, 1911, which was the first month that the companies reported, and I have every month from July, 1911, to March, 1912; and I find that the Erie Railroad reported that during those nine months, in addition to the tie-ups, they ran trains over 16 hours to the extent of 4,368. Now, if that was a small proportion, then it might be 10,000 or 12,000 or 15,000 trains that were tied up during that time under the law.

Mr. Hayes: No, because this is a fact, the statement that has been made is a fact. That checks with the record.

Mr. Carter: Well, you do not know how many trains were tied up at the expiration of 16 hours and not reported?

Mr. Hayes: This is an abstract of it is it not?

Mr. Carter: No, this is only those trains that had to be run more than 16 hours.

Mr. Lee: Oh, no.

Mr. Hayes: No, no.

Mr. Carter: Now I will read.

Mr. Hayes: Oh, you are talking about one thing and I about another.

Mr. Carter: Let us talk about this for a while then. If during these nine months the Erie Railroad ran 4,368 trains more than 16 hours, disregarding the law because they had a right to, that would indicate that vastly a greater number of trains were tied up at the end of 16 hours would it not?

Mr. Hayes: If that were so.

Mr. Carter: You spoke a while ago about the money you made in 1877. I am a seventy-niner.

Mr. Hayes: I was promoted in 1877 and I got $2.11 a day for running a locomotive.

Mr. Carter: I fired in 1879, and got $50 a month, and it was a wood burner at that.

Mr. Hayes: Yes?

Mr. Carter: Were you ever in England?

Mr. Hayes: No sir.

Mr. Lee: Is this another advertisement?

Mr. Carter: No, this is not an advertisement. You were never in York Minster were you, the cathedral in the old City of York in England?

Mr. Hayes: I never was in England, and hence it would be impossible for me to have been in York.

Mr. Carter: For the benefit of the Commission I will say, that I took a lesson in increased wages while standing before the east window in York Minster. The guide told me then, and I afterward read it in the catalogue:

"The east window measures 77 feet by 32 feet, next to that of Gloucester, which is 72 feet by 38 feet, the largest in England, and of unsurpassed beauty. The stained glass, dating from 1405, was executed by John Thornton of Coventry, for 36 Pounds."

It is said, that to-day that same window would cost $36,000. Now I imagine John Thornton when he built that window could do as much with his 36 Pounds perhaps as Bill Jones who would build another like it could do with $36,000 to-day. The point I want to bring out is, that you cannot compare the wages of to-day with the wages of the past, unless you take into consideration the purchasing power of a dollar or a pound sterling. I guess that every man who pays his 2 shillings tip to go through York Minster and have a guide will hear a dissertation on the increased purchasing power of money when he shows you that window and tells you that what would probably cost $36,000 to-day was built by contract by John Thornton for 36 Pounds. Now is it not possible, Mr. Hayes, that in 1877 the money you had then would purchase nearly as much as the money the firemen get now?

Mr. Hayes: We paid the same for meals and the same for a bed that firemen pay now as a rule.

Mr. Carter: Did the meat cost the same then?

Mr. Hayes: No, I think not. I think the price of provisions has advanced quite considerably.

Mr. Carter: Then there is not much or considerable advance in the cost of the necessities of life, or there is no falling off in the purchasing power of money compared with the early 70's?

Mr. Hayes: Well, yes, there would be some relation of course.

Mr. Carter: That is, if we judge from the squeals that we hear go up.

Mr. Hayes: Yes.

Mr. Carter: That is all.

RE-CROSS EXAMINATION:

Mr. Lee: Mr. Hayes, do you remember, when these two firemen were originally put on the Mallets, was it not one of the arguments that the heat was so intense that the firemen claimed one man had to have frequent relief in going up the hill.

Mr. Hayes: From the heat?

Mr. Lee: Yes.

Mr. Hayes: Yes, those engines were coupled up quite short, and the heat was severe, and that was the claim made.

Mr. Lee: That they had to have relief in going up the hill?

Mr. Hayes: That they had to have relief in going up the hill or become exhausted. It was claimed that some of the men almost gave out. We found that that was not substantiated later on.

Mr. Lee: That is all.

RE-CROSS EXAMINATION:

Mr. Carter: Mr. Hayes, regarding the heat, do you remember what the heat was on the tests?

Mr. Hayes: No, I did not carry a thermometer with me, and I do not think one of the people did.

Mr. Carter: Oh, yes. It was found to be 140 degrees 6 inches above the deck.

Mr. Lee: The fact remains though that the other fireman stayed at the bottom of the hill?

Mr. Carter: To get his feet cool.

Mr. Hayes: Without any injurious effects?

Mr. Carter: You have heard of people letting their feet get cool?

Mr. Lee: Oh, we will manage to keep them warm all right.

Mr. Carter: Thank you, Mr. Hayes, that is all.

The Chairman: The witness will be excused.

E. B. DITHRIDGE, called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: I may say for the benefit of the Board that Mr. Dithridge is put on to answer certain questions asked last Friday by the Board in regard to certain conditions surrounding the run from Dennison to Columbus on the Pennsylvania Lines west of Pittsburgh, concerning which the Board desired as much information about 1902 and 1912 as we could get together.

The Chairman: Very well.

Mr. Lee: Mr. Dithridge, what is your position?

Mr. Dithridge: Chief Clerk in the General Manager's Office, Pennsylvania Lines west of Pittsburgh.

Mr. Lee: How long have you been in the General Manager's Office?

Mr. Dithridge: Nearly 20 years.

Mr. Lee: How long in the position of Chief Clerk?

Mr. Dithridge: Nearly 11 years.

Mr. Lee: You are familiar with the rates paid on engines and in train service?

Mr. Dithridge: Yes.

Mr. Lee: You have been closely connected with the situation concerning rates of pay and working conditions of firemen and other classes of train employees since you have been in the General Manager's Office?

Mr. Dithridge: Well, since the latter 90's.

Mr. Lee: We would like to discuss first that portion of the Pittsburgh Division between Dennison and Columbus, which is 100 miles in length.

Mr. Dithridge: Yes.

Mr. Lee: Comparing conditions and rates in 1902 and 1912.

Take first the physical conditions. What additional main track has been laid since 1902 between Dennison and Columbus?

Mr. Dithridge: They had double tracks both in 1902 and at present. Since 1902 they have built about four miles of third and fourth track in the vicinity of Coshocton. They built eight miles westbound running track from Central City to Outville. That was up hill of course, and eastbound track on the other side of the hill from Big Walnut to Summit, about seven miles I believe.

Mr. Lee: Of the so-called heavy engines which are in service on this division to-day, H-6 and H-4, how many were in service in 1902?

Mr. Dithridge: 24 H-4's and 25 H-6's.

Mr. Lee: How many on the Pittsburgh Division to-day?

Mr. Dithridge: 13 H-4's and 68-H-6's.

Mr. Lee: Please tell us what you know about the rates of pay of firemen in through freight service between Dennison and Columbus in 1902?

Mr. Dithridge: In December, 1901, just previous to the increase made in January, 1902, the trip rate for the H-4's and H-6's was $2.14 for this trip from Dennison to Columbus, 100 miles with overtime after 11 hours.

The trip rate to-day between the same points for the same class of engines is $3.05, an increase of 42%.

The hourly rate paid for overtime to-day is 30 cents or 30½ cents, as compared with 19 cents at the previous date, being an increase of something between 55% and 60%.

Mr. Atterbury: Is your overtime at 30½ cents after 10 hours now?

Mr. Dithridge: Yes. As a matter of fact, Mr. Atterbury, the $2.15 rate was paid, and the overtime limit was then 11 hours, and if you divide that into the rate, you will find a further difference. I was going on to that later.

The overtime limit at the previous date was 11 hours. At the present time it is 10 hours.

At the previous date the men were allowed 30 minutes preparatory time, although I am told by those familiar with the conditions on that division that the firemen really got around in most cases about an hour before the time fixed for the train to leave. In some cases it was not necessary and in other cases it was necessary in order that they might do what work was required

of them on the engines and get to the train and be prepared to leave at the time which was fixed for the train to leave.

As against that time allowance of 30 minutes at the previous date, their time now begins one hour before the time fixed for the train to leave; so that as a matter of fact the man's overtime began at that time ten hours and 30 minutes after the time fixed for the train to leave, while on this same run, overtime now begins 9 hours after the time fixed for the train to leave.

Mr. Lee: That is nine hours.

Mr. Dithridge: After the time fixed for the train to leave.

Mr. Lee: Not from the time he reports?

Mr. Dithridge: No, sir. You have to do it that way in order to get the distinction between the time fixed for the train to leave now, and at the previous date. And if you get what you might call an hourly rate on that which would probably be compared because of the changes not only in the overtime limit, but in the preparatory time allowance, it would figure out, in the previous date, 20.47 cents, and at the present time 33.9 cents per hour, which is about a 66% increase.

Mr. Carter: Please repeat those cents again. What was it in 1902?

Mr. Dithridge: December, 1901, 20.47 cents. Now it is 33.9 cents. You understand that is not the overtime rate, it is not the trip rate divided by the overtime limit, it is the trip rate divided by what you might term the time on road after which overtime begins.

Mr. Lee: How about the earnings of 1902 as compared with 1912 of these men between Columbus and Dennison?

Mr. Dithridge: I understand you are talking about the through freight.

Mr. Lee: Through freight.

Mr. Dithridge: And we tried to get the time slips for several months in 1902, taking a winter month and a summ,er month, but those time slips had been destroyed a number of years ago, at a time when it was not the practice to keep them as long as they now keep them. We then thought perhaps we could get something from the train sheets, but we find they only kept the train sheets for—well, they have them for 1904, that is the earliest date they had the train sheets; so that left us with nothing by which we could get the time on the road, but of course, we still

have the copies of the payrolls, so we got the payrolls for the months of January, 1902, and 1912, and June, 1902, and 1912, considering that January was a representative winter month, and June a fairly representative summer month. We took names just as we found them on the payroll, called freight firemen, which means road freight firemen, and between Dennison and Columbus, because the regular firemen, as I understand it, are regularly assigned to what they call the West End of the Pittsburg Division, which is between Dennison and Columbus, and on the east end which is east of Dennison, so that they keep the rolls separately. So we took, as I said, the payrolls for the freight firemen between Dennison and Columbus for those two months of the two years, and of course we could not tell who was off duty six days or ten days in either month, and we just took the names as we found them, assuming that ordinarily conditions are about the same from the standpoint of on-duty and off-duty.

Mr. Lee: This represents the total names on the roll?

Mr. Dithridge: Taking all the freight firemen shown on the roll.

Mr. Atterbury: Does that include those who were sick and those who were off on suspension, and by accident, and everything of that sort?

Mr. Dithridge: Yes, sir, we just had to assume, because we had not the 1902 time slips, we had to assume, which is a reasonable assumption, I think, that conditions are about the same as to men laying off and getting leave of absence and being suspended, and so on.

The Chairman: It includes every man that got any pay?

Mr. Dithridge: It includes every man's pay who was on the roll, who got any pay.

Mr. Atterbury: He might not have got any pay.

Mr. Dithridge: Yes, his name would have been on the roll, but I do not think there were any that did not get any pay.

Mr. Atterbury: Suppose you had a fireman off on relief, would he get any pay.

Mr. Dithridge: No, but I have the rolls here, and if you wish to look over them, you can at any time. But as I say, we took every name of through freight firemen on the section of road between Dennison and Columbus in 1902, and in 1912, January

and June. The average earnings of each name on the payroll in January, 1902, was $65.30. The average of each name on the January, 1912 payroll, was $94.26. For the month of June, the 1902 figure was $54.65, and in June, 1912, $83.57. Both in January and in June, 1912, there are four firemen on those two rolls who are paid, you might say, a salary, for the reason that they were engaged during the two months of 1912, as stoker instructors; and inasmuch as they were paid a salary, and really were not firing engines, we omitted their salaries in making this calculation; and, as a matter of fact, had we included the salaries, it would have brought the 1912 average up, which we did not think was proper, on account of—

Mr. Lee: Those men were paid as high as any firemen on the road?

Mr. Dithridge: Yes, sir; as a matter of fact, higher, and very much higher than this average.

Mr. Lee: You say you got that information from the pay-rolls?

Mr. Dithridge: Yes, sir, right from the pay-rolls.

Mr. Lee: And you have those with you, if the Board want to look at them?

Mr. Dithridge: Yes, sir.

Mr. Lee: Is this increase of rates which you speak of, peculiar to this portion of the Pennsylvania Lines West of Pittsburgh, or is this the general situation?

Mr. Dithridge: No, sir, that is the general situation. On some divisions, if you take individual runs, you would find there would be a greater increase during that same period, and on other divisions you would find runs where at that time, they were perhaps paid higher rates on the average, and their increase on those individual runs would not show such a great percentage. But taking the firemen as a whole, and taking the Pennsylvania Lines West as a whole, you will find that is fairly representative of the general situation, for the reason that, taking the various increases which have been made to firemen, that is, the increases in the rates of pay and the changes in the conditions concerning preparatory allowances and reduction in overtime limits, and all the various things that cost money and mean money to the firemen at the end of the month, we find, based on calculations that were made by the different divisions, and the

totals thrown together, and divided by the proper figures and so on, that firemen as a whole, you understand that includes yard, freight, passenger and all firemen all over the Pennsylvania Lines West of Pittsburgh, are now getting 42.57 per cent more money for their service than they would have gotten had they been paid on the rates and under the conditions in effect in December, 1901. I might say on January 1st, 1902, increases in adjustments were made, which, for the fireman as a whole, and the Lines West as a whole, were equal to about 4.6 per cent. Now, I believe the rate increase on this Dennison-Columbus through freight run would figure a little more than that, but of course, as I said, this is for the firemen as a whole, and the Lines West as a whole.

Mr. Lee: That is taking December 1901 as a basis?

Mr. Dithridge: Yes. Because this change was made on January 1, 1902. The 4.6 per cent. increase was followed in November, 1902, by an 8 per cent. adjustment which meant an 8 per cent. increase to the firemen at the end of the month. December 1st, 1906, 10 per cent. As a result of the adjustments made in 1910, the firemen received a further increase of 14.73 per cent., taking the wages and conditions together which mean money.

Mr. Lee: That means, then, Mr. Dithridge, does it, that a man firing the same class of engines in the periods mentioned would have had that much increase in his wages.

Mr. Dithridge: Well, you say firing the same type of engine. I would not say exactly yes to that, because in some cases, because of the difference in the trip rates at that time, and now, for firing a road engine and a yard engine, it might be 42.57 per cent., or whatever it is, or it might be considerably more than that. It might be a little less.

Mr. Lee: That would be the average?

Mr. Dithridge: And that would be the average for all firemen. They are now getting 42.57 per cent. more money at the end of the month than they would have gotten for exactly the same service in December, 1901. As I say, some would have been very much higher and others a little lower, but in no event less than thirty some per cent.

Mr. Lee: The question was raised the other day, Mr. Dith-

ridge, about the rates between Conway and the lakes. Have you some figures on that.

Mr. Dithridge: Yes. I understood the question—I either read it or heard it—the inquiry was with reference to the through freight runs between Conway and the lake ports, Erie and Harbor. So I have gotten the trip rates for the same periods for these two runs, and it shows that in December, 1901, the trip rate for H-4 and H-6 and G-4-A engines between Conway and Erie, was $2.65, with an overtime limit of 13 hours. The trip rate to-day between the same points, for the same class of engine, is $3.80, an increase of 43.4 per cent., with a decrease of the overtime limit to 12 hours and 36 minutes.

Mr. Atterbury: What is the mileage?

Mr. Dithridge: 126 miles. In other words, the trip rate has increased 43.4 per cent., the rate per hour or what you might say the guaranteed rate per hour, because he gets that if he takes the full overtime limit or less than that, has increased 47.5 per cent. Between Conway and Harbor, the rate, at the previous date, for H-4 and H-6 engines, was $2.25; 105 miles; overtime after 11 hours. The rate to-day is $3.22, an increase of 43.1 per cent.; overtime after 10 hours and 36 minutes, giving a guaranteed rate of 30.4 cents, which is a 48.3 per cent. increase. And the same situation with reference to when time began existed on these runs, as exist on the runs between Dennison and Columbus. In other words, at the older date the time began 30 minutes before the time fixed for the train to leave, and at this date 60 minutes before the time fixed for the train to leave, and I understand to-day they are required to report about the same time as they did on the previous date.

Mr. Lee: What percentage of the total number of employees are in the engine and train service?

Mr. Dithridge: The last time we got the figure on that was in November and October of last year. At that time it was a little over 20 per cent.—20.7 per cent.

Mr. Lee: How much of the total wages paid on the railroad do these men get?

Mr. Dithridge: We had that figured, and while I do not know the exact figure I am quite positive it was from 38 to 39 and a fraction per cent. of the total wages paid.

Mr. Lee: Do you know generally how the increase in wages

of these employees in engine and train service compares with the wages of employees in other service of the company?

Mr. Dithridge: Yes, sir. Several years ago, after the 1910 adjustments, it appears that it might be interesting to get something showing just how the different classes were faring, so that we went back and got the figures for the different classes of road and yard men, and then we took the other employees as a whole, because while various adjustments are made in salaries of individuals from time to time on a railroad, that is, outside of the employees in yard service, and many adjustments formerly were made of individual runs, in that service prior to 1910—and this, as I say was worked up for 1910 and for our own purposes only, and therefore it is a comparison with 1899, and based on the figures which we have, this shows that the engineers to-day, as compared with 1899, have gotten various increases and adjustments which, in effect, mean that they are now getting 41.68 per cent. more money than they would have gotten under the 1899 rates and conditions; the firemen 47.78 per cent. Now, as I say, that comparison is with 1899, and for that reason this 47.78 per cent. will not line up with this figure I gave you before of 42.57 per cent., which is from December, 1901, although from these earnings statements it would appear that even that figure was justified.

