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Various pagings.

In Appendix No. 1A, page 29 is incorrectly numbered page 26.

In Appendix No. 3, page 215 is incorrectly numbered page 115.

APPENDIX

TO THE

TWENTY-NINTH VOLUME

OF THE

JOURNALS OF THE HOUSE OF COMMONS

DOMINION OF CANADA

SESSION 1895



OTTAWA

PRINTED BY S. E. DAWSON, PRINTER TO THE QUEEN'S MOST
EXCELLENT MAJESTY

1895

VOLUME XXIX

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APPENDIX

LIST OF APPENDICES—1895.

- No. 1.—REPORT of the Public Accounts Committee with reference to the Fredericton and St. Mary's Bridge, together with evidence adduced before said Committee. *Printed herein.*
- No. 1a.—REPORT of the Public Accounts Committee with reference to the Sault Ste. Marie Canal, together with evidence adduced before said Committee, and exhibits in connection therewith. *Printed herein.*
- No. 2.—REPORT of the Public Accounts Committee with reference to the Tobique Valley Railway, together with evidence adduced before said Committee, and exhibit in connection therewith. *Printed herein.*
- No. 3.—REPORT of the Select Standing Committee on Agriculture and Colonization. *Printed herein.*

58 Victoria.

Appendix (No. 1.)

A. 1895

REPORT

OF

PUBLIC ACCOUNTS COMMITTEE

WITH REFERENCE TO THE

FREDERICTON AND ST. MARY'S BRIDGE

TOGETHER WITH

EVIDENCE ADDUCED BEFORE SAID COMMITTEE

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

PRINTED BY S. E. DAWSON, PRINTER TO THE QUEEN'S MOST
EXCELLENT MAJESTY

1895

Fredericton and St. Mary's Bridge Inquiry.

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Fredericton and St. Mary's Bridge Inquiry.

REPORTS.

COMMITTEE ROOM,
FRIDAY, 14th June, 1895.

The Select Standing Committee on Public Accounts beg leave to present the following as their Second Report:—

Your Committee have had under consideration the items "Fredericton and St. Mary's Railway Bridge Company Loan Account, \$300,000," and "Fredericton and St. Mary's Bridge Loan, \$60,000," set out on page xvi of the Public Accounts of Canada, for the fiscal year ended 30th June, 1894, under the headings "Sundry Investments" and "Interest Special Accounts," and in connection therewith, have examined witnesses under oath, and for the information and convenience of the House of Commons, have agreed to report at this stage of their proceedings the evidence so far given by such witnesses.

All which is respectfully submitted.

GEO. B. BAKER,
Chairman.

COMMITTEE ROOM,
FRIDAY, 12th July, 1895.

The Select Standing Committee on Public Accounts beg leave to present the following as their Sixth Report:—

Your Committee have had under further consideration the items "Fredericton and St. Mary's Railway Bridge Company Loan Account, \$300,000," and "Fredericton and St. Mary's Bridge Loan, \$60,000," set out on page xvi of the Public Accounts of Canada, for the fiscal year ended 30th June, 1894, under the headings "Sundry Investments" and "Interest Special Accounts," respectively, and in connection therewith, have taken further evidence under oath, and for the information of the House have agreed to report such further evidence annexed hereto; and the Committee recommend that the said evidence and that contained in their Second Report, be printed.

All which is respectfully submitted.

GEO. B. BAKER,
Chairman.

Fredericton and St. Mary's Bridge Inquiry.

EVIDENCE

TAKEN BY THE

PUBLIC ACCOUNTS COMMITTEE

WITH REFERENCE TO THE

FREDERICTON AND ST. MARY'S BRIDGE

Fredericton and St. Mary's Bridge Inquiry.

MINUTES OF EVIDENCE

COMMITTEE ROOM, No. 49,

HOUSE OF COMMONS, 21st May, 1895.

The Select Standing Committee on Public Accounts met,

Mr. J. M. COURTNEY, Deputy Minister of Finance, called, sworn and examined.