The Chairman: That is because there was an advance in January, 1901.

Mr. Dithridge: 1902.

The Chairman: January, 1902?

Mr. Dithridge: Yes, sir; and there were adjustments made previous to that time, some miscellaneous adjustments of rates made subsequent to that time not included here, and individual adjustments and miscellaneous adjustments for all purposes that we did not include in this horizontal adjustment of rates named. This shows that the conductors are now getting about 39.25 per cent. more than in 1899. And then we combined other train men, which includes the yard men, of which there are a great number, and to whom a very considerable increase has been made, as the result of various changes and adjustments and increases made from time to time, to meet the situations as they arose, and the different conditions; so that the other train men seemed to be receiving now about 56.09 per cent. more. The other employees,

as a whole, not including individual adjustments made in salaries from time to time, which it was almost impracticable to get and include in any such figure as this; all the other employees got the horizontal increases which were made from time to time. November 1st, 1902, 10 per cent. to all employees getting less than $200 per month. Now, the engine and train crews also came in under that horizontal increase, and as a result, after November, 1902, as compared with December, 1901, the engine and train crews came out a little better than 10 per cent. On December 1, 1906, an increase of 10 per cent. horizontally, and on April 1, 1910, a horizontal increase of 6 per cent., to all getting less than $300 per month; this, however, not including the employees in engine and train service, because they got other adjustments which meant something more—considerably more than the six per cent. All of that means that the other employees are now getting at least 28.25 per cent. more than in January, 1899, as compared with 41.68 per cent. for the engineer, 47.78 per cent. for the fireman, 39.25 per cent. for the conductors and 56.09 per cent. for other train men.

Mr. Atterbury: Do I understand, Mr. Dithridge, that in 1902 the H-4 engine was a standard engine at that time, with a sprinkling of H-6's?

Mr. Dithridge: The G-4-A and the H-4 were, although there were a large number of H-6's ordered—I think an order was placed in 1900, or early in 1901 for a large number of H-6's.

Mr. Atterbury: And that to-day the H-6 engine is practically the standard on those divisions, but with some H-4's?

Mr. Dithridge: There are a very large number of H-6's, and I should imagine that there were more H-6's and H-4's than there were of the H-8 and for that reason I should say that if you were taking one engine as the standard heavy freight engine, and without the exact figures, I would say that the H-6, A, B and C, is perhaps the standard road freight engine to-day.

Mr. Atterbury: Then if we had some testimony as to how hard it is to fire or how easy it is to fire an H-6 or an H-4, then for these various wages, we should get a fair comparison of the work that is done to-day as compared with 1902?

Mr. Dithridge: It is the same engine; that is, they are now using the same engines as in 1902, and I think that that engine would be the proper—

The Chairman: Are those same engines doing more work now than in 1902?

Mr. Dithridge: Well, I was rather interested in that myself, and I looked up this Pittsburg division rating book; that is, the engine rating between Dennison and Columbus, and I found that the A rating between Dennison and Newark, where they set off and pick up in several directions, the H-4 engine which has the same tractive power as the H-6, and there were H-6's on the division in that day too, was more then than it is now. In other words, the rating with the same resistance per car, for the H-4 engine, was greater in 1902 than it is to-day, between the same points.

The Chairman: You mean to say that the traffic handled by an H-6, as you called the engine, in 1902, exceeded what it is doing now?

Mr. Dithridge: I could not say what it actually handled, because the train sheets were destroyed some years ago, and we had no records, any other records, to which I could refer, to find out what they actually handled. So that the only thing I could take, was the printed book outlining the ratings to be given the various classes of engines between these several points covered by the different engine runs, and that showed that the H-4 engine in 1902 was supposed to haul at "A" rating, which is the highest rating in slow freight service, more adjusted tons than she is rated to haul to-day.

The Chairman: You mean by the same engine, not the identical engine?

Mr. Dithridge: I mean the same type of engine.

The Chairman: Then the tremendous increase of traffic on the Pennsylvania Lines West of Pittsburgh since 1899, comes about from the increased number of trains, and not from the increased size of the trains?

Mr. Dithridge: Well, I would not say. We know that we have more trains, of course, and we know that we have more fast freight trains than we had then, speaking generally. We are quite positive of that, because competition as well as other things, has forced the operation of more of these faster trains, stock trains, and dressed beef trains, and so called preference merchandise trains, and things of that character.

The Chairman: These wages of the firemen, this table you

have given us, have not been arrived at by taking the greatest amount of wages paid the firemen, and dividing it by the number of firemen?

Mr. Dithridge: Absolutely no, sir.

The Chairman: But by taking what each fireman at several different periods received?

Mr. Dithridge: Yes, sir. In other words, the way we do that, when we want to make an exact comparison of what an adjustment meant to the men, we take the time slips which show what the men did, and how long it took to do it and we figure up their pay on the old basis, and we figure up their pay on the basis of the new rates, and conditions. In other words, if the man for doing this particular work would get three dollars under the present conditions, or under yesterday's conditions, and under to-day's conditions for doing that same work, we would find that we would pay him $4.00, then we would say that the adjustment was 33 1-3 per cent. increase.

The Chairman: Then it is your opinion that the productivity of the individual fireman is no greater to-day than it was in 1899?

Mr. Dithridge: That would be merely an opinion, because I have not prepared any figures either way.

The Chairman: If the individual fireman is firing the same type of locomotive to-day, and hauling no more tons per trip than he was then, he is not earning any more for the railroad than he was then, unless the railroad is getting a higher rate of freight—which we know it is not getting. Then how do you work it out?

Mr. Dithridge: While this one situation to which I refer, in answer to your question, as to the rating of that particular class of engine in 1902 as compared with to-day, and which shows that "A" rating to-day is less than in 1902, I am not sure that you will find that the "A" rating for the same type of engine on other runs, or on other portions of the road, would be less.

The Chairman: I understood you to say that while these figures applied to the division between Dennison and Columbus on one hand, and Conway and the Ports on the other, that they would apply, in your opinion, generally to all the system west of Pittsburgh.

Mr. Dithridge: That was the rates of pay, yes, sir. But the rating of the engine, meaning the tonnage that she is supposed to haul, was in answer only to the question with reference to these heavy freight engines in use to-day, and in 1902, between Dennison and Columbus.

The Chairman: From your figures there, and your reasoning, how can you justify these advances in wages to the firemen of 46% during that period?

Mr. Dithridge: You mean the various advances that have been made?

The Chairman: Yes.

Mr. Dithridge: Well, I do not know that I would attempt to justify it.

The Chairman: Because, if the individual fireman is doing no more work, and it is his work that has been given to us here in the form of productivity, and he is earning no more for the railroad than he did then, I would like for somebody, either on the railroad side or the other side, to justify these increases.

Mr. Dithridge: Well, I would not even be prepared to attempt to justify them, that is for any one class.

The Chairman: You think that if the cost of living had remained the same as it was then, that the fireman ought to be getting the same pay as he did in 1909?

Mr. Dithridge: Well, that opens up a pretty broad subject Judge Chambers. While I think the cost of living undoubtedly influences the action of anybody that employs me or anybody else, I think that he also is influenced by many other considerations. Sometimes increases are made which perhaps are not felt to be absolutely proper; sometimes increases are not made to classes of employees, not only in railroad service but in all other branches of industry, which classes of employees perhaps are thought to be more worthy than those who are increased. So that it is governed largely by the conditions as you find them, and under present conditions it would seem to be governed largely by the laws of supply and demand and the market price.

The Chairman: Are you going to give us copies of these statements?

Mr. Dithridge: These rates of pay, yes, sir.

The Chairman: Will we have copies of these statements?

Mr. Lee: I will be very glad to get them for you. You will see that copies are made for the Board and also for Mr. Carter.

Mr. Dithridge: Yes.

The Chairman: Will you make them exhibits?

Mr. Lee: If you so desire, we will be very glad to.

Mr. Atterbury: Read them into the record and then they will not have to be marked.

Mr. Lee: We can have them made exhibits. We will have them put up in typewritten form and submit them, to compare with the testimony.

I notice that you are speaking about December, 1901. Just explain why you used that date. It is on account of that increase on January 1st, 1902, that that was used?

Mr. Dithridge: Yes. You will remember Mr. Lee that I recited that on November 1st, 1902, an increase of 10% had been made; and I think later on I said, over the rates paid in December, 1901, which meant that a man that had gotten an increase on or after January 1st, 1902, and preceding November 1st, 1902, was paid on November 1st, 1902, enough additional to make him a 10% increase; and as the other classes of employees had gotten a little ahead of the last portion of 1902, we made the comparison in that way.

Mr. Lee: You may cross-examine.

The Chairman: Before you begin, there is one other question I wanted to ask. Will you tell the Board what effect upon these rates on your division—you have not a division, but on your system—

Mr. Dithridge: Yes, sir; the system.

The Chairman: What effect the request of the firemen here now would have upon the rates that prevail on your system?

Mr. Dithridge: May I see the exhibit a minute?

Mr. Lee: That information will be given in our general tables. If you desire this witness to give it, he prepared the general exhibits on the cost proposition, which will be explained in connection with other railroads.

The Chairman: He can answer this question as to what the increases requested by the firemen will increase the rates on these divisions for which you furnished the figures.

Mr. Dithridge: Yes, sir.

The Chairman: You would have to pay, to-day, the firemen more than this $85 or $90 a month?

Mr. Dithridge: Yes, sir; assuming that they performed the same service, which I presume there would be no difficutly about.

Mr. Atterbury: Have you not the actual figures there?

The Chairman: I think they are going to introduce that in connection with other matters further along, but I just asked if this was not a fact.

Mr. Dithridge: I think it is 35 or 50 some per cent.

Mr. Lee: 33%.

Mr. Dithridge: 33%?

The Chairman: Give us the facts just now.

Mr. Lee: $896,000 on the Pennsylvania Lines West of Pittsburgh, or an increase of 30% on the payroll.

The Chairman: Just say that again, what was the figure?

Mr. Lee: $896,482.

The Chairman: Increase?

Mr. Lee: Increase, or an increase of 33% on the payroll.

Mr. Carter: That exhibit is to be introduced by some one else?

Mr. Lee: Yes.

Mr. Carter: Then I will not ask him about it.

The Chairman: The Board will take a recess of 10 minutes.

(After recess.)

CROSS EXAMINATION:

Mr. Carter: Mr. Dithridge, will you turn back to the first of your tables there, where we discussed the H-6 engines and the H-4 engines. How many H-6 engines were in service on the lines west in 1902? Do you know?

Mr. Dithridge: I do not seem to have that information, but I can get it for you, Mr. Carter.

Mr. Lee: You have the number that were on the Pittsburg Division at that time.

Mr. Dithridge: Yes. I was testifying with reference to these particular runs.

Mr. Carter: The impression seems to prevail with some that at that time it was the H-3 engine that was in general use, and that a few of the H-6 engines were just coming in.

Mr. Dithridge: As I said, this shows that there were 46 H-4's and H-6's, which are of equal tractive power; and of the H-3's which you talk about, there were only three of them on the Pittsburgh Division in June, 1902.

Mr. Carter: What about the H-4's?

Mr. Dithridge: As I said, there were 21 H-4's and 25 H-6's, or a total of 46 of both classes.

Mr. Carter: What became of the H-4's?

Mr. Dithridge: They are still doing good work.

Mr. Carter: They are still there on that division?

Mr. Dithridge: Thirteen of them.

Mr. Carter: Now we will turn to the H-6's. I understood you to say that the rate was $2.15 per hundred miles in 1902. Is that right?

Mr. Dithridge: No, sir, what I said was that for the run between Dennison and Columbus, which happens to be 100 miles, we paid $2.15 in 1902. In other words, we paid trip rates and not mileage rates.

Mr. Carter: How much did they get for that 100 miles?

Mr. Dithridge: They got $2.15 if they did not make overtime.

Mr. Carter: Disregarding the overtime, how much would they get in 1912?

Mr. Dithridge: $3.05.

Mr. Carter: What percentage of increase is that?

Mr. Dithridge: 42 per cent.

Mr. Carter: In making these comparisons about through freight service, is it not possible that although these men's names appeared as through freight firemen, they were in all classes of service?

Mr. Dithridge: It is possible in both years.

Mr. Carter: Are not firemen assigned more regularly to runs in 1912 than they were in 1902?

Mr. Dithridge: Not in through freight service, I do not think so.

Mr. Carter: Were they as particular about asking for what they call their rights in 1902, as they are in 1912?

Mr. Dithridge: My own experience, as the result of hearing firemen talk in meetings with the management, and as the result of my conversations at different times in the past ten or

fifteen years with road foremen of engines and others who are right next to the men, is that the practice of wanting their rights is about the same today as it was in 1902.

Mr. Carter: The road foreman of engines, or whoever has charge of it, is more particular in 1912 than he was in 1902, is he not?

Mr. Dithridge: I could not answer that.

Mr. Carter: You spoke about tonnage increasing on these H-6 engines. Is there any way by which you can compare tonnage in 1912 with tonnage in 1902?

Mr. Dithridge: I think you misunderstood me, Mr. Carter. What I said in answer to the question that was asked, was that I found that the tonnage rating of the H-4 engine in 1902 was a little more than it is today for the same engine.

Mr. Carter: How was the engine H-4 rated in 1902—by the number of cars?

Mr. Dithridge: No, sir.

Mr. Carter: Tonnage?

Mr. Dithridge: Adjusted tonnage, a resistance of five tons per car.

Mr. Carter: The same rule as now?

Mr. Dithridge: Yes, the same resistance per car.

Mr. Carter: The difference in the size of cars is considered, is it, in 1902 and 1912?

Mr. Dithridge: That is considered, as I understand it, in fixing the car resistance.

Mr. Carter: In 1902 were not all the firemen on the Pennsylvania Lines West paid a trip rate instead of on a mileage basis?

Mr. Dithridge: Both in 1912 and in 1902 practically all the firemen were paid on a trip rate basis. We have trip rates for practically every run that is made.

Mr. Carter: In 1902, wasn't there a greater diversity than there is now?

Mr. Dithridge: Just what do you mean?

Mr. Carter: Diversity of rates.

Mr. Dithridge: Oh, yes, prior to the so-called schedule that was decided upon after the meeting with the Committee in 1910, there was a considerable variation in rates, because frankly

speaking, you might say that the management practically decided on the rates prior to 1910, arbitrarily and that at that time based the rates on the different conditions, whether the traffic was heavier, or whether it was harder work on this division or that division, or this particular portion of a division, and another, and as a result of the 1910 conferences and the conditions that arose all over the country, we came to more nearly a flat basis in regard to rates.

Mr. Carter: Would you consider that the conditions on this Pittsburgh division were more favorable at that time, in 1902, than on other parts of the road?

Mr. Dithridge: Considering those conditions which I would be generally familiar with; that is, as to the time, the character of the road, signals, and so on, I should say that perhaps the conditions are a little better to-day than they were in 1902.

Mr. Carter: You misunderstood me. I said in 1902, were the conditions much better on the Pittsburgh District than other portions of the line in 1902?

Mr. Dithridge: On the Pittsburgh District?

Mr. Carter: Yes.

Mr. Dithridge: Do you mean this division I am talking about?

Mr. Carter: Yes, sir.

Mr. Dithridge: Yes, I think the conditions from the firemen's standpoint between Dennison and Columbus were better than some other portions of the railroad, and that was considered at that time.

Mr. Carter: Then you took the most favorable conditions in 1902?

Mr. Dithridge: No, sir, we took the conditions that were asked for.

Mr. Lee: When this witness was introduced he was put on to make comparisons between Dennison and Columbus, as requested by the Board.

Mr. Carter: Can I ask you this: You are the chief clerk to the General Manager?

Mr. Dithridge: Yes, sir.

Mr. Carter: And were then?

Mr. Dithridge: Yes, sir.

Mr. Carter: Did the General Manager have entire jurisdiction over any other part of the Pittsburgh District?

Mr. Dithridge: Certainly.

Mr. Carter: Have you any knowledge of any other part of the road except the Pittsburgh District?

Mr. Dithridge: Yes, sir.

Mr. Carter: Is it not the fact that the wages on the Pittsburgh District in 1902 were much less than on the Eastern Division of the road?

Mr. Dithridge: You mean the Eastern Division of our road?

Mr. Carter: Yes, towards Fort Wayne and that direction.

Mr. Dithridge: You mean our Eastern Division. I think some runs were paid higher on the Eastern Division than some runs on the Pittsburgh Division. I am not prepared to say that there were not rates on the Pittsburgh Division that were paid higher than some runs on the Eastern Division.

Mr. Carter: Is it the fact there were other divisions paying more money than on this division?

Mr. Dithridge: I would not say divisions—I might say runs—because as I said before at that time the different conditions were considered by the management in considering the rates.

Mr. Carter: I am informed that this great increase in the wages on this road was greater than on the Eastern Division?

Mr. Dithridge: Well, I would not be surprised if in passenger service you would find that, taking the Pittsburgh Division through runs and comparing them with some of the runs on the Eastern Division, you would find that the Eastern Division in 1902, may have been paying a little more, while others may have been paying a little less. There were runs on the Eastern Division, as compared with runs between Dennison and Columbus, where this very large difference was, which were very different from what they were on the Pittsburgh Division, and on the Pittsburgh Division east of Dennison.