By Sir Richard Cartwright :

1. You are the Deputy Minister of the Department of Finance?—Yes.
 2. And have been so for the last sixteen or seventeen years?—Yes.
 3. I find here, Mr. Courtney, handed in from your department, a number of communications with the secretary treasurer of the Fredericton and St. Mary's Bridge Co., and also with the Auditor General. Do these contain all the papers of every kind in reference to the Fredericton Bridge in the department?—In the department, yes.
 4. You have no other information of any kind?—No.
 5. I observe that beginning in June, 1888, and going on to December, 1894, you appear to have addressed, pretty regularly every half-year, a request for interest to this company. I find also, if I understand these papers of yours, that no payment for interest ever appears to have been made except apparently what was stopped out of a \$30,000 bonus granted to the company?—I think there were \$3,000 paid.
 6. That does not appear here?—And \$12,000 stopped.
- Mr. FOSTER.—I think that \$3,000 appears in the papers.
The WITNESS.—The \$3,000 is there.

By Sir Richard Cartwright :

7. As far as I can see it is not?—At all events everything was paid up to the 30th June, 1889.
8. The only \$3,000 I can see is apparently \$3,000 which was stopped out of the \$30,000?—Oh, that was the first stoppage.
9. It does not appear from these papers. Looking at them, Mr. Courtney, as far as I can see, that anything at all was paid except what was stopped out of the \$30,000 bonus; that the company never paid a cent out of its own funds as far as these papers show. I perceive the \$3,000, but you will notice——?—That seems to have been stopped there.
10. Then as far as you are aware nothing was ever paid by the company?—I believe not.
11. Except what was stopped?—Except what was stopped.
12. Out of the \$30,000 bonus?—Yes.

By Mr. Davies :

13. How much was that altogether?—\$15,000.
 14. How many years did that cover?—Up to the 30th June, 1889.
- Sir RICHARD CARTWRIGHT.—That would be one year and a quarter.

By Mr. Davies :

15. And since the 30th June, 1889, nothing has been paid?—That is so.

By Sir Richard Cartwright :

16. The sum total of arrears, Mr. Courtney, on the 31st December, appears to amount to \$66,000 by your memorandum?—\$66,000 on the 31st December, and half yearly.

17. Now this correspondence I see extends over some six or seven years. You acquainted the minister of the department from time to time with the fact that these sums were not paid?—Well, with all due respect, is not a communication between the Minister and his deputy rather privileged?

SIR RICHARD CARTWRIGHT.—Does the Minister raise the point?

MR. FOSTER.—I will raise no opposition.

WITNESS.—The Minister of Finance, I believe, was fully aware of the thing.

By Sir Richard Cartwright :

18. There were two or three Ministers of Finance apparently between 1888—? Mr. Foster came in 1888.

19. In 1888, did he?—Yes.

20. I thought he was a year later. However it does not matter. At any rate I suppose as a matter of course you would acquaint the Minister from time to time with the state of affairs?—The Minister of Finance is very well aware of what is in the public accounts.

21. Now, apparently no explanation whatever that I can find in these letters was given by the company as to why they did not pay?—No, none whatever.

22. And apparently they did not always answer your communications?—Sometimes they did and sometimes they did not.

23. Well now, here is a period of six years or thereabouts during which each half year a further large sum of money is accumulating due. Was no action whatever of any kind or sort taken by the department towards the collecting of these moneys that you are aware of?—Beyond the demand every year.

24. Beyond the demand? Well, is it not the practice of the department if these demands are not responded to to communicate with some other department as to the facts; to set the law in motion and collect your just debts?—Well, I do not know of any other thing that is in arrears.

25. Except the Fredericton Bridge?—I think that is all.

26. I think there are some harbour bonds of Quebec that look to me to be in arrears?—That is the only thing besides that.

27. Those two?—Yes.

28. Then no communication at all was had with the Department of Justice? Was this matter ever reported to the Council?—I don't report to Council; that is for the Minister to do.

29. Then no further authority other than the departmental was obtained for abstaining from collecting or trying to collect what is due?—Nothing was done except those two.