Mr. Carter: Then the division you selected there was a low paid division, was it not?

Mr. Dithridge: I did not select it, Mr. Carter.

Mr. Carter: Well, that was selected?

Mr. Dithridge: I thought perhaps it would be interesting to see the—

The Chairman: As I understand that, it was selected because you had some witnesses that testified about conditions on that division?

Mr. Carter: Then I will withdraw that word "selected" and substitute "taken" or "treated." The one covered was a low paid division in 1902?

Mr. Dithridge: Mr. Carter, I can show you places where the increase was more than that, and considerably more. These Conway-Erie and Conway-Harbor rates I read show a larger percentage of increase than this Dennison-Columbus; I think it was 43 and something as compared with 42 on this Dennison-Columbus. And there are others that I could select, if I were selecting, that were very much higher.

Mr. Carter: In reply to the Chairman in regard to tonnage, did I understand you to say that the ton miles per fireman had not greatly increased?

Mr. Dithridge: No, sir; I do not think he asked the question.

Mr. Carter: The general efficiency of firemen has greatly increased, has it not?

Mr. Dithridge: I do not know that I am a competent witness on the question of the general efficiency of firemen.

The Chairman: That is the question that I intended to ask you; and now, as I understand, you say that probably the efficiency of the fireman has increased?

Mr. Dithridge: No. I think I misunderstood you, Judge, because I understood you to ask if they were handling less tons to-day than they were in 1902.

The Chairman: Yes. Because I do not distinguish between the tonnage of a train and ton miles.

Mr. Dithridge: Yes. Well, Mr. Carter asked about the ton miles, sir.

The Chairman: Yes. If it is the ton miles that affect or establish the efficiency of the fireman, that is what I want to get at.

Mr. Dithridge: As I explained in answer to your question, we have not the records—they were destroyed—which would enable us to show just what tonnage the man actually handled, so that we could not show that; and, therefore, the only thing I could quote was the book in which is printed the rating which the engine is supposed to handle, and the book showed that in 1902 this type of engine about which we were speaking was supposed to haul more than the same type of engine is supposed to haul to-day between the same points.

The Chairman: That is a thing that I fail to grasp, because the roadbed is better probably than it was then; if the grades have been changed at all they have been changed to improve conditions rather than to increase the obstacles; the cars are supposed to be manufactured better than they were in those days; in fact all the conditions are better. Therefore, I could not grasp your reply that the same engine to-day is rated at less than it was then, and that all the conditions would seem to make an engine do more work now than then?

Mr. Dithridge: While I cannot answer definitely, Judge Chambers, I could speak—that is, several reasons suggest themselves to me. But I could not say, under oath, what they were.

Mr. Atterbury: The annual report, Judge, will tell exactly what was done in 1902 and 1912 and I have no doubt the Conference Committee can submit that.

The Chairman: I think we are anticipating data which perhaps is to come out later.

Mr. Carter: Mr. Dithridge, you spoke about the firemen in 1912 receiving 42% more money in a month, say, than in 1902. That does not take into consideration the possibility of working longer hours in 1912 than in 1902, does it?

Mr. Dithridge: Just as I stated, Mr. Carter. I explained, you know, that we did not have the time slips or the train sheets, so that we took the only thing we had, the payrolls, the actual payrolls, and divided the number of names on the payroll, by the total roll, and got those average figures.

Mr. Carter: If it were a fact that the average time on the road in making one of these trips in 1912 was two hours longer in 1910, that would have some bearing on this increased compensation, would it not?

Mr. Dithridge: Provided the increased time on the road in 1912 got him into overtime.

Mr. Carter: What I mean is this: Supposing a man made the trip, 100 miles, in 1902 at an average, we will say, of 10 hours and in 1912, it took him, we will say, 12 hours—these are just suppositions; then that would be a 20% increase in hours of service. You have disregarded any possibility of that kind when you showed there was a 42% increase in cost of the firemen to the company?

Mr. Dithridge: What was your figure for 1912, about ten hours?

Mr. Carter: No, I said if it were.

Mr. Dithridge: Well, I have the figures showing what it was in 1912, if you will just bear with me for a minute (referring to papers). In 1912 I have this divided between fast passenger and other passenger; this is between Dennison and Columbus, the one we are speaking about, and it shows in through freight service in 1912, in January, the average time on duty for all firemen, which means from the time he was required to report until he got to the ash-pit at the engine house, was 7 hours 52 minutes.

Mr. Carter: That includes passenger service?

Mr. Dithridge: No, this is fast freight service only.

Mr. Atterbury: Seven hours and what?

Mr. Dithridge: And 52 minutes, in January.

Mr. Lee: Fast freight service only?

Mr. Dithridge: Fast freight service only, from the time he was required to report until he was relieved at the ash-pit.

Mr. Atterbury: Is he paid overtime on a basis of ten hours and 30 minutes.

Mr. Dithridge: He is paid on the basis of 10 hours overtime now.

Mr. Atterbury: 10 hours or 10 hours and 30 minutes?

Mr. Dithridge: 10 hours. In June, 1912, the average for fast through freight service was 6 hours 55 minutes and for other through freight service it was 9 hours and 56 minutes in January and in June, 7 hours and 58 minutes; that is the entire time on duty.

Mr. Atterbury: Is his overtime also 10 hours?

Mr. Dithridge: Yes, sir. In passenger—well, we are only talking about through freight.

Mr. Carter: I think it is understood that passenger service is more speedy in 1912 than it was in 1902; at least the demand for fast travel has increased.

Mr. Lee: How is that again, please?

Mr. Carter: I think the demand for a fast passenger train is greater in 1912 than in 1902.

Mr. Lee: That might be.

Mr. Carter: And I think the railroads try to meet the demands as a rule; they say they do at least, in their folders.

Mr. Lee: I do not know as we are prepared to concede that all passenger trains are any faster in 1912 than in 1902. Personally I do not know.

Mr. Carter: I was referring particularly to freight service. You do not know how much time was spent in freight service in 1902?

Mr. Dithridge: No, sir. We tried to get the figures but the time slips and train sheets had been destroyed a number of years ago.

Mr. Carter: In this increase of 42 per cent. in the cost of firemen to the company, the earnings of the firemen, did you take into consideration the greatly increased productive efficiency in ton mileage?

Mr. Dithridge: Not in preparing these figures.

Mr. Carter: What did you say was the average monthly earning for all the firemen on the Pennsylvania Lines West of Pittsburgh in a certain month?

Mr. Dithridge: I did not say, Mr. Carter: That was the through freight firemen on the section of road about which inquiry was made, Dennison to Columbus.

Mr. Carter: You do not know what it would be for all of them?

Mr. Dithridge: No, sir; not for this year.

Mr. Carter: You were speaking about these increases in rates of the firemen and other employees. Were other employees increased in the same proportion or as rapidly or more rapidly than the firemen were increased?

Mr. Dithridge: Not by any means.

Mr. Carter: How much do you pay your switchmen in the Pittsburgh Yards per hour?

Mr. Dithridge: I don't remember the exact figures. I can give them to you in a few minutes if you want them.

Mr. Carter: I would like it sometime.

Mr. Lee: Have you the figures with you?

Mr. Dithridge: Yes, I have too, I beg pardon. I have more than I thought I had. Here is Pittsburgh: The day brakeman gets 34 cents an hour and the night brakeman 36 cents.

Mr. Carter: How much does a fireman get there?

Mr. Dithridge: 26 cents.

Mr. Carter: 26 against 34?

Mr. Dithridge: Yes, sir.

Mr. Carter: What do you pay shopmen?

Mr. Dithridge: I do not know definitely.

Mr. Carter: Do you believe that on the Lines West they pay shopmen as well as they do on the Lines East?

Mr. Dithridge: I have not any information as to what they pay on the Lines East, Mr. Carter.

Mr. Carter: I have an Altoona paper of February 24th—

Mr. Lee: What year?

Mr. Carter: February 24th, 1913. The heading of the article is this: "Praise for the Altoona Shops"—

The Chairman: What paper is it?

Mr. Carter: This is the Altoona Mirror of February 24, 1913: "Praise for the Altoona Shops." This is simply a report of the Altoona Mirror of Altoona, Pa., of what was said by a certain scientific investigator. I will read the headline which perhaps sets forth what it was: "Praise for the Altoona Shops: Herbert L. McIntosh, representing a scientific monthly in Australia, says they are a grand institution. He describes the Altoona shops and shows what a great institution the Altoona shops are." Now I will only quote from part of it. Speaking of wages and so forth he says, "This instance was strikingly illustrated in the Altoona Tank Shop, where groups of men, three and four in number, were ingaged in various sections of the shop in cutting heads off rivits and later removing the bodies from their positions in the frame of the tank. The only tools used in this operation consisted of a maul, cutter and punch, plus muscular action, the entire operation executed by non-tradesmen who received 45 cents and 50 cents per hour as their wage."

Presuming that this common labor, muscle with a maul, get 45 and 50 cents an hour for their wage, both east and west on the Pennsylvania Lines, how much more would that be than the firemen get per hour?

Mr. Dithridge: It would depend a good deal on what the figures would show for all the men. Of course this may have been a particular bunch of men, who were particularly skilled—

Mr. Carter: He says not.

Mr. Dithridge: Or particularly husky?

Mr. Carter: He says they were not skilled, and he is a scientific investigator.

Mr. Dithridge: There are scientific investigators and scientific investigators.

Mr. Carter: We have had some of them here, haven't we?

Mr. Lee: Yes, we have.

Mr. Dithridge: That would depend largely on the skill, and the work, and the conditions under which it was done?

Mr. Carter: If it were true that these men in the shops, handling the maul, cutting off the rivets and as he says, to use his exact language:

"The only tools used in this operation consisted of a maul, a cutter and a punch, plus muscular action, the entire operation executed by non-tradesmen," presuming he told the truth, and presuming he told the truth when he said they got 40 to 50 cents an hour, it would indicate, would it not, that the Pennsylvania Company are also liberal to their shopmen, as well as to their trainmen?

Mr. Dithridge: I think it is generally conceded that the Pennsylvania is pretty liberal to everybody.

Mr. Carter: I will concede that they are more liberal than most of the companies, in the East, I mean.

Mr. Lee: Assuming that they got a dollar an hour, it would have been more so yet?

Mr. Dithridge: The more they get, the more it is.

Mr. Lee: Generally.

Mr. Carter: Now, these shopmen—no, I will not ask you about that, because it is not fair. These shopmen did not wrest this from the Pennsylvania by the power of any trades union?

Mr. Dithridge: I do not know anything about that.

Mr. Carter: Not much. I want to say that this was done gratuitously by the Pennsylvania Road as indicative of their liberal policy in the payment of wages.

Mr. Lee: I should like to have my friend verify those figures.

Mr. Carter: I imagine if there was a scientific investigation conducted for rebuttal, they would find some men there who were not getting anything; but this is the report of a gentleman by the name of Herbert L. McIntosh, representing a scientific monthly in Australia, and he praises the Pennsylvania Road.

Mr. Lee: Is that a copy of his report, or the report of an interview?

Mr. Carter: It purports to be a copy of his report.

Mr. Lee: We would like to look at it.

Mr. Carter: "Through the mail this morning, a communication was received, February 22, 1910, to the Editor of the Altoona Mirror," and it is signed Herbert L. McIntosh, 48 Adelaide Place, Sydney, Australia, and he adds a P. S. and says, "My next visit is to the Baldwin plant at Philadelphia, leaving Altoona to-night." The Pennsylvania pay shopmen more than they pay firemen, there is no question about that, and unskilled shopmen, too.

The Chairman: Do brakemen and switchmen throughout the Pennsylvania system get higher wages than firemen?

Mr. Dithridge: There is a difference, Judge Chambers. I do not know whether you understand the difference between brakemen and switchmen. We call them road brakemen, and yard brakemen on our lines. The road brakemen are the men who run on the trains over the road. The yardmen are the men who are on and off cars, working in the yards.

The Chairman: Does the road brakeman get higher wages than the fireman on the same train?

Mr. Dithridge: No, sir.

Mr. Atterbury: The road brakeman gets less than the fireman?

Mr. Dithridge: The road brakeman gets quite a little less than the fireman.

The Chairman: What is the difference between yard brakemen and switchmen?

Mr. Dithridge: Some roads call them switchmen, and some roads call them yard brakemen, and some roads call them helpers.

The Chairman: They get more than firemen, do they?

Mr. Dithridge: Yes; the yard brakemen get more than firemen as a rule, due to various conditions.

Mr. Atterbury: What do you call the man who throws the switches in the yard?

Mr. Dithridge: A switch tender.

Mr. Carter: In fairness to ourselves and also the company, I did not want it to be understood that in introducing this matter it is a reflection upon the Pennsylvania Company. We are glad to accept the fact that the Pennsylvania Company is perhaps as liberal if not more so in the payment of wages than any other Eastern road, not to be compared, however, in their liberality with Western roads with which they connect.

Mr. Lee: The rate quoted there is probably piece work rate per hour and not the hourly rate mentioned.

Mr. Carter: Firemen are working on piece work too, so much per 100 miles.

Mr. Lee: Not in the same way that the men in the shops work piece work, however.

Mr. Carter: I think it has been always conceded that men in train service are on a piece work system. I think it is a matter of general knowledge, except in arbitration proceedings, that when the piece work system of so much per hundred miles was established, wages were based upon mileage; but in later years, when hours exceeded miles, I think it is the general concensus of opinion, outside of arbitration proceedings, that firemen and other train employees have ceased to be on a piece work system and have gone to an hourly system, because they usually take more than 10 hours to make 100 miles now, while formerly they took less.

Mr. Lee: There is a very great difference, if the Board pleases, between the piece work system in the shops and the piece work system of the fireman, and, that is, that in the piece work system in the shops a man is paid for what he does, regardless of the number of hours in which he does it. With the train service employee he is paid for 100 miles, if he makes that in 7 hours or if he makes that in 10 hours. If he makes 100 miles in 11 hours, he is paid overtime. That is the difference and a very decided one.

Mr. Carter: Gentlemen of the Commission, I agree in what is said. If the firemen were paid in proportion to what they produced, they would be getting more than those shop men. The fireman's rate is still based on mileage, regardless of the immense increased tonnage that they have produced. If the firemen had been based on exactly the same principle of piece work system that the shop man is, then all of this increased tonnage per train would have gone to the credit of the firemen until the rate of piece work had been cut.

Mr. Lee: All this statement of counsel, an opinion expressed?

Mr. Carter: Simply flights of oratory from counsel on both sides.

The Chairman: You want the Pennsylvania Railroad and all other railroads to treat the firemen as well as they do the shop men?

Mr. Lee: Shop hands he is talking about there, sir.

Mr. Carter: In fact, gentlemen, I feel if the Pennsylvania Railroad was just as liberal in their payments as it indicated in this report, why, I think we would be getting more than we are asking for.

Mr. Lee: The very peculiar thing, if the Board pleases, is that if the shop man were getting all this tremendous increase and tremendous wages, that we have any firemen left on the road.

Mr. Dithridge: Mr. Chairman, may I make an observation right there?

The Chairman: Yes, we will be very glad to hear you.

Mr. Dithridge: I think it might be interesting, while the shop men, according to that report, seem to have made a pretty good rate per hour for their piece work, would I know that we have firemen, sons of skilled shop men, who are making each month more than their fathers; and it is very disconcerting to the fathers to discover that.

The Chairman: You think then that the wage sheets of these men who cut rivet heads by the month—

Mr. Carter (Interrupting): By the piece.

The Chairman (Continuing): No, by the month; that the monthly wage of these men who cut rivet heads and who are paid by the hour for what they do, would not show up as well as his earnings would, if he was firing an engine.

Mr. Dithridge: With reference to the particular cases I have in mind of skilled men, we know that it is a fact that the sons of these skilled shop men get more money in a month than their fathers; and in several cases about which I have personally been told the boys were home more than their fathers.

Mr. Carter: Those are some special passenger runs—high priced passenger runs?

Mr. Dithridge: I am not advised whether they were passenger runs. I have the general information that they were firemen.

Mr. Lee: And might or might not be passenger train firemen?

Mr. Dithridge: I don't know.

Mr. Carter: We will concede, gentlemen of the Commission, that it is possible out of all of the employees of the railroad, there is a fireman or a shop man, to pick a few comparatively highly paid men—in fact, because of this system of what we call seniority, a man, by many years of service, gains the privilege of selecting these peculiarly favored runs. We agree that those runs do pay high rates but we were speaking about the average. Now, any statement of wages of firemen showing the earnings per month, unless it includes all firemen on the system, taking the highest paid special run and putting it against the extra men, so as to even up; we do not believe that it would be indicative of what the firemen do earn. For instance, we might take seven of the lowest paid men on a division and say that they did not earn $10 a month; the company might take the same number of the highest paid men on the division and say that they earned over $100 a month. I do not believe that any such statistical statements would be fair to the Board, because we would be exaggerating on the one hand and they would be exaggerating on the other hand. I think, if wages of firemen are to be considered, it should be all the firemen and all the compensation.

Mr. Dithridge: If the Board pleases, as I said before, I was testifying only in connection with queries that were asked, and for the same portion of the road. I also have the hourly earnings or earnings in cents per hour on duty for the firemen on this same section of the road in January and June, 1912, and it shows that in fast passenger service, between Dennison and Columbus, the firemen, in January, were paid 75 cents per hour on duty; in June, 67 cents. Other passenger service, January, 53 cents; June, 55 cents. Fast freight service, January, 39 cents per hour on duty; June, 45 cents. Other freight service, 33 cents and 36 cents; and as a result the figures we have made from time to time as to the hourly earnings per hour on duty, which in fairness I ought to say does not mean that a man gets that 10 hours every day, but it is indicative of the rate paid him for his hour on duty, these rates, in some cases—I know they are lower on other divisions and other runs, and in some cases they are a little higher, but not much—we have passenger runs where the average earnings of firemen, for the month, was as much as $1.06 per hour on duty during the month.

Mr. Carter: How much was that?

Mr. Dithridge: $1.06. Those are fast passenger runs and I am not quoting them to indicate that that is the average of all firemen, but in connection with the reference that has been made to the hourly earnings of shop men and others, I merely recite that we have divisions on which the average earnings of the firemen in fast passenger service, per hour on duty, is $1.06 per hour.

Mr. Carter: I think, Mr. Dithridge, that the first witness we put on in our Western Arbitration earned $1.05 per hour. I didn't know how much he earned and we put him on.

Mr. Dithridge: I tried to be fair to you Mr. Carter, in explaining that is a fast passenger run. It does not mean he earned it 10 hours a day or every day; but it is indicative of what he earns per hour, and you will find by taking them, as we have, for several different hours, that the hourly earning is very high, and this is very much higher than what these figures as to what trip rates would indicate.

Mr. Lee: Would you consider that comparable with the hourly earnings of the shop men that have been quoted?

Mr. Dithridge: Well, I will tell you. If you are going to compare hourly earnings, why, you have to compare hourly earnings.

Mr. Carter: Pardon me. You say he got so much per hour—it was really so much per mile, by the rapidity of turning out the work it amounted to this much per hour.

Mr. Dithridge: Per hour on duty.

Mr. Carter: He doesn't get paid for the hour on duty, he gets paid for the mileage he makes, and because of the speed of the train he got a great many miles in an hour?

Mr. Dithridge: Yes, sir. I can take some slow passenger train and show you something too, I think, if I have it—I don't know whether I have it—I guess I haven't got it here. But these slow men on the Pittsburgh Division, for instance, this means "slow" it means accommodation trains between Dennison and Columbus.

Mr. Carter: It means stopping at every station practically?

Mr. Dithridge: Practically so. In June, earned 55 cents per hour on duty.

Mr. Carter: How many hours did it take them to get over the division?

Mr. Dithridge: 3 hours and 26 minutes on the road, and 4 hours and 57 minutes on duty.

The Chairman: 4 hours and 57 minutes for those 100 miles?

Mr. Dithridge: Yes, sir. And he was on duty a few minutes less than five hours.

The Chairman: That is what you call a slow run?

Mr. Dithridge: That is a slow run on that portion of the road, yes, sir. That would be a slow run, 3 hours and 26 minutes on the road; that is, from the time he left the passenger station until he got to the terminal passenger station; three hours and 26 minutes on the road would indicate that it is a slow run.

Mr. Carter: I was going to say, Judge and Gentlemen, that on some of the roads in this movement that would be fast—a little over three hours per 100 miles.

Mr. Phillips: You can understand, Mr. Dithridge, how a man can make 50 cents a mile, too, can't you?

Mr. Dithridge: Why, sure.

Mr. Phillips: For example, a man working on the mileage basis, a hundred miles, ten hours or less, and he made just ten miles, and we will say he is earning as an engineer $5.00 a day; or, if you wanted to get 50 cents a mile for a fireman, you would say, $3.00 per day, and he would go six miles, of course, he has made 50 cents a mile?

Mr. Dithridge: Sure. And then you can take another extravagant case, but it is true, and it is paid every day, some place. I know men, firemen, that haven't made any miles and get $2.85 and $3.00.

Mr. Phillips: I have known lots of men that have made more than that for doing nothing.

Mr. Dithridge: Simply came to the engine house, or there was a washout, and the train could not go, or as they sometimes blame it on the callboy.

Mr. Lee: Any questions, Mr. Chairman?

The Chairman: No.

(Witness excused.)

D. F. CRAWFORD was called as a witness, and having been duly sworn, testified as follows:

DIRECT EXAMINATION:

Mr. Lee: What is your business, Mr. Crawford?

Mr. Crawford: General Superintendent of Motive Power, Pennsylvania Lines, west of Pittsburgh.

Mr. Lee: How long have you been in that position?

Mr. Crawford: 9 years.

Mr. Lee: What were you previous to that?

Mr. Crawford: Superintendent of Motive Power.

Mr. Lee: Previous to that?

Mr. Crawford: Assistant to the Superintendent of Motive Power.

Mr. Lee: Previous to that?

Mr. Crawford: Assistant Master Mechanic.

Mr. Lee: Previous to that?

Mr. Crawford: Inspector, Test Department, Altoona.

Mr. Lee: And previous to that?

Mr. Crawford: Machinist's apprentice.

Mr. Lee: Are you a graduate mechanical engineer, Mr. Crawford?

Mr. Crawford: I am not.

Mr. Lee: You are not a college man?

Mr. Crawford: No, sir.

Mr. Lee: Never went to college?

Mr. Crawford: No, sir.

Mr. Lee: Your knowledge of mechanical matters, then, comes from practical observations and experience?

Mr. Crawford: Yes, sir.

Mr. Lee: The deductions that you draw in your present position of General Superintendent of Motive Power and any deductions you may draw here, are such deductions as you have been led to believe come from certain facts?

Mr. Crawford: Yes, sir.

Mr. Lee: What are your duties as general superintendent of motive power?

Mr. Crawford: I am responsible for the design of locomotives, passenger cars, freight cars and other machinery, and for

the maintenance of the equipment to the set standard; also such other duties as the general manager may assign me from time to time.

Mr. Lee: Do you have general supervision over the performance of equipment?

Mr. Crawford: General supervision, yes.

Mr. Lee: Do your duties require you to go over the road frequently?

Mr. Crawford: Yes; not so frequently now, however, as formerly.

Mr. Lee: You have made up certain statements in connection with this case?

Mr. Crawford: Yes, certain exhibits.

Mr. Lee: In order to get these exhibits straight, we should like to discuss with the Board for a moment, the question as to how they would like these exhibits put in. They are in a book which is presented here, and each exhibit is numbered. Do you desire to consider them as numbered in the book, or the whole book as exhibit No. 1? We will discuss them at various times. I am raising this question at this time so that we can keep the record straight.

Mr. Atterbury: Have you any other exhibits?

Mr. Lee: Yes, we have another book. We now offer the book entitled "Statements prepared by the Conference Committee of Managers, Eastern Territory, New York, March 19, 1913, Firemen," as Exhibit No. 1, and will refer to the various statements as sub-exhibits by their numbers.

Mr. Crawford: Using the page numbers?

Mr. Lee: Using the page numbers or exhibit numbers, as shown on the pages, as sub-exhibits.

Mr. Crawford: Sub-exhibits?

Mr. Lee: Yes.

(The statements so offered and identified were received in evidence and thereupon marked Railroads' Exhibit No. 1, Witness Crawford, received in evidence March 25th, 1913, and is attached hereto.)

Mr. Crawford: Exhibit No. 1, Sub-exhibit 31, and sub-exhibits 32, 33, 34, 35 and 36, comprise a statement showing the comparisons of the average tractive power per locomotive in pounds; average weight on drivers per locomotive in pounds;

average pounds of coal per locomotive mile, and average wages paid firemen per locomotive mile; Exhibit No. 1, sub-exhibit 31, showing the comparison for passenger service on a percentage basis.

Sheet No. 2 of sub-exhibit 31, is a continuation of the passenger data.

Mr. Atterbury: This is sub-exhibit 31, sheets 1 and 2?

Mr. Crawford: That is correct. Sub-exhibit 31, sheet 2, is the passenger service concluded, on a percentage basis.

Sub-exhibit No. 32 gives the data from which the percentage is determined.

Exhibit No. 1, sub-exhibit 33, sheets 1 and 2, cover freight service on a percentage basis.

Sub-exhibit 34 is the data from which the percentage was determined.

Sub-exhibit 35, sheets 1 and 2, shows the comparison for yard service on a percentage basis.

Sub-exhibit 36, gives the data from which the percentage was determined.

The Chairman: Will your testimony be confined to these exhibits and sheets?

Mr. Lee: For the present. He will talk about these first.

Mr. Crawford: These sub-exhibits show the comparison for 40 roads for 1910, 1911 and 1912, and for 21 roads for 1900, 1905, 1910, 1911 and 1912.

Mr. Carter: Pardon me, what exhibit is that?

Mr. Lee: Our Exhibit No. 1, sub-exhibit 31, sheet 2 shows the average for all railroads. That is what you are talking about Mr. Crawford, is it?

Mr. Crawford: The same information is shown on sheet 2 of each of the sub-exhibits, for passenger service, freight service and yard service, the three services being kept separate, and separate statements covering each being included in the book.

Mr. Lee: Why did you have three years for forty roads and five years for 21 roads.

Mr. Crawford: We asked all of the roads to furnish the information for all five years, the same form or blank being sent to each of the roads; only 21 of the roads requested could furnish the information for the five years, on account of the condition of their records.

Mr. Lee: Why were not all of the fifty roads included?

Mr. Crawford: All of the roads parties to this arbitration were requested to give the information. Some of the replies were not received in time to be included in this printed statement, and others could not furnish the information.

Mr. Lee: Now, if you will, go ahead and explain this statement, Mr. Crawford, I think it will be only necessary to take these averages for all railroads, unless there is some particular point on some railroad that the Board, or our friends on the other side may want.

Mr. Crawford: For the purpose of comparison, the year 1910 was taken as a basis year, and the average tractive power, the average weight on drivers, the average coal per locomotive mile, and the average wages per locomotive mile shown in comparison with it for each class of service.

As will be seen on Sheet 2 of the Passenger Service, the tractive power of locomotives is 106.7 as compared with 100; that is an increase of 6.7 per cent. in 1912. The weight on drivers has increased 7.2%, the coal used 3.2%, and the wages six per cent.

Mr. Lee: That is for the three years?

Mr. Crawford: For the three years.

Mr. Lee: I will be glad for you to give it to us for the 21 roads for which you have complete information in five year periods, or say from 1900 to 1912.

Mr. Crawford: The data was figured for the 21 roads still using the 1910 as the basis, and therefore the roads that could give the information for 1900 and 1905, the information is shown as a percentage of the 1910 figures; therefore, the difference between the figures shown for 1900 and 1912 could be used as indicating the change in that period.

Mr. Lee: You have those figured out, Mr. Crawford?

Mr. Crawford: Passenger service would show that in 1912 compared with 1900, there had been an increase of 35½% in average tractive power.

Mr. Atterbury: 35½%, that is for the 21 roads, is it not?

Mr. Crawford: Yes, sir, for 21 roads.

Mr. Atterbury: 35½%?

Mr. Crawford: Yes.

Mr. Atterbury: Go on.

Mr. Crawford: Weight on drivers 43.7%, coal 34.7%, wages 32.9%, In freight service—

Mr. Atterbury: You have not worked this out by percentages.

Mr. Crawford: No, that is by subtraction.

The Chairman: That is just the difference in per cent.?

Mr. Crawford: Yes, the difference in per cent.

The Chairman: The percentage is what 106 would be of 71.3.

Mr. Crawford: No. it would not, it would be the difference. You cannot take per cent. of per cent.

The Chairman: You are right, I apologize.

Mr. Atterbury: But if you take 71 as the basis, and it is increased to 106, then your increase would be what per cent. 35.5 is of 71.3, would it not?

The Chairman: That is what I thought, but you see he takes 1910 as 100, as the base, and makes an arbitrary base, and that 71 may not have really been the actual per cent. at that time. That is the actual percentage compared with the arbitrary basis.

Mr. Phillips: The same arbitrary 100 would apply to the 71 per cent.

Mr. Crawford: The same arbitrary 100 would apply to the 71%.

Mr. Phillips: One would be minus, and the other would be plus.

Mr. Crawford: One would be minus, and the other would be plus.

Mr. Phillips: That is the difference between the percentages.

Mr. Crawford: It makes a little difference in the rate line.

The Chairman: Go on, Mr. Crawford.

Mr. Crawford: On Sub-Exhibit No. 33, Freight Service, second sheet, for the 41 roads as to which we have complete information, the average tractive power increased 5.6%, the weight on drivers 6.2%, the coal 2.8% and wages 10.3%.

Mr. Carter: Pardon me. What page is that?

Mr. Crawford: That is Sub-Exhibit 33, Sheet No. 2.

Mr. Carter: At the bottom of the page?

Mr. Crawford: At the bottom of the page. "Average for

all roads." On the 21 roads, by differences again, the tractive power increased 35.8%, the weight on drivers 32.4%, the coal 32% and the wages 40%?

Mr. Carter: On what page is that?

Mr. Lee: It is not here.

Mr. Carter: Pardon me. I find now you have pencil notations on yours I haven't on mine. I could not find where this information was coming from.

Mr. Crawford: Pardon me for not telling you. Shall I read it, Mr. Carter for you?

Mr. Lee: Better put it down now.

Mr. Carter: Well, let it go.

Mr. Lee: That is in freight service.

Mr. Crawford: Freight service. Yard Service is Spb-Exhibit 35, Sheet 2. The complete information was obtained in this case for 42 roads. Compared with 1910 the tractive power increased 5.3%, weight on drivers 7.2%, coal 2%, wages 6.8%. For the 21 roads which could give information for five years; Tractive power 38.5%, weight on drivers 37.1%, coal 39.7%, wages 32.3%.

Mr. Lee: That is for the five-year period, but it is from 1900 to 1912?

Mr. Crawford: Yes, I have reports for five years but the initial year is 1900, the second year 1905, the third year 1910, the fourth year 1911, the fifth year 1912.

Mr. Lee: Why did you use the locomotive miles in the case of passenger and freight service, Mr. Crawford, on this comparison of wages and coal consumed?

Mr. Crawford: The record of locomotive mileage is kept by all railroads; the record of total coal consumed is also kept by all railroads, as well as, of course, they have a record of the total amount of wages paid. Therefore, by dividing one fixed quantity by another, such as the total wages by the total locomotive miles, there could be no question of allowances or constructions; it was simply two figures that existed in the records of all the railway companies, one divided by the other.

Mr. Lee: That, as I understand it, put the wages and the coal consumed on a more or less comparative basis?

Mr. Crawford: As nearly as may be done. That the amount of coal used was the amount used in each year divided by the loco-

motive miles in each year. The wages shown were obtained by dividing the total amount of wages paid by the total locomotive miles each year. In other words, the wage figure is the cost of wages per mile.

Mr. Lee: On what basis did you use the tractive power?

Mr. Crawford: We obtained the average tractive power of locomotives in service as reported by the different railways in filling in the blank which was sent to them, and the same way with the weights on drivers.

Mr. Lee: Why did you take 1910 as the basis?

Mr. Crawford: It was the intention, when the form was sent out to the railways to use 1900 as a basis, but so few of the roads members of the conference, could furnish the information, it was decided to take 1910, where the majority of 42 of the total roads could furnish the information.

Mr. Lee: What do these statements indicate to your mind, Mr. Crawford?

Mr. Crawford: They indicate to me that the wages have increased in proportion to the tractive power and the weight on drivers and the coal used.

Mr. Lee: Generally?

Mr. Crawford: Generally.

Mr. Lee: Does it show that they have been increased more rapidly than any other of these factors in the freight service?

Mr. Crawford: It does, sir.

Mr. Lee: Would you consider any one of these three factors by itself a comparative measure of the firemen's wages?

Mr. Crawford: No, sir.

Mr. Lee: Not by themselves.

Mr. Crawford: Nor necessarily together.

Mr. Lee: Would they indicate by themselves the amount of work a fireman does?

The Chairman: You mean separately?

Mr. Lee: Separately or together.

The Chairman: When you say "by themselves" you mean separately?

Mr. Lee: Yes, by themselves, separately.

Mr. Crawford: There are many other factors other than tractive power, weight on drivers, and the amount of coal

shoveled which would necessarily enter into the determination of a suitable wage to firemen?

Mr. Lee: What then is the idea of presenting the data you have just prescribed?

Mr. Crawford: To illustrate the basis requested and the basis of the request of the firemen that wages be, to some extent,—proportioned to some extent upon the relative weight on drivers, and the other two elements were put in for the information of the Board and for the information of the railways, to ascertain if any relation could be established between the other factors.

Mr. Lee: Would you say that the number of miles run would be as near a comparison of the wages paid as any one factor—the locomotive miles?

Mr. Crawford: It is the only single factor that I know that can be taken, because, as I said before, it admits of no variation, counting the number of men or the number of days, it is simply one figure shown in the records of the companies divided by another figure. There was no question of preparing this data or specializing it or selecting it; it is a division of one total by another total, and the only two totals that I know of that can be used as a comparative basis.

Mr. Lee: Purely as a comparative basis, however?

Mr. Crawford: Yes, sir.

Mr. Lee: What would you consider a proper basis, Mr. Crawford, for the payment of wages for manual labor; would it be on the basis of service rendered?

Mr. Crawford: I think, without doubt, that wages should always be based on the service rendered. That of course includes the time, the skill and the manual labor, with one other factor, responsibility.

Mr. Lee: It would be different then for different localities?

Mr. Crawford: Absolutely different for different localities and each set of conditions.

Mr. Lee: And the one factor though in your mind that shows nearest the cost of firemen to the railroad, is the one showing the cost per locomotive mile.

Mr. Crawford: The one method that I know of by which it can be determined for comparison.

Mr. Lee: Now, Mr. Crawford, you endeavored, as I under-

stand, to find out what relation the weight on drivers had to the work done by firemen?

Mr. Crawford: Yes, sir.