30. In the face of 20 or thirty communications made to the secretary-treasurer of the Fredericton and St. Mary's Bridge Co.?—That is all.

31. Did you obtain any information as to who composed the Fredericton and St. Mary's Bridge Co.?—Nothing whatever.

32. You know nothing at all about them?—I know nothing whatever.

33. Of any kind?—Nothing at all, though I may make a remark that the advance is made under Act of Parliament. It shows how the advance should be made and under what conditions.

34. Yes, I am aware of that Do you know whether this is secured by any form of mortgage?—Yes.

Fredericton and St. Mary's Bridge Inquiry.

35. In what shape is it?—I don't know who has the mortgage. I think in this case, if I may be allowed to refer to the Act, it is 50-51 Victoria, I am speaking from memory, but it was under the conduct of the Department of Railways, and on the estimate of their engineer that the work was done and on the deposit of the mortgage the Auditor General was asked to issue a certificate that the money should be paid.

36. But are you aware that the mortgage is in existence?—I know there is such a thing.

37. In what department?—In the Department of Railways and Canals.

Sir RICHARD CARTWRIGHT—Well, I suppose the Department of Railways and Canals will produce it?

Mr. HAGGART—I think it has been produced in the House.

Mr. FOSTER—It was asked for by the House, and it is in the returns to the House, I think.

By Sir Richard Cartwright :

38. Then, Mr. Courtney, in point of fact, you knew nothing about this?—Except those letters.

39. You have no information about the company?—None whatever.

40. And you are not aware that any other steps whatever were taken to collect any portion of this money?—I am not aware of any further steps being taken.

41. And the deed, you say, is in the hands of the Department of Railways and Canals?—I believe so.

By Mr. McMullen :

42. Did the company make any return annually, showing the receipts and the expenditures connected with the operation of the bridge?—I imagine they would do that under the Railway Act and to the Railway Department.

43. You know of none?—I know of none whatever.

44. Then with regard to this item on page XVI of the Public Accounts : How long is it since an account of this kind has been opened? Interest—special account—when was that opened?—I don't know how far the Albert Railway loan goes back, but it must have been open for some years before the Fredericton and St. Mary bridge business came up.

45. Why was it left open until this time? Do you look upon these items that are here as a kind of profit and loss account, or what?—No; they are an asset of the Dominion.

46. Are they counted in as an asset in your balance sheet?—Yes, certainly.

47. And credit taken for them?—Yes; credit taken for them.

48. And the interest is taken also?—The interest is credited to Consolidated Fund and debited to Special Interest account.

49. And the interest is here stated? For instance, \$60,000 Fredericton Bridge Co. is counted in as earning interest and an asset of the Dominion in balancing the accounts of the Dominion, and is deducted when you make the per capita rate of interest of this Dominion?—Yes; certainly.

50. It is deducted out of that?—Yes; certainly.

51. It is deducted out of that?—Yes.

52. How is it about the Quebec Harbour bonds, are they treated in the same way?—I believe so.

53. Well, now, here in these four items there are \$805,000?—I beg your pardon.

54. In these four items there are \$805,000. Now, on balancing the account for the year, is that sum taken as an asset?—I believe so. I could look it up in a few minutes, but I believe it is reckoned off the net debt.

55. Well, we should like to know?—Well, I believe it is so, but I could make sure very soon.

56. This is taken out as an available asset and deducted from the gross debt of this country. Are there any other accounts that stand in the same shape?—Only these four.

By Mr. Mills (Bothwell):

57. Are there other accounts not so included here, interest accounts?—Oh, yes, there are some that are not included in the estimation of the net debt.

58. Now, will you state to the committee the arrangement for including these four items and not including others?—If you will look in the sundry investments consolidated fund investment account, second item, you will find some things. Bank of Upper Canada stock which is absolutely dead and worthless is not included. These four were looked upon as available assets.

By Mr. Davies:

59. Which four?—Three Rivers Harbour Commission, Quebec Harbour Commission, Fredericton and St. Mary's Bridge Co. and Albert Railway Company.