Mr. Lee: If the Board pleases, we are about to enter upon another subject which will take about an hour or two. If the Board pleases it might be well, so we can have a continuation of thought, to adjourn at this time.

Mr. Atterbury: Are you going to leave these sheets now.

Mr. Lee: Unless there are some questions you desire to ask on them.

Mr. Crawford: That particular set of sheets.

Mr. Carter: Inasmuch as they have introduced so much matter as one exhibit, it will probably take a long while to cover it all, and if we could dispose of a portion of it at a time, I think it would be simpler for us.

The Chairman: I was going to make just that suggestion.

Mr. Lee: Anyway that it will be easier to discuss, will be perfectly agreeable to us. Mr. Carter has had these sheets since Friday, and I wanted to ask some questions on them.

The Chairman: Why should not Mr. Carter cross-examine on these exhibits now?

Mr. Lee: It is perfectly agreeable to us. I had thought to suggest that, because there might be loss of some time.

The Chairman: How would that suit you?

Mr. Carter: That suits us exactly, because that is about the way we handled it We had our exhibits divided into minor divisions.

The Chairman: Will your examination on these exhibits consume more than ten minutes probably?

Mr. Carter: I do not know; I have several questions to ask, because I do not know how these figures were prepared.

The Chairman: Then we will take a recess until 2 o'clock.

(Whereupon, at 12:18 P. M., a recess was taken until 2 P. M.)

After Recess, 2:10 P. M.

D. F. CRAWFORD, resumed:

Mr. Lee: In considering these increases, between 1900 and 1912, in the various classes of service this morning which you put

down in pencil, I believe in the noon hour you went over them again, as you desired to confirm the figures and the methods employed, that you used hurriedly at the time?

Mr. Crawford: Yes, by inspection. The difference in the freight service between the 1900 figure and the 1912 figure as compared with the calculated result is so close, that I did not have them calculated for all of them for passenger and yard service, but I have had them calculated for freight service.

The Chairman: What page are you on?

Mr. Crawford: It is the summary on sub-exhibit 31.

Mr. Lee: Sub-exhibit 31, sheet 2.

Mr. Crawford: Sub-exhibit 31, sheet 2, sub-exhibit 33, sheet 2 and sub-exhibit 35, sheet 2. In the summary, for the complete information for five years for 21 roads, as I said before, I calculated the difference between 1900 and 1912 in freight service by inspection; and in putting down the figures for the passenger and yard service I did not notice that the base changed so widely. I have therefore recalculated, taking the data available, and have calculated the per cent. of the trackage power, weight on drivers, coal, and wages in each class of service, passenger, freight and yard, using the figures in 1900 as a basis, and have prepared a statement which gives the information. There are six copies of it.

Mr. Lee: This takes the place of the pencil figures that you put in before?

Mr. Crawford: It takes the place of the pencil notations referred to in the earlier testimony.

Mr. Lee: But not the printed figures?

Mr. Crawford: No, it has no relation to the printed figures at all, except that it is obtained from the same data, using 1900 as a basis, instead of 1910.

(The statement referred to is as follows):

PASSENGER

Year	T. P.	%	Weight	%	Coal	%	Wages	%
1900	14890	100.0	65114	100.0	69.6	100.0	.0182	100.0
1905	17920	120.3	85270	131.0	93.0	133.6	.0209	114.8
1910	20900	140.4	101600	156.0	111.8	160.6	.0250	137.3
1911	21670	145.5	105700	162.0	105.7	151.8	.0259	142.3
1912	22300	149.8	109400	168.1	108.3	155.6	.0264	145.1

FREIGHT

Year	T. P.	%	Weight	%	Coal	%	Wages	%
1900	22830	100.0	102630	100.0	133.0	100.0	.0268	100.0
1905	29837	130.7	130570	127.2	167.9	126.3	.0329	122.7
1910	33333	146.0	147300	143.2	193.2	145.3	.0394	147.1
1911	34108	149.4	151400	147.5	195.2	146.8	.0412	153.7
1912	34743	152.2	150453	146.5	195.2	146.8	.0426	159.0

YARD

Year	T. P.	%	Weight	%	Coal	%	Wages	%
1900	17175	100.0	82018	100.0	64.0	100.0	.0247	100.0
1905	21720	126.4	104550	127.6	80.2	125.3	.0295	119.3
1910	25350	147.6	120860	147.5	105.6	165.0	.0400	161.9
1911	25840	150.3	123200	150.3	101.8	159.2	.0415	168.1
1912	26940	156.8	126900	154.8	106.1	165.7	.0417	168.8

Comparison of Tractive Power, Weight on Drivers, Coal per Locomotive Mile and Wages Paid Firemen per Locomotive Mile, on 21 roads furnishing the complete information for five years, taking 1900 as a Basis of 100%.

Sub-exhibits Nos. 31, 32, 33, 34, 35 and 36.

Mr. Lee: For passenger service, the increase in tractive power is 49.8 per cent. Is that right?

Mr. Crawford: Yes.

Mr. Lee: For the 21 roads?

Mr. Crawford: Yes.

Mr. Lee: The increase in weight on drivers is 68.1 per cent.?

Mr. Crawford: Yes.

Mr. Lee: The increase in coal consumed is 55.6%.

Mr. Crawford: Yes.

Mr. Lee: The increase in wages, 45.1%?

Mr. Crawford: Yes.

Mr. Lee: Sub-exhibit 33, sheet No. 2 for freight service now, for the 21 roads, the average tractive power shows an increase of 52.2%; the average weight on drivers, an increase of 46.5%; the average coal consumed, 46.8%; wages, 59% per locomotive mile.

Mr. Carter: What was that first one?

Mr. Lee: An increase of 52.2%.

Mr. Crawford: Shall I go on?

Mr. Lee: Yes.

Mr. Crawford: Sub-exhibit 35, yard service. The tractive power in 1912 increased over 1900 56.8%; weight on drivers increased 54.8%; coal consumed, 65.7%; wages increased 68.8%.

Mr. Lee: Per locomotive mile?

Mr. Crawford: Per locomotive mile. All of these data are reduced to locomotive miles.

Mr. Atterbury: Have you got those figures for all locomotives for all roads?

Mr. Crawford: No, sir.

Mr. Lee: No, sir, we have not got that.

Mr. Lee: That summary could be made, Mr. Crawford?

Mr. Crawford: Yes, sir, that can be made, and I will be very glad to make it.

Mr. Lee: Make a note of that. Your attention having been called to that, you may put it in tomorrow.

Mr. Crawford: Yes.

Mr. Lee: You may cross-examine on that Mr. Carter.

Mr. Carter: Mr. Crawford, taking these totals here on sheet No. 2, any sheet No. 2,—

The Chairman: Suppose you just take one sheet No. 2, so we will all have the same sheet.

Mr. Carter: Sheet No. 2 of Sub-exhibit No. 33.

Mr. Crawford: Yes, sir.

Mr. Carter: I am asking these questions because I do not understand it. Now, the tractive power has increased 5.6 per cent. in three years only on the 41 roads. Now, do you mean to say that the average tractive power of the locomotive has increased 5.6 per cent?

Mr. Crawford: The average tractive power of the locomotives reported to us by the 41 roads.

Mr. Carter: That is the average tractive power of each locomotive.

Mr. Crawford: Yes, sir, the average tractive power has increased that much.

Mr. Carter: Have you taken into consideration what has been the increase in the total power on all locomotives on this road.

Mr. Crawford: Not on this calculation. We have the total number of locomotives they have, also the total tractive power they reported. We put in comparison with the coal burned, the size of the locomotive as determined by the average tractive power.

Mr. Carter: Would taking the average tractive power of each locomotive be indicative at all of what we really want to find?

Mr. Crawford: The average tractive power of each locomotive is the measure of its proportionate size in the different years, the proportionate size of the locomotives as used.

Mr. Carter: For instance, here is something which has been worked out; if we take 20 locomotives in 1910, we will say, of 20,000 pounds tractive power, that would be a total tractive power of 400,000 pounds, or an average of 20,000 pounds each; now if in 1912, two years later, we find we have bought ten more locomotives of 25,000 pounds tractive power each, we would find the original 20 locomotives with 20,000 pounds tractive power each, 400,000 pounds aggregate, and the additional ten locomotives of 25,000 tractive power each, aggregate 250,000 pounds, increasing the tractive power to 650,000 pounds in the aggregate; now, dividing that by 30, we find then the average tractive power

of the locomotive in 1912 is 8.03 per cent. greater than in 1910, and that is about as you show. You show 5.6 per cent. Now that would be the average increased tractive power of each locomotive 8 per cent., or 8.03. Now, that is one way of figuring it, but it we take the total tractive power in 1910, of the 20 locomotives, 400,000 pounds, and the tractive power of the 30 locomotives in 1912, 650,000 pounds, we find that the total tractive power has increased 62½ per cent. while, according to your figures, it only increased 8 per cent.

Mr. Crawford: Not the total tractive power. I have not given any figures for the total tractive power. If you have one engine, and made 1,000 pounds, you would have more total tractive power than you had before.

Mr. Carter: What I want to show is the way you have figured this tractive power is hardly indicative of the increase in tractive power.

Mr. Crawford: The way I have figured the tractive power indicates exactly the relative size of the locomotives and—

Mr. Carter: Taking, and averaging, them through.

Mr. Crawford: The relative size of the locomotives in service at one period with the size of the locomotives at another period.

Mr. Carter: But there is this difference when we are talking about percentages, if you take each locomotive in this hypothetical case, you have only increased 8 per cent, but if you take the total tractive power of all, you increase 62½ per cent.

Mr. Crawford: That is so, if you quadruple or quintuple it, you would increase it so many per cent., which would be no measure of the relative size of the locomotive.

Mr. Carter: If you had shown the increased tractive power of all those locomotives on these roads in 1910, rather the tractive power of all locomotives in 1910, and all the locomotives in 1912, it would probably have shown four or five times as great an increase as is shown here. I should presume so, because all of the railroads, I hope, have had sufficient business to justify getting some more locomotives. All we want to bring out, gentlemen, is that figures are figures, and in this comparison, in this hypothetical case of 20 locomotives in 1910, with a tractive power of 20,000 pounds each, it would have been 400,000 tractive power in the aggregate. If in two years we add 10 locomotives of 25,000

pounds each, we have added ten locomotives and 250,000 pounds tractive power. Now, if we find out what the average is for each locomotive, we find in 1910, is was exactly 20,000 pounds, in 1912, it was 21,600 pounds, or an increase of 8⅓%. Now, if we are going to take that method, why, I will confess that the tractive power has increased equivalent to the work of the firemen. But if you take the total tractive power of all the locomotives in 1910, it was 400,000; the addition of the 10 locomotives increases it to 650,000; or an increase in the total tractive power in two years of 62.5%. So you see it is according to how they figure. The firemen have to fire all the locomotives and they have to fire 62.5% more tractive power now than two years ago.

Mr. Atterbury: In your hypothetical case, do I understand you that each fireman fired an engine that was 62.5% greater in tractive power, or each fireman fired an engine that was 8% greater in tractive power?

Mr. Carter: I mean all the firemen to-day, taking this hypothetical case—the firemen of 1912, upon this hypothetical case, instead of firing 8% more tractive power would fire 62.5% more tractive power.

Mr. Atterbury: What is each fireman doing? Is he doing 62.5% more work, or is he doing 8% more work?

Mr. Carter: I think the man that is on the little dinky tea kettle is doing the same. I will confess to that. But if you are to take into consideration the total tractive power developed, the development of which hauls cars, produces ton miles, if you take the total tractive power, it is an increase of 62.5%. But if you simply take the average tractive power of each locomotive it is only 8%. Now, it seems to me that if the total tractive power has in these two years increased 62.5%, that the firemen have to fire 62.5 greater tractive power, even though the average engine is only 8% greater.

Mr. Atterbury: Then, in one case you have got 30 firemen and in the other case you have got 20 have you not?

Mr. Carter: I have simply taken what all the firemen in this movement are firing under in this hypothetical case. Take all the firemen in this movement in 1912, as compared with 1910, —I do not care what the number is—and upon this hypothetical case, if you take the average weight on drivers of each locomotive they are only firing 8% more tractive power, but if you take the

total tractive power of all the locomotives they are firing 62.5% more tractive power.

Mr. Lee: With an increase of how many per cent, in firemen?

Mr. Carter: I don't know. I just want to show you the difference in the results of adopting two different methods. If you adopt the methods taken in this hypothetical case, it only shows 8%. If you adopt the methods that Mr. Lauck adopted, showing the total increase of all tractive power, it would show 62.5%. It shows a different way of reaching conclusions from the same basis.

Mr. Atterbury: Then, another showing might be 66⅔% of the men doing exactly the same amount of work and 33⅓% doing 25% more work?

Mr. Carter: As I said, it was not my purpose to go into that. It was only to show how radically different are results when you adopt different methods of reaching results. Now, Mr. Lauck, in showing the increased tractive power of all locomotives, went to the Interstate Commission records, or, rather, to the reports of the railroad companies to the Interstate Commerce Commission, and found that the total tractive power of all the locomotives covered was so much in a certain year. He went in a later year and he found the total tractive power reported was so much and he found the increased percentage was so much. Now, that was one method. This method, as I understand, that is adopted here would show about ⅛ as much increase as by the other. That is, the increased tractive power say, in the total tractive power of the locomotives were taken and compared with the total wages, the total tractive power would show eight times as much as is shown here in this statement. You take all of the wages of all the firemen and you take not all of the tractive power of all of the locomotives, but the average of certain locomotives, and when we work it out in the hypothetical case, we find that the increase in tractive power of locomotives has been only 8%, whereas, if you take the total it would be only 62½%. I see that Mr. Quick worked this out. You didn't work this out, did you?

Mr. Crawford: I did not personally.

Mr. Carter: If Mr. Quick had taken the total tractive power in 1910 or 1902, or whatever it is, and the total tractive power in 1912, and compared it with the total wages, it would have shown about eight times the difference in the ratio?

Mr. Lee: I don't want to get mixed up in this too deeply, myself, but I call the attention of the Board to the fact that my understanding of this arbitration is that it is for an increase of wages and improvement of working conditions of the individual men, not of the firemen as a whole—it is of the individual fireman.

Mr. Carter: I think that totals are made up of units, of individuals, and if all the firemen in 1912, upon such a hypothetical basis, were firing 62½% more tractive power for all the locomotives, it would be unfair to those firemen t ouse this method of showing the average increase of tractive power per locomotive, which would show only an increase of 8%, while if you take the increased tractive power of all locomotives, that shows an increase of 62½%.

Mr. Atterbury: Do you think it would be fair to take the entire tractive power, and then divide by the total number of firemen each year—would that give you a figure you would consider fair?

Mr. Carter: I think that would be fairer. The reason I am bringing this out a little bit is, I think Mr. Lee, in the early stages of this proceeding agreed with Mr. Lauck that practically all authorities had taken the total tractive power as indicative of the facts.

Mr. Lee: I don't know that I agreed to anything.

Mr. Carter: I think in the discussions between you and Mr. Lauck—

Mr. Lee: I would rather have the minutes and the quotations from past experience.

Mr. Carter: I think you partially agreed that the basis of taking the total tractive power of all locomotives was the one to be adopted.

Mr. Lee: I do not admit that unless I see it. I don't remember. I don't know what you are driving at at all.

Mr. Carter: In the reports of the railroads to the Interstate Commerce Commission, do they report the average tractive power per locomotive, or the tractive power of all locomotives?

Mr. Lee: I really don't know; I am not an expert.

Mr. Carter: (Addressing Mr. Lauck) You are not on the stand, but perhaps I can ask you how they report it.

Mr. Lauck: Total tractive power.

Mr. Lee: Don't they report it in both ways?

(No response.)

Mr. Carter: Don't misunderstand me; I believe that this was honestly done, I believe it is just as honest to figure it this way as the other way, so far as honesty of purpose is concerned, but I want to show you how different the result is.

Mr. Lee: I don't see there is very much difference.

Mr. Carter: About eight times.

Mr. Lee: They are different propositions entirely, Mr. Carter.

Mr. Carter: Where you say wages, and you show the wages as being 100 in 1910 and 110.3 in 1912, don't you take the total wages of all the firemen?

Mr. Crawford: I took the total wages, sir, and divided by the total locomotive miles. That is not the measure of the firemen's wages relative to the other.

Mr. Carter: You considered the firemen collectively?

Mr. Crawford: Quite so ,and I considered all the locomotives owned by each of the railways in the locomotive statistics, dividing the total tractive power by the number and not a comparison of the relative sizes of the locomotives and not how many engines the road happened to have.

Mr. Carter: Did you follow this hypothetical case?

Mr. Crawford: It is perfectly clear to me, Mr. Carter, but we are talking from entirely different viewpoints. You are speaking of the total available power owned by the railway, and I am speaking of the relative size of the average unit owned by the railways at two periods.

Mr. Carter: That is agreed to, Mr. Crawford, and I want to agree that one is just as honest as the other, and I am not trying to show anything that would indicate that it is not; but I am showing what radical differences there are in results reached by two different methods. Now, Mr. Lauck, in his statistics, took as his proposed basis, the increase in the aggregate tractive power of all locomotives. He showed, taking all locomotives—not only the passenger and freight and switching—I think he showed in all the railroads, by taking all the locomotives in 1902 and 1912, as reported to the Interstate Commerce Commission, there was an increase of some 218%—what was it—120%—what was that road that had 218%?

Mr. Lauck: That was on the Baltimore & Ohio.

Mr. Lee: The Baltimore & Ohio left out a whole lot of early arrangements.

Mr. Carter: 120%, or whatever that was. If Mr. Lauck had taken the method adopted by the witness, why, he would only have shown that the tractive power had increased 8%. In fact, we all agree that the railroads had 120% more tractive power, and I am going to suggest that if that is so, based upon the total tractive power, showing the increase of the total tractive power, instead of showing a lesser ratio of percentage than wages, it would have shown an immensely greater ratio of percentage.

We will pass from that. In reaching your average you took a simple average, did you not?

Mr. Crawford: No, sir.

Mr. Carter: Did you take all locomotives of each weight for instance? For instance, you took the Lake Erie & Alliance, so many locomotives of a certain weight.

Mr. Crawford: Each railway reported to us the total tractive power of the locomotives they owned, and the number of locomotives they owned. We have, therefore, what is called a weighted average.

Mr. Carter: Did they show the number of each weight of locomotives that they owned?

Mr. Crawford: No, sir, they showed us the total tractive power of all locomotives and the total number they owned.

Mr. Carter: That would be a simple average.

Mr. Crawford: No, it would not.

Mr. Carter: Suppose they had ten locomotives with 20,000 pounds tractive power and 5 locomotives with a certain other tractive power and so on, that would be a weighted average, would it not?

Mr. Crawford: That must make their total, must it not?

Mr. Carter: The point is this: In the beginning of these proceedings it was insisted that our averages being simple were not proper. Now, I think we took exactly the same method as you did.

Mr. Crawford: No, I beg your pardon.

Mr. Carter: We took the total number of locomotives in a group—

Mr. Lee: You do not understand this, as shown by the statements of your own witnesses.

Mr. Crawford: I do not know what you took. We did not take the average tractive power of the locomotives on a railroad and add that column of figures together and divide by the number of lines to get this average. We took the total tractive power, the total weight of the locomotives owned, and divided by the number owned.

Mr. Carter: Would not that give a weighted average? Say 20 locomotives of 20,000 pounds tractive power each, 30 locomotives of 22,000 pounds tractive power each, and 40 locomotives with 18,000 pounds tractive power. That would have been a weighted average.

Mr. Crawford: Yes, and when you added them all up you would have your total number of locomotives, the total tractive power, the total weight, and you would divide one by the other and get the true average.

Mr. Carter: And, this way you simply took all the locomotives, did you? I want to find out how you did it.

Mr. Crawford: The railways reported to us for example that they had 1,000,000 pounds of tractive power and 100 locomotives. We divided 100 into 1,000,000, or whatever the figures were.

Mr. Carter: That was a simple average, was it not?

Mr. Crawford: No, sir, it was not a simple average. To get a simple average you would have taken the averages of the several classes of locomotives and put them in a column, added those up, and divided by the number of lines without regard to the number of locomotives. In this case we regarded the locomotives.

Mr. Carter: That would be an average of averages?

Mr. Crawford: The average tractive power of the locomotives shown here is the total tractive power of the locomotives owned divided by the number of locomotives owned.

Mr. Carter: But you have not shown here the percentage of increase in the total tractive power.

Mr. Crawford: No, sir, because the railroads are buying new locomotives every day, and the total tractive power is increasing.

We also had another reason. We were unable to find any definite data as to the number of firemen employed, unless we would work it out on a fireman day, or some unit of that kind, which I personally do not care for.

Mr. Carter: You understand then, that if you had taken the total tractive power of the locomotives included, it would have shown a much greater increase of per cent.

Mr. Crawford: It probably would, because the railroads are buying more locomotives. The railroad that formerly had only one locomotive and now has two has a larger percentage of total tractive power; yet the average tractive power may be the same, and this data was worked up to have some connection with the computation which was introduced, which was on the weight of drivers, of individual locomotives, and not on the total weight of drivers of all the locomotives owned throughout the country.

Mr. Carter: Pardon me, Mr. Crawford. Now, if we had been working this up and we had shown the total tractive power in 1910 and the total tractive power in 1912 as compared with the increase in wages, we probably would have shown that the ratio was four or five times as great in tractive power as it is in wages, instead of the reverse, as it is shown here.

Mr. Crawford: I have no knowledge of what you would show by that method of calculation. I was endeavoring to compare the relative size of locomotives in one year, in other words, the relative weight of drivers in one year with the relative weight on drivers in another year.

Mr Carter: I will pass to the next column, weight on drivers. How did you reach that weight on drivers?

Mr. Crawford: The railways reported to us the total weight of all their locomotives, and the number of locomotives; they had so many million pounds of weight on drivers, and that was divided by the number of locomotives.

Mr. Carter: They did not report how many locomotives they had of each weight on drivers?

Mr. Crawford: They did not need to.

Mr. Carter: Then the weight on drivers reported was a simple calculation, not weighted?

Mr. Crawford: A simple calculation?

Mr. Carter: It was a simple one; that is, they took the total weight on drivers of all locomotives.

Mr. Crawford: The weight on drivers shown here is the absolute weight?

Mr. Carter: Of all locomotives.

Mr. Crawford: Of all locomotives divided by the total number of locomotives, and, therefore is the absolutely true average weight on drivers of each locomotive, of the locomotives.

Mr. Carter: Without regard to the fact that one road might have had more big engines than another one?

Mr. Crawford: It did not make any difference whatever, because it is not concerned in the calculation. That calculation was not made that way. We are talking of the reciprocal of things.

Mr. Carter: I was trying to compare the third line, coal consumed, with Mr. Lauck's, but I do not believe I can do it. This 46% increase is per what?

Mr. Crawford: Per engine mile.

Mr. Carter: Per engine mile?

Mr. Crawford: Per locomotive mile. It is unfortunate that that is not carried down, but the heading reads, comparison of average pounds of coal per locomotive mile.

Mr. Carter: And the wages, how was that reached?

Mr. Crawford: The heading also reads, comparison of average wages paid firemen per locomotive mile. That was obtained by dividing the total wages paid firemen as reported by the railways, by the total locomotive mileage, as reported by the railways.

Mr. Carter: That is practically what Mr. Lauck did, I think; and I am trying to ascertain the difference between your figures and Mr. Lauck's figures, and methods. That is what I am trying to find. Do you notice the difference besides—

Mr. Lee: A very decided difference.

Mr. Carter: How did you find these wages?

Mr. Lee: That is the total wages, in each class of service, divided by the mileage made in each class of service.

Mr. Carter: Not by the number of firemen?

Mr. Lee: Not this, no.

Mr. Atterbury: I want to get your viewpoint straight.

Mr. Carter: If I had 20 locomotives of 20,000 pounds tractive power and I bought 20 more of exactly the same tractive power, have I increased the average at all?

Mr. Carter: No, you have not increased the average, but you have increased the total tractive power against the total wages paid.

Mr. Atterbury: That is right, that is perfectly true.

Mr. Lee: This wages is not divided by the total tractive power in this case, though. This is wages per locomotive mile. The wages are not divided by the tractive power.

Mr. Carter: I will ask you some more questions. In these statistics here about wages, etc., you do not take into consideration the increased number of men.

Mr. Crawford: We have taken nothing into consideration but the number of dollars paid to firemen as shown by the rolls of the railway companies.

Mr. Carter: It is simply the cost to the roads of the firemen?

Mr. Crawford: The cost to the railroad company of firemen, as disclosed by their records.

Mr. Carter: If it could be shown that the firemen are working longer hours now than formerly, it would have a bearing here, would it not?

Mr. Crawford: I do not see that it would have any bearing on this statement in any way whatever. This purports to be a statement showing the wages paid firemen per locomotive mile in two periods.

Mr. Carter: All the firemen, per locomotive mile?

Mr. Crawford: The total amount paid firemen divided by the locomotive miles.

Mr. Carter: You do not mean to say that each fireman has received 59% increase?

Mr. Crawford: I know nothing about what each fireman received. I know the total money paid was so much and the total engine miles were so much.

Mr. Carter: You mean—I do not mean to put any words into your mouth, and may be I am asking the questions peculiarly—but do you mean that in 1912 the increase was 59% over 1900?

Mr. Crawford: In 1912, I mean that the statements returned to us by railways show that they paid whatever percentage is shown there in excess of what they paid in the year before.

Mr. Lee: Per locomotive mile?

Mr. Crawford: Per locomotive mile, absolutely. It has noth-

ing to do with the number of firemen or the conditions or anything else; it is merely the money divided by the miles.

Mr. Carter: All right. Now this morning we were speaking about the increase being in proportion to the increased tonnage, etc., or increased tractive power and weight on drivers and coal, etc. That is not upon the supposition that in 1902 the wages were commensurate?

Mr. Crawford: I beg your pardon, Mr. Carter—

Mr. Carter: I mean to say that these comparative statistics are simply based upon what the wages were in 1902?

Mr. Crawford: Absolutely.

Mr. Carter: Without regard to whether they were equitable then or not?

Mr. Crawford: The documents would not disclose whether they were equitable or not.

Mr. Carter: Let us presume in 1902 it was shown that these roads were paying very much lower wages than other roads, presumably on account of the cost of living being so much cheaper in the east than in the west, and since that time it now can be shown that the cost of living in the east is as much as in the west; then would you consider it a fair basis of computing increases in wages?

Mr. Crawford: What as a basis?

Mr. Carter: Let us presume $1.95 or whatever it was, as is shown here were the proper wages to pay a fireman in 1902 in the Pittsburgh district; you did not show it but the witness before you; presuming that was the basis, $1.95, and as we understand at that time the reason the Eastern roads only paid that was because the cost of living was so much cheaper, at least that was the plea that was made when the men in the East asked for more money in those days and showed what the men in the West were getting, which was very much more, and they would say the cost of living is so much less, say in the Pittsburgh District; now the cost of living in the East is just as hgh as it is in the West; would not that indicate that the original basis of $1.95 on which these statistics are shown was hardly the proper basis for you?

Mr. Crawford: It might indicate it to a student of political economy but to a motive power man it is very much involved.

Mr. Carter: Well, the point I want to make is this: Sup-

pose it can be shown that years ago other roads, less prosperous than the Pennsylvania Lines, were paying more wages than the Pennsylvania Lines were paying quite recently, it would indicate then that the original rate paid by the Pennsylvania was hardly a proper basis on which to make these calculations?

Mr. Crawford: Perhaps from view points; but it is too involved for me, because cost of living has not entered into my mechanical department statistics and—

Mr. Carter: Just pardon me. I have got so many leaflets and wings here, that I have lost a memorandum I made, and I think it is hidden in the inner recesses of Exhibit No. 1. You were asked a question this morning about the increase in wages, in proportion to weights on drivers, and so forth. Do you think that the wages have increased in proportion to the productive efficiency of the engine and crew? For instance, do you believe that the road is making any more money, we will say, or the engine crew and engine are producing any more per unit now, than in 1912,—any more than is shown in the increase in wages?

Mr. Crawford: I have been unable to find yet a measure of productive efficiency of an individual man. The ton miles hauled by a locomotive is not a measure, by any means, of the tractive efficiency of the man operating the locomotive.

Mr. Carter: Is there any measure at all that you would decide is a measure of productive efficiency?

Mr. Crawford: There are measures of productive efficiency that can be applied in certain occupations, but I know of no measure of productive efficiency at the present time, to apply to a locomotive fireman. Shall I explain, Mr. Lee, that proposition?

Mr. Lee: Go ahead. Yes.

Mr. Carter: Yes.

Mr. Lee: Give him all you have got.

Mr. Crawford: My reason for making that statement is that I know it is possible for a locomotive, burning absolutely the same amount of coal, doing absolutely the same amount of work, to haul 30% more paying tons than another locomotive of exactly the same class, doing exactly the same thing, with no difference whatever in the work done by the fireman.

Mr. Carter: And conversely that is true?

Mr. Crawford: Conversely what is true?

Mr. Carter: Some man might be getting less for doing the same service?

Mr. Crawford: He may have gotten less for doing the same service. But that is not the point. Using the ton mile as a measure of productive efficiency, and dividing the ton miles by the number of men, firemen or enginemen or any particular class of men, is no measure whatever of what that man contributes to that productivity.

Mr. Carter: That is from the employer's viewpoint?

Mr. Crawford: No, sir, not from the employer's viewpoint at all. It is simply the question of the facilities provided. I can take a train of cars with a given engine, and another train of cars with a given engine, and the productivity, or the earnings of the railway, the paying tonnage to the railway—I do not know about the money earnings, but the paying tons in one train—will be 30% more than the other, and the man won't contribute anything to it—engineman, fireman, shopman.

Mr. Lee: Just explain that a little bit more? Why would that be? How would you do that?

Mr. Crawford: I would do that by loading the train, or by turning out into one of our yards a number of cars. The yardmaster would give one engine, one class H-6-A engine a train, according to the tonnage rating book. It would happen to be made up of all one class of cars, our G-E car, with 30-inch sides, the old car of 30 tons capacity. The other engine, another class H-6-A engine would be given a rating of H-21 cars with 70-ton trucks, what we call our 70-ton car, of which we now have a few, and which some of the other railroads are building. The train made up of G-E cars would have in it about 1,600 tons, 1,680, I think, paying tons of coal. The train made up of H-21 cars, I think, would have 2,160 tons of coal, and the work performed by the engine, the cost of repairs, everything in connection with those two locomotives, would be identical, as near as two things can be—

Mr. Carter: Let us take a common place hypothetical case—

Mr. Crawford: I beg pardon for a moment. If I may go a little further?

Mr. Carter: I thought you had finished.

Mr. Crawford: And of course in daily train service, the increment in tons per locomotive mile, due to the change in the construction of cars, so works out that the average car owned in 1902 on the Pennsylvania Lines West of Pittsburgh, as com-

pared with the average car owned in 1912, shows a clean 7% gain in productive efficiency, without any more output.

Mr. Carter: Taking a hypothetical case, a man hires another man to haul dirt for him and he gives him a one horse cart —that is 1902—and he pays him so much a hundred yards or a trip—that is labor—but he invests capital in the business, and he buys a two horse wagon, and he gives him two big horses, and he says: "Now, because I have given you a bigger wagon, you will haul twice as much dirt and I want to increase your wages 15 per cent." Now, he has to shovel that dirt, you understand. Therefore, because of the investment of capital in the bigger wagon and the more horses, it would be capital that would increase the productive efficiency.

Mr. Crawford: I beg your pardon, but do I understand you to say that the wagon held twice as much?

Mr. Carter: Yes.

Mr. Crawford: And that the man shoveled twice as much dirt?

Mr. Carter: Yes.

Mr. Crawford: Well, in my illustration the man shovels exactly the same amount of coal and the productive efficiency, or whatever you want to call it, has increased thirty per cent.

Mr. Carter: Gentlemen of the Commission, regardless of any statistics offered by ourselves or the other side, we know, and the saying is "when we know a thing we know it," that the big engine of to-day and the two-horse wagon, if you like, burns twice the amount of coal that a 16-inch cylinder on a 80,000 pounds engine of the old days.

Mr. Lee: I would like to have that statement proved.

Mr. Crawford: That is not involved in my illustration. I was using the same identical locomotive.

Mr. Lee: I will call attention to a good many of these statements not made under oath.

Mr. Carter: The immense amount of capital that has been borrowed to buy the big engines indicates that evidently they get more out of the big engines than out of the small engines. That is all.

Mr. Lee: Have you finished with the witness, Mr. Carter?

Mr. Carter: Yes, sir.

Mr. Lee: Mr. Crawford, will you go to the next lot of

statistics—what is your next statement—trips on various railroads? You made an effort to determine whether there was any relation, I believe, between the weight on drivers and the work done by firemen.

Mr. Crawford: Yes, sir. Since these negotiations commenced, I have endeavored personally to ascertain, if possible, the relation between the work done on the two classes of engines. I fully appreciated how much it would mean to the railways and to the men if an arrangement or method could be determined upon which to base wages without such ponderous machinery as we seem to have at the present time. I therefore, with the co-operation of some of the gentlemen from the other railroads, arranged to have special observations made of individual trips on the various railways, to ascertain, if possible, what relation there was in the work done on the locomotives having weights on drivers in excess of 200,000 pounds, and those having weights on drivers less than 200,000 pounds. There is quite a number of these trips—in the neighborhood of 300—reported by the different railways. They start at Sub-exhibit No. 37, Exhibit No. 1, Sub-exhibit No. 37. In the earlier observations or earlier trips observed, it was thought that if we would ascertain the proportion of the time on duty that a fireman was shoveling coal, that would give us some idea, perhaps, of the relative labor performed on an engine in excess of or under 200,000 pounds on drivers; but it developed, that it would be of great value, if we had the total manual labor performed, so, therefore, some of the later trips contain more complete information. These trips are given without regard to tonnage, slow freight, fast freight, although the data is given with the individual trips; but was merely to ascertain whether under all conditions the work on a locomotive weighing over 200,000 pounds was different from the conditions on a locomotive weighing under 200,000 pounds, it being understood that this refers to through freight service; but, in some cases passenger trips were included as a matter of interest; and the less than 200,000 pounds refers to through freight service only, whereas, I understand that the requests submitted requested that two firemen be employed on locomotives weighing over 200,000 pounds in through freight service, regardless of the tonnage hauled, regardless of the time on road, regardless of anything except the one factor, weight on drivers. Therefore, there

is no special arrangement of these tests, other than to indicate the relative work done on locomotives, over and below 200,000 pounds on drivers.

Mr. Lee: Relative manual work.

Mr. Crawford: Yes, relative manual work, and it is given in percentages, the proportion of the time on duty.

The data was collected by observers whose names are given opposite each trip. They were instructed, of course, to use due care, in making an accurate report of what they observed. There were no selected runs. So many trips were taken, and I regret to say that we have not been able to get a good many more on account of the short time.