By Mr. Mills (Bothwell):

60. They are taken at par and deducted from the gross debt?—Yes.

By Mr. McMullen:

61. Are you prepared to say that we have no other assets or investments which stand in the same shape as these. Are these the only items we have that are looked upon as questionable whether the Dominion may realize on them?—I do not express any opinion as to whether they are questionable or not. They are the only four items from which nothing has accrued in the way of interest.

62. Still you look upon them as available assets to the extent of deducting them from the gross debt?—We have treated them in that way.

By Mr. Mills—(Bothwell).

63. When was interest paid on the Quebec Harbour Commission bonds?—Well, I could not tell you. I read up the Fredericton and St. Mary's because I expected to be examined on it, but I did not expect to be examined on the others, or I would have looked them up.

By Mr. Davies:

64. Is there anything in the accounts which you could look up now and find out when interest was paid?—I do not think so, I can tell you next day.

65. Do I understand you to say that at the next meeting you will have a statement showing when each of these investments began to get into arrears and how much each of them has got into arrears?—I will get whatever the committee want.

By Mr. Haggart:

66. Have you any other balance sheet than that?—No.

67. None whatever?—That is the balance sheet of the Dominion.

By Mr. McMullen:

68. Since this investment got into arrear has the Department of Finance ever made a report to the Department of Justice with a view to pressing for payment?—Are we not at the Fredericton and St. Mary's bridge business.

Mr. FOSTER—We were on the Fredericton bridge, but we have wandered off on to other things.

Sir RICHARD CARTWRIGHT—We had better confine ourselves to the Fredericton bridge.

By Mr. McMullen:

69. You say in the case of the Fredericton Bridge Company there was no report made to the Department of Justice?—There was no communication with the Department of Justice.

Fredericton and St. Mary's Bridge Inquiry.

70. None whatever?—None whatever.

By Mr. Foster :

71. You say that nothing was paid except what was stopped from their subsidy?—I believe so.

72. That subsidy of course was payable on conditions. They had fulfilled the conditions and at the time when the conditions were fulfilled this subsidy was their money?—Undoubtedly.

73. So that they paid it out of money they had earned. You stated in your reply to Sir Richard Cartwright that the Minister was fully aware of what is in Public Accounts. Will you exercise your memory and inform the committee whether or not you ever made a special report to me upon this matter?—I do not know that I did.

74. Did you ever bring it to my attention at all?—Well, going back six years I would not like to say, but I think I have done so.

75. You have no recollection of having formally made a report or anything of that sort?—I have made no written report.

76. You have pursued the same course with reference to the Fredericton bridge that you have with reference to certain other investments that we may call of a similar nature?—Yes.

77. Can you recall any other investment of a similar nature in which money under an Act of Parliament has been granted for certain objects and money has been paid, and they have fallen int arrear and they are still in arrear?—These three.

78. Have you followed the same course in reference to the Fredericton bridge as to these three?—Yes.

79. You say this is a special account. Did you receive special orders from the Minister to make it?—No; it was just because it was in arrear and it was the only way of dealing with it.

80. It was just done by the book-keeper?—Just by my own volition.

81. Will you say when this Fredericton Bridge Company was put in that special account?—Is there any reason why it was put in as a special interest account?—I do not know how we could otherwise describe it. It was interest due and it was a special account and I do not know how else we could describe it.

82. What I wish to call your attention to is this, and I would like you to think so as to see whether you are certain about that or not. The question was asked whether this \$60,000 of the amount of interest were taken into account when you made up the net debt?—Yes.

83. That is whether or not they were looked as assets and subtracted from the total of the gross debt in order to give the net debt. Are you certain that they were so subtracted?—I would not like to say I am quite certain. I believe so. I said I could find out in ten minutes.

84. I think you will find they are not. It is a very important point.—I believe the \$60,000 was.

85. I think we had better send for Mr. Dickieson so as to be sure. It would be better to have a decided answer on that?—Yes.