In addition to the statements, the charts No. 37-A and 37-B show graphically the same information as is shown in the statements. I think there are charts for each one of the statements, except perhaps the Wheeling & Lake Erie Railroad, which information was received too late to permit of charting. The heavy black portion of the chart—

Mr. Lee: At the bottom?

Mr. Crawford: At the bottom,—indicates the proportion of the time on duty that the fireman was engaged in supplying coal to the firebox. The cross-hatched portion shows the total time engaged in hooking the fire, shaking the grate, breaking and shoveling down coal. In some of the statements, that is vertically cross-hatched, and in others double cross-hatched.

The other manual labor is indicated by cross-hatching in a different direction.

Below each trip is the number which refers to the statement, and also a designating line which indicates whether the locomotive is over or under 200,000 pounds on the drivers.

In some of the charts, due to the use of an improper color, the upper part of the chart is shaded more darkly than we desired it.

That part above the cross-hatching indicates the proportion of the time on the road when no manual labor was performed.

The individual trips, made on all roads, were made in approximately the same way, and were reported and tabulated in New York by the Conference Committee.

Mr. Lee: Will you please state again, for the information

of the Board, just what was intended to be shown by these charts and statements? What I am getting at is this: Do these statements show the measure of the work performed by the firemen, or are they only for comparative purposes?

Mr. Crawford: The idea of preparing these charts was to show the relation between the work performed by the fireman on a locomotive weighing under 200,000 pounds on the drivers, and the work which he performed on a locomotive weighing over 200,000 pounds on the drivers, under all conditions of through freight service, disregarding tonnage.

Mr Lee: The relation of the manual labor performed?

Mr. Crawford: Yes.

Mr. Lee: Now, will you please go through some of these statements of all the roads, and some of the Pennsylvania Lines West.

Mr. Crawford: I would say in regard to going through the statements of the roads other than the Pennsylvania Lines West, I do not feel sufficiently familiar with the roads to do so, but representatives of each of the roads are here, who can go into details on their roads.

Mr. Lee: You are sufficiently familiar with these charts, in what they show, to indicate what they show, are you?

Mr. Crawford: Yes. They indicate to me that there is absolutely no relation between the manual labor and the weight of over or under 200,000 pounds on drivers under all conditions of through freight service.

Mr. Lee: I shall be glad to have you call attention to some of these statements.

Mr. Crawford: If the gentlemen of the Board will please turn to the chart on page 39-A—

Mr. Lee: Sub-exhibit No. 39-A?

Mr. Crawford: Sub-exihibit 39-A, Pennsylvania Lines West of Pittsburgh.

The first trip was a trip on which the crew was laid up for rest, but then proceeded, so therefore they carried on the work of the one fireman and the one observer. The second trip—

The Chairman: On what division is that?

Mr. Crawford: The Eastern Division. The first trip and the second trip were made on one of our Class H-6-A locomotives, which weighs less than 200,000 pounds on the drivers, and the

data shown is the amount of time engaged in supplying coal to the fire-box. Unfortunately, on the earlier trips, as I stated before, we did not get complete information.

Mr. Lee: As to duties other than supplying coal?

Mr. Crawford: As to duties other than supplying coal. The next two trips were made on our class H-8 locomotive, which weighs over 200,000 pounds on the drivers.

Mr. Lee: If you will refer to the trip numbers, perhaps it will show in the record better.

Mr. Crawford: On trips Numbers 301 and 302, these trips were made on locomotives weighing less than 200,000 pounds on drivers. On these trips the firemen spent 14.9 per cent. and 16.4 per cent., respectively, of the time on duty in supplying coal to the fire-box.

Trips 303 and 304 were made on one of our class H-8-C locomotives.

Mr. Atterbury: What is this number you are talking about?

Mr. Crawford: Trips 303 and 304 were made on one of our class H-8-C locomotives, which weighs in excess of 200,000 pounds on drivers. The time required to supply coal to the fire-box was in one case 15.4% of the time on duty, and in the other case 17.8% of the time.

The locomotive in trips 301 and 302 would have but one fireman while the locomotive in trips 303 and 304 would have two firemen.

Mr. Lee: You saw, Mr. Crawford, that the engines on trips 301 and 302, under the request, would have one fireman?

Mr. Crawford: One fireman.

Mr. Lee: While on trips 303 and 304 the engines, under this request, would have two firemen?

Mr. Crawford: Yes, sir.

Mr. Lee: That is, the engines with the smaller percentage of work would have the greatest number of men? Is that right?

Mr. Crawford: No, not the smaller percentage, but practically the same percentage. I will then go on to trips 305 and 306. I beg pardon. Are you ready?

Mr. Lee: Go ahead.

Mr. Crawford: Trips 305 and 306 were made—

Mr. Lee: What page?

Mr. Crawford: It is the same page. Page 39. I am reading from the page rather than the graphic charts.

Mr. Lee: Go ahead.

Mr. Crawford: Trips Nos. 305 and 306 were made with one of our locomotives equipped with a stoker and the superheater. These locomotives weigh in excess of 200,000 pounds on the drivers and, on one trip, the fireman spent 1.4 per cent. of his time on duty supplying coal to the firebox. As a matter of fact, in a run of 166.5 miles there was a total of 313 shovedfuls of coal applied to the firebox.

Mr. Lee: By the fireman?

Mr. Crawford: By the fireman. On the other trip .3 of one per cent. of the time on the road was spent in supplying coal to the firebox. On this particular trip a total of 52 shovelfuls of coal was supplied to the firebox, in 166.5 miles. Under the request before you, gentlemen, this engine would also have two firemen. Trips 307 and 308 were on the same locomotive as trips Nos. 303 and 304, and show,—I will give each trip—that 15.5% and 13.9% respectively of the time on duty was spent in supplying coal to the firebox by the fireman.

Mr. Carter: Pardon me. This is a successful stoker trip, is it not?

Mr. Crawford: One of them is what we know as a 99% trip and the other as an 85% trip, sir. On these trips, Nos. 305 and 306, additional data was obtained.

Mr. Atterbury: Did I understand that trips 307 and 308 were with a stoker engine?

Mr. Crawford: No, sir. 307 and 308 were hand-fired. Engine 9930, the same as trips Nos. 303 and 304.

The Chairman: What does it mean then by 85% successful?

Mr. Crawford: Mr. Carter asked me if these stoker trips referred to were successful trips. I said one of them was a 99% and the other an 85%.

The Chairman: That is, 305 and 306?

Mr. Crawford: Yes. Those are trips 305 and 306?

The Chairman: I understand now.

Mr. Carter: 307 and 308 were hand-fired, were they?

Mr. Crawford: Yes, sir; engine No. 9930 is not equipped with a stoker. To give a little better idea of what this meant I had some charts prepared. Here are six of them, Mr. Lee. (The witness produces charts.)

Mr. Crawford: I am very sorry to have to apologize to the Board for not having these exhibits numbered exactly with the trips represented, so I will have to identify them.

Mr. Lee: We would like to number these some way.

Mr. Crawford: I will put numbers on this as I go along, and the remaining copies can be numbered. At the top of the first page of this exhibit I will first describe what this is. On this page is a profile of the railroad showing the grades between Crestline and Pittsburgh. On this division automatic signals are located approximately one mile apart, and the distance between the vertical lines represents the distance between the signals approximately as well as can be done with this very much reduced scale. Each horizontal line above the base line represents one-half minute. The height of the red shaded area indicates the number of minutes required to run between the signal bridges; the blue shaded area represents the number of minutes engaged in supplying coal to the fire; the green shaded area, where it exists on one or two of the trips, indicates that it was a stoker trip, and that it was necessary for the fireman to supply some coal through what we call the deck hopper. I will explain the reason for this a little later, if I may, Mr. Lee, in describing some of the stoker performance.

These diagrams, as I say, refer to these first eight trips, and the one on the top of page 1, is trip No. 306. It shows that in the first mile leaving Crestline, coal was supplied to the fire-box by hand to the scoop. He then ran 50 miles, when evidently a little more coal was supplied with the scoop.

Mr. Lee: Indicated on that line by the mark 140.

Mr. Crawford: Yes, sir. It then ran 40 miles more, when a little more coal was supplied to the scoop. Then we had an arch in the tender, as we call it, and for half a minute he threw some coal in the stoker hopper. That occurred at two other points on the road. Then the last 35 miles, about, without supplying any coal to the fire-box. That locomotive would require, under this arrangement, two firemen.

The trip below that is a hand fired trip running in the same direction, and is No. 304. It shows the relative time for traversing a given distance and the amount of time occupied in supplying coal to the fire-box in that district. Worcester Hill is the ruling grade on that division for east bound traffic. This train was a

light train for the H-8 type of locomotive. Going up Worcester Hill, the ruling grade, it shows that the fireman was occupied about 26 per cent. of the time supplying coal. Notwithstanding that this locomotive had a very low rating, under the request it would still require two firemen.

Mr. Crawford: On the next page, at the top, is a trip from Conway to Crestline.

Mr. Lee: That is in the opposite direction.

Mr. Crawford: That is in the opposite direction, and is trip No. 305. On this trip, which was a locomotive provided with a stoker, it was necessary to supply, in the 166 miles, 313 shovelsfull of coal, and also necessary, on account of the coal arching in the tender, for the fireman to supply some coal to the stoker hopper, which I will explain when I have opportunity. This is page 2. Of course the distance and times are the same as on the other pages; that is, the vertical lines are approximately 1 mile, or, to be more exact, the distance between signal bridges, and each horizontal line is one-half minute. The trip below that is a hand-fired trip, locomotive No. 9930.

Mr. Lee: Just a moment, Mr. Crawford. Did you say the vertical lines were the minutes?

Mr. Crawford: No, the vertical lines, or the distance between those vertical lines represents the distance between signal bridges. Each horizontal line represents half a minute.

Mr. Phillips: The vertical lines represent a mile, do they not? You have ten miles or ten minutes to the block.

Mr. Crawford: Here is one that took just five minutes to run from one signal bridge to another. That is as nearly to the proper scale as it can be made. The signal bridges are not exactly a mile apart. The lower trip on page 2 is trip No. 307, and extends from Allegheny to Crestline, a distance of approximately 190 miles, and is a hand-fired trip, with a moderate train for the time of year. On the upper trip on page 3, is trip No. 302.

The Chairman: 302?

Mr. Crawford: On the top of page 3 is trip No. 302, and represents a trip made by an engine weighing less than 200,000 pounds on the drivers. The trip at the bottom of this page is 304, and is made by a locomotive weighing more than 200,000 pounds on drivers, both locomotives being hand-fired.

Mr. Lee: The upper one is—

Mr. Crawford: The upper one being the lighter locomotive. I would call your attention to the work performed on the lighter engine going up the ruling grade, as compared to the work performed on the heavier locomotive going up the ruling grade.

Mr. Lee: At Worcester Hill?

Mr. Crawford: At Worcester Hill. It is true that the large engine had light tonnage, light enough, I think, to class it as a fast freight run; but under the request the upper locomotive would have but one fireman, while the lower locomotive would have had two requested for it.

Mr. Lee: Would you consider from these two diagrams, Mr. Crawford, on page 3, that the fireman on the upper locomotive did more work than the fireman on the lower locomotive?

Mr. Crawford: I would consider that the work on the upper locomotive was the more difficult, sir.

The Chairman: That is always the case where you overload a light engine, and underload a big engine.

Mr. Lee: Sir?

The Chairman: I say, that is always the case where you overload a light engine, and underload a big engine?

Mr. Lee: Yes, sir. You would have to put two firemen on, in one case, and one in another, if this request were granted.

The Chairman: Oh, yes. I meant as to the amount of work that the fireman has to do.

Mr. Crawford: May I be pardoned a minute to look up the loading on that particular trip? That locomotive had what we know as the B rating.

Mr. Lee: That is the one at the top?

Mr. Crawford: The locomotive on the top of page 3 has 1,380 tons, and the B rating is 1,400 tons. The B rating, as I remember it, is 93% of the A rating.

Mr. Lee: Would you say that was the full tonnage for the weather conditions?

Mr. Crawford: I should say so.

Mr. Lee: Have you the rating for the engine in trip No. 304?

Mr. Crawford: The D rating is the lowest winter rating we have in slow freight. That is 1,150 tons. This had 998 tons. As I explained to you, the tonnage on this was probably such that it could be classed as a fast freight.

Mr. Lee: It would indicate that?

Mr. Crawford: Yes. The trip at the top of page No. 4 is trip No. 301, and is made on a locomotive having less than 200,000 pounds on the drivers.

The trip at the bottom of page 4 is trip No. 303, made with the larger locomotive.

I had hoped to have a larger number of trips over a number of our divisions worked out in this same form, but the time has been too short.

These do not disclose any startling difference in the work done between the larger and smaller locomotives. I will have the sheets numbered if you desire, if the gentlemen have not already numbered them.

Mr. Phillips: I have mine numbered.

Mr. Crawford: I again apologize for that oversight. I have not gotten the remainder of the trips in such detail so it will not take me quite so long to go through the record of them.

Trips 309 to 313 are made on the Western Division, part of them between Cresline and Fort Wayne on the Western Division. They are all made with the locomotives weighing less than 200,000 pounds on the drivers.

The fireman supplied coal in the average of these trips, during 13 per cent. of the time he was on duty.

Trips 314 to 319 are made on a Class H-8-C locomotive, weighing in excess of 200,000 pounds, between Fort Wayne and Chicago, and the fireman was occupied 11 per cent. of the time.

On the smaller engines the average coal supplied by the fireman per minute was 269 pounds; that is, per minute that he actually fired.

On the larger engines the average coal supplied by the fireman was 305 pounds per minute of the time that he actually fired, but on the larger engines he was engaged a smaller proportion of the time.

This coal data was obtained by counting the shovelfulls and allowing 17 pounds per shovel; because we put a ton of coal on the floor and shoveled the ton of coal away, and the number of shovels divided into the ton showed 17 pounds. That was the closest approximation of the coal that we could get.

In some of these other trips where we have shown coal data, it is taken from the coal slips, and the observers estimates on

the Pennsylvania Lines west of Pittsburgh, so far as the coal data is concerned, are the closest approximation we can get for individual trips.

Trips 320 and 321 were made on the Pittsburgh Division of the Southwest system, and were made on the lighter locomotives. When I refer to the lighter locomotives, I mean locomotives having a weight under 200,000 pounds on the drivers.

On these locomotives 16.2 per cent, of the time on duty was occupied in supplying coal.

The next four trips, Nos. 322 to 325, were made on one of our H-8-A locomotives, weighing in excess of 200,000 pounds on the drivers, over the same division, and the time occupied was 15.4 per cent. of the time on duty.

The average coal per trip handled by the firemen on the small engine and the large engine was practically the same, 24,800 pounds in one case, and 24,100 pounds in the other. In the minutes that he fired he had to supply coal a little more rapidly, but he fired less minutes.

On the next page is the record of five trips made with stokers. All of the locomotives weighed in excess of 200,000 pounds on drivers. On these trips the fireman supplied coal to the fire 2.8 per cent, of the time, 1.3 per cent, of the time, 3.2 per cent. of the time, .4 of 1 per cent. and again .4 of 1 per cent. of the total time on duty.

On these particular trips the time that the fireman was engaged in all of his other duties was noted. Trips 332 and 333 cover trips on a locomotive weighing less than 200,000 pounds on the drivers on our Logansport Division, and they show that the fireman was occupied about 17 per cent. of the time in supplying coal.

Immediately below, in trips shown as trips No. 334 and 335, are two trips made on locomotives weighing 113,000 pounds on the drivers, locomotives that are still in through freight service on some of our divisions. They show in one division 12.6 per cent. and in another case 10.7 per cent. The only conclusion which I have been able to draw from these figures is that the difference in manual labor between the large and small locomotives is not sufficiently marked to require—by large and small I again mean over and under 200,000 pounds—is not sufficiently marked to warrant the introduction of the second fireman, and, on loco-

motives provided with stokers, I cannot realize from this data the necessity. On the other railways the trips have been gone into even perhaps more in detail; that was accomplished on the Lines West, and all of the trips of all the railways, if spread out in a line —if you would put these graphic charts side by side and omit the name of the railroad, the division, trip number and size of the locomotive—I think you would have some difficulty in picking out which was which. I would prefer, Mr. Lee and Mr. Carter, if there are any questions about roads other than the Lines West—

Mr. Lee: Any detail questions?

Mr. Crawford: Any detail questions—that you would ask some of the other gentlemen. I think there are in this room three of the observers who made these observations.

(Whereupon a recess was taken for 5 minutes.)

(After Recess.)

The Chairman: You may proceed, Mr. Crawford.

Mr. Lee: On trip No. 331, sub-exhibit 39, sheet 2—

Mr. Crawford: Trip No. 332, I think it is, Mr. Lee.

Mr. Lee: Yes, 332.

Mr. Crawford: The note states they ran light from P. V. Tower to Hartsdale, and occupied 35 minutes.

Mr. Lee: That is P. V. Tower?

Mr. Crawford: I understand so. It was a report which came to me from the Logansport Division, and I do not know the towers. The remainder of the statements, up to sub No. 46, are the statements giving records of the trips made on the other railways than the Pennsylvania Lines West.

No. 46 is what is known as a target diagram, and shows the proportion of the time on duty that the fireman was engaged in all manual labor, in percentages; locomotives weighing less than 200,000 pounds being indicated by dots, locomotives weighing over 200,000 pounds, being indicated by a cross or an "x." The names of the railroads or the divisions, are at the bottom of the page. No. 46-A—

Mr. Lee: What does 46-A show? There are some of these x's in a square.

Mr. Crawford: That represents stoker trips. The key is down at the corner, and some of them, either the dot or the cross, is surrounded by a circle, indicating that assistance was given by the brakeman. This is the same information shown in the other statements, but figured on a percentage basis and plotted in this manner, to show whether or not the crosses preponderate above a certain line or below it, or vice versa, with the dots. In other words, this is to illustrate, if possible, what law can be ascertained to determine the relative work on the basis of over 200,000 pounds and under 200,000 pounds on the drivers. This chart represents the total manual labor, and of course only covers such trips as that information was received for.

Mr. Lee: What does it show, Mr. Crawford? That there is a relation there between the weight on drivers and the work performed?

Mr. Crawford: It is absolutely impossible for me to detect it as applied to this situation. It will be noted that in many cases the dots and crosses intermingle. On some divisions of some roads, the dots are high as the crosses on some divisions of other roads, and as the request is a uniform request for all roads for all conditions in through freight service, this would indicate to me that the request is not borne out by the data obtained.

Mr. Lee: That is the manual labor performed?

Mr. Crawford: Total manual labor. That includes filling the lubricator, on roads where they fill the lubricator, pulling the water scoop on roads where they pull the scoop, sweeping the deck, squirting water on the coal with the squirt hose. Everything.

Mr. Lee: Taking water?

Mr. Crawford: Taking water. Everything that a man does.

Mr. Lee: In the way of manual labor?

Mr. Crawford: In the way of manual labor in working on these trips; everything that can be observed as a time element. No. 46-A is the same information plotted for some of the roads which reported some passenger trips. No. 47 is the proportion of the time on duty the fireman was engaged in caring for the fire, including the time of supplying coal to the fire-box, hooking or scraping the fire, shaking grates, dragging or shoveling coal down and ahead, cleaning fire or ash-pan. In other words, we

separated out the care of the fire, because on some roads the manual labor other than caring for the fire is different, due to their rules and regulations as to filling lubricators, and other things. There are a few more trips, on this sheet, than there are on the other, because we had more reports of that kind.

Mr. Lee: Does this show any relation between the work performed in caring for the fire, and the weight on drivers?

Mr. Crawford: It does not to me, sir. 47-A same kind of a diagram, covering the same items for passenger service.

Mr. Lee: Does that jump around, or is there any law that can be recognized there, having any bearing on the matter as to the weight on drivers?

Mr. Crawford: Not to me, sir. No. 48 is freight service, proportion of time on duty fireman was engaged in supplying coal to fire-box, and with the same method of marking, which has been carried out uniformly in all of these sheets. The key given in the lower right hand corner is the same for all sheets.

Mr. Lee: Is there any relation there, in 48, between the work performed in supplying coal to the fire-box and the weight on drivers?

Mr. Crawford: There is not a uniform relation.

Mr. Lee: There is one uniform thing there, I think. On the lower lines the stoker engines, they all seem to be down low—percentage of time supplying coal to the fire-box?

Mr. Crawford: That is the percentage of time the fireman supplies coal to the fire-box on stoker trips, sir.

Mr. Lee: Even those on the B. & O. seem to be the same, do they not ?

Mr. Crawford: Yes, sir. 48-A is the same information for passenger service; 49 is the coal shoveled per minute firing, the approximate amount of coal shoveled per minute firing, obtained by dividing the coal reported by the actual number of minutes engaged in putting it into the fire-box, opening and closing the doors. Some of the observers can give you perhaps more absolute—or, not "perhaps," but can give you more absolute detail, as to how they did that, than I can. 49-A is the same information for passenger service.

Sheet No. 50 gives some data regarding pusher and helper service. As none of this data relates to the Pennsylvania Road which I am familiar with, the gentlemen from the Erie, or B. &

O., can explain it much better than I can; but it is the same kind of a diagram as the other diagram, and made for the same purpose and the same key is used.

These diagrams show to me a lack of uniformity, which we are endeavoring to meet by so-called uniform conditions.

Mr. Lee: These various tests that you have been speaking about were made in connection with this arbitration?

Mr. Crawford: Yes.

Mr. Lee: Have you any information from tests made previous to this movement, which would tend to confirm these recent tests?

Mr. Crawford: Yes. In 1899 a similar test was made on the Pennsylvania Lines west of Pittsburgh. Unfortunately, on account of the death of one of our officers to whom this data was sent, it has been impossible for me to obtain the original data. I have, however, the copy of a letter written by Mr. G. L. Potter, then General Superintendent of Motive Power, to Mr. M. W. Mansfield, Superintendent, the gentleman to whom the details of these tests were turned over. This letter is dated November 27, 1899. It is addressed to Mr. M. W. Mansfield, Superintendent, and reads as follows:

"For your information would advise that the young man who was appointed to get the information in regard to the amount of time actually required by the fireman in shoveling coal in a trip over the road has made one trip. This was a trip from Allegheny to Crestline of 17 hours duration. During this time he was employed in shoveling coal into the fire box, and in shoveling coal off the top of the tank into the pit about 18 per cent. of the total time; and as soon as we get the information in regard to other trips we will furnish it to you. This is sent to you preliminarily, as I thought it would be interesting to you to know it."

Mr. Lee: Would that indicate that the smaller locomotives in service at that time required about the same proportion of the fireman's time to be occupied in putting coal into the fire box?

Mr. Crawford: Comparing it with the run from Allegheny to Crestline in the trip recently made, the amount of time is practically the same.

Mr. Lee: Was that made on a small engine?

Mr. Crawford: It was made on a Class R locomotive weigh-

ing 113,000 pounds on drivers. I am sorry to say, that I have not the engine number, nor have I been able to get the data for the reasons I have already explained to you.

Mr. Lee: You were on the Pennsylvania Railroad at the time that test was made?

Mr. Crawford: Yes, I remember the test, and endeavored to get the data on account of having remembered it. The original report from the Observer was made to me, and forwarded by me to my superior officer.

Mr. Lee: What was that test made for?

Mr. Crawford: There was a petition from the firemen on our Eastern Division, requesting that on Class H-4 and Class H-6 locomotives two firemen be placed on each locomotive.

The Chairman: This is not a new idea?

Mr. Lee: Oh, no, sir. Do you care to go on with the rest of this, or to be cross-examined?

Mr. Crawford: I think they are so intimately tied together that it would be well to go on.

Mr. Lee: Very well, then, we will take up these general things.

The Chairman: Mr. Carter can go on with his cross-examination in the morning.

Mr. Lee: Mr. Crawford, in your opinion are the large locomotives to-day generally worked as close to their capacity as the smaller engines were ten years ago?

Mr. Crawford: No, sir.

Mr. Lee: Why not?

Mr. Crawford: First, on account of the increased number of fast freight schedules. Second, because the increased density of traffic in this territory has made it necessary to reduce the rating, to enable them to be moved more promptly over the road.

Mr. Lee: The ratings are practically dependent upon the facilities?

Mr. Crawford: Entirely so. I know of a number of examples where the ratings of freight locomotives have been reduced so as to permit them to make sufficiently good time over the road to prevent blocking or interfering with increased passenger traffic, and also to expedite the movement through congested districts.

Mr. Lee: As a general proposition, does your data indicate

that there are less ton miles hauled per pound of tractive power to-day than was the case ten years ago?

Mr. Crawford: As a general proposition, yes, sir.

The Chairman: What was that question, Mr. Lee?

Mr. Lee: Whether or not the data he has would indicate that there are less ton miles hauled to-day per pound of tractive power. That is an indication of the extent to which the engine is worked, I think.

Mr. Crawford: It is.

Mr. Lee: That is a measure of that. That is, the ton miles hauled per pound of tractive power. That would show, then, that the engines are not as near up to their capacity now, as they were in 1902, as a general proposition.

Mr. Crawford: As a general proposition, yes, sir.

Mr. Lee: To your knowledge, is it easier for a fireman to fire on an engine that is loaded to its capacity, than it is on an engine not loaded to its capacity?

Mr. Crawford: I beg pardon.

Mr. Lee: Is it easier for a fireman to fire an engine loaded to its capacity, than it is to an engine not loaded to its capacity?

Mr. Crawford: As a general proposition, the lighter the load, the lighter the work.

Mr. Lee: I do not understand that you desire to convey the impression to the Board that there are no runs where the fireman is hardworked.

Mr. Crawford: Not at all, sir. I can appreciate that there are undoubtedly runs where the fireman has very hard work. But that is no criterion as to what should be done on all the runs on one division, let alone one railroad or fifty railroads.

Mr. Lee: And some of them would be harder than what these tests show?

Mr. Crawford: I have no doubt, sir.

Mr. Lee: You would feel, however, that the 300 trips shown in these statements, are probably typical of conditions on the five or six roads covered by these statements?

Mr. Crawford: I would consider them as typical for the traffic they were handling during this period. Some roads, for instance I have not included any data from our lake lines, on account of the fact that the traffic at this time of year would

not be typical of the heavy work. Immediately on the opening of navigation. I shall have similar information obtained.

Mr. Lee: From your knowledge of conditions in general, and from the tests, experiments, and other information that you have, do you think that weight on drivers is a proper measure of the work of the fireman?

Mr. Crawford: I do not.

Mr. Lee: Do you think in all cases, or do these tests and your other information indicate to you, that because an engine weighs over 200,000 pounds on the drivers in through freight service, it would require two men in through freight service at all times?

Mr. Crawford: I do not.

Mr. Lee: Do your tests and data indicate that there are some instances where the fireman is worked harder on an engine weighing less than 200,000 pounds on the drivers, than with an engine weighing more than 200,000 pounds on the drivers?

Mr. Crawford: I am quite sure that will be found frequently to be the case. On divisions having the lighter power, under 200,000 pounds, the work will require considerably more exertion than on some other division or some other run where the locomotive weighs considerably in excess of 200,000 pounds on the drivers.

Mr. Lee: As a general proposition, Mr. Crawford, would you think that a fireman would do more work in slow freight service than he would in fast freight service?

Mr. Crawford: As a general proposition, yes, sir. In fast freight service he will probably handle a little more coal per hour, but he will be on the road less hours.

Mr. Lee: You had a report made of the time on the road, the amount of coal used, and so forth, for one day?

Mr. Crawford: Yes, sir.

Mr. Lee: What did you find from that statement?

Mr. Crawford: I was endeavoring to find out from that day's record, about what percentage of the locomotives used different amounts of coal per hour. I found that out of a total of 1,140 trips in all kinds of service, except suburban passenger, which was excluded, that on a total of 33 trips, there were over 5,000 pounds of coal used per hour; of these, 16 were in freight service,

13 of the 16 being in fast freight service; one of the trips in freight service was fired by a stoker.

Mr. Lee: Did you find that these were all on large engines, Mr. Crawford?

Mr. Crawford: No, sir, five of the 16 trips in the freight service were on locomotives weighing approximately 140,000 pounds on the drivers.

Mr. Lee: These fast freight trips went over the road in a shorter number of hours than the slow freight trips?

Mr. Crawford: Yes, sir, as a general proposition.

Mr. Lee: While they might be burning this apparently large quantity of coal per hour for this small number of hours, they were doing that in less time than the slow freight trains?

Mr. Crawford: Yes.

Mr. Lee: From your knowledge of the conditions on the Pennsylvania Lines West of Pittsburgh, and from the information you have been able to gather, would you say it is easier to fire an engine on the Eastern Division of the Fort Wayne Railway, which is an undulating division, than it is on the Western Division of the Fort Wayne, which is a more or less level division?

Mr. Crawford: No, sir, I should say that the Western Division would probably be the harder on account of the fact that steam in used more continuously, the throttle is open a greater precentage of the time, and therefore the time for recuperating is relatively shorter.

Mr. Lee: And that would be the case substantially on any division, in comparing two divisions under the same physical conditions?

Mr. Crawford: The work would depend entirely on the topography of the division, and the service.

Mr. Lee: Mr. Crawford, do you hace some engines equipped with automatic stokers on the Pennsylvania Lines West of Pittsburgh?

Mr. Crawford: With the Board's permission, I should like to call them mechanical stokers rather than automatic stokers.

Mr. Lee: A mechanical stoker then? An "automatic" stoker is improper. It is a mechanical stoker, in the present stage of its development.

Mr. Crawford: Yes, sir. We have.

Mr. Lee: How many engines, Mr. Crawford?

Mr. Crawford: There are 153 engines on the line of road, about 100 of which are in service; the last 53 which have arrived from the builders have not all been gotten into service on account of some errors made in the construction of the stokers.

Mr. Lee: Have you any more ordered than those?

Mr. Crawford: Yes, sir; 140.

Mr. Lee: That would make a total of what?

Mr. Crawford: 293.

Mr. Lee: And, in addition to those, will you equip some more at your shops?

Mr. Crawford: Yes, sir. We are equipping three or four at the present time, or two or three, with various types adapted for different purposes. We usually equip one engine at our own shops first, of each type, and then from that try to get the experience to tell us how to fix the rest of them.

Mr. Lee: You have had certain records kept of the trips run with these stokers?

Mr. Crawford: Yes, sir.

Mr. Lee: How are those records made?

Mr. Crawford: For the first two or three thousand trips a stoker instructor made a report in great detail as to the performance of the stoker, the steam pressure and the height of the water in the glass; but, after a considerable number of locomotives were provided with the stoker, the enginemen were requested to note on their work reports, that they make out at the end of the trip, the performance of the stoker, as to whether it did or did not work, and, if it did work, about what percentage, approximately what percentage of the coal was supplied by the stoker, and any comments they had to make.

Mr. Lee: What do your records show?

Mr. Crawford: To February 1st, 1913, we have records of 29,195 trips, of which 18,076 were approximately 100 per cent., or reported to me as 100 per cent.; 21,973 trips ran over 90 per cent.—that of course includes the 18,000 trips; 23,397 ran over 80 per cent.; 24,828 ran over 70 per cent.; leaving 4,367 trips which ran below 70 per cent. In other words, in 15 per cent of the trips which we have made, the stoker has failed to supply 70 per cent. of the coal. On 85 per cent. of the trips, out of 29,195 trips, the stoker has supplied over 70 per cent. of the coal.

Mr. Lee: When were these records started?

Mr. Crawford: The records were started when the first stoker was really put in road service, after the first stoker had gotten over the division and made a real trip.

Mr. Lee: How long ago was that, approximately?

Mr. Crawford: Oh, 1908 and 1909. We have been working with the stoker since about 1904, but I believe that we built 5 all alike in 1908. Before that time they were all different and experimental.

Mr. Lee: To your knowledge, Mr. Crawford, has the use of the stoker been opposed by the firemen?

Mr. Crawford: I have not the slightest knowledge to that effect. In fact, from all that I can learn by inquiry, I have received the most hearty co-operation from the firemen, enginemen, shopmen and officers on the railway.

Mr. Lee: What results were obtained from the stoker on the Pittsburgh Division of the Southwest System?

Mr. Crawford: On the Pittsburgh Division of the Southwest System our earlier stokers were applied. The first stokers were built at our Ft. Wayne shops and applied on our Western Division, but, for shop reasons, the Columbus shops being better adapted, having better facilities, we transferred the building of the stokers to the Southwest System. Therefore the earlier stokers went into service on the Southwest System. I have gotten from the Pittsburgh Division the record of all the stokers on that Division. They have made 18,384 trips, of which 6262 were in passenger service and 12,122 in freight service. Of the 18,384 trips, 12,404 are reported to me as 100 per cent. trips; 1673 between 90 and 99 per cent.; 641 between 80 and 89 per cent.; 714 between 70 and 79; 233 between 60 and 69; 625 between 50 and 59; 112 between 40 and 49; 125 between 30 and 39; 222 between 20 and 29; 65 between 10 and 19; 114 between 1 and 9; 1456 zero—they didn't work.

Mr. Lee: 1,456 trips?

Mr. Crawford: Yes, sir. Of the coal used on the 6,262 trips in passenger service it is reported to me that 93.7 per cent. was supplied by stoker.

Of the 12,122 trips, 80.7 per cent. of the coal used on these trips was supplied by the stokers; 811 of the zero trips were on the locomotives recently received.

Mr. Lee: What result did you obtain on the Logansport Division?

Mr. Crawford: On the Logansport Division, where Indiana coal is used and some of our earlier stokers were put in service, the results were not nearly so good. The trips were erratic. We would have a series of good trips and a series of bad ones.

Experience on that division has led us to take away practically all of the stokers that are on that division and put them on a division where we feel that the grates and arrangements are better suited to the coal that we will burn.

We have an experimental stoker which we hope will meet the Logansport Division situation in using the Indiana coal, and if it does, it will be entirely suitable for use on the other divisions, where other coal is used. In other words, we will endeavor to have the stoker which will handle the worst coal, or the most difficult coal—I will hardly call it the worst coal, but the most difficult coal for the stoker to handle, and then use it for the coal that is less difficult.

Mr. Lee: Does the stoker reduce the grate area?

Mr. Crawford: The early stokers with flat grates figured to reduce the grate area as we ordinarily calculated about 25 to 30 per cent.; but, much to my disgust, the fire burns very actively over the stoker troughs. I wish it would not.

On our later designs we have so changed the grates that the total of the air openings is very close to that obtained on a hand-fired engine.

Mr. Lee: Have you a picture of your stoker there?

Mr. Crawford: I have a photograph of it here.

The Chairman: We will adjourn until nine o'clock to-morrow morning.

(Whereupon, at 4:32 P. M., the hearing was adjourned until Wednesday, March 26, 1913, at 9 A. M.)