By Mr. McMullen :

86. The Deputy Minister said they were?—I said I believed so.

87. If the deputy is right I have had a wrong impression, because my impression is that they have been in that special account and were not looked upon by the Dominion book-keeper as reliable assets and were not subtracted?—I think the \$60,000 were.

88. With regard to this interest on the Fredericton bridge, Mr. Courtney, do you think that it could remain in arrear for six years and the Minister of Finance not know anything about it?—I don't see that I can give an opinion on a suppositious matter.

Mr. FOSTER—You need not follow that subject. The Minister of Finance did know. There is no necessity for getting evidence upon that.

Mr. THOMAS TEMPLE, M.P., called, sworn and examined.

By Sir Richard Cartwright :

89. Mr. Temple, you are the member for the county of York, N.B., I think?—I think so, sir.

89. You are also, I believe, a shareholder in the Fredericton and St. Mary's Bridge Co?—Yes.

90. Can you inform the committee what is the total capital of that company?—Well, I know the cost of it.

91. I mean the total, nominal capital of the Fredericton and St. Mary's Bridge Co.?—I think it is \$400,000.

92. \$400,000?—With power to extend it to \$500,000.

SEVERAL MEMBERS—We cannot hear the questions or the replies.

93. Well, I will just repeat the question. Mr. Temple, what is the nominal capital of the Fredericton and St. Mary's Bridge Co., as far as you remember?—I think it is \$400,000 with power to extend to \$500,000, I think it is.

94. Can you tell the committee how much of that capital has been paid up?—I think it is all paid up.

95. All paid up?—Yes.

96. \$400,000?—Yes. The cost of the bridge, which is all paid into the treasury, and all paid out again.

97. The whole \$400,000 has been paid?—It is more than \$400,000. It is \$418,000 or \$419,000.

98. Do you refer now to the capital of the company?—I refer to the cost of the bridge.

99. What we want to know, sir, is the amount of capital of the company which you say is \$400,000?—That is the capital. It is the amount paid under the contract that we gave out.

100. That is not exactly the same thing?—That is the amount, and I don't think there was more paid up than what has been paid out.

Mr. GIBSON—Not very well.

WITNESS—We borrowed the money, of course, and paid it up, I can tell you that.

By Sir Richard Cartwright :

101. How was this capital paid up?—Paid up in money.

102. Did any of it come out of the pockets of the shareholders?—Some of it did.

103. Some from the pockets of the shareholders and the remainder from the Government, a gift?—A gift?

104. Or loan?—It was a loan; borrowed money under a mortgage.

105. I see. That is the way the capital was paid?—How do you get money?

106. Then, Mr. Temple, as I understand you, when you state that this \$400,000 of capital is paid, you mean that it was paid in this way; a certain proportion was paid by the shareholders, so to speak, out of their own pockets, and the remainder by a \$300,000 loan from the Government?—Yes.

107. Well, do you consider?—Not the remainder; that's not all of it.

108. At any rate in what you would call a payment this \$300,000 is included, this \$300,000 of Government loan?—Yes; that is included, certainly,

109. Then I understand you to say that you consider the entire amount of this capital to be paid up?—I do.

110. And no further liability to exist on the part of the shareholders?—No, only the Government. They are liable to the Government, that is what they are.

111. The shareholders in their corporate capacity may be, but not in their individual capacity, if your contention is right?—Not at all, according to the law. The Government has a mortgage on the undertaking, which they can take any time they like; but I think if you will allow me to speak one word—

112. Go on.—I think it is rather premature of the Opposition, on behalf of the Opposition, I might say, to press this thing just at the present time, when there is every prospect of something being made out of the undertaking.

Fredericton and St. Mary's Bridge Inquiry.

113. We shall be all delighted to hear it, Mr. Temple.—And I think it is, as I said before, rather premature to undertake to press the Government to take from the company the bridge in the present prospect. That is my idea about it.

114. How long do you consider a debt should hang before the Government should press it?—Well, of course, under the law, the Government can step in at any time and take the bridge any time they like, and what property we have got in it. The company has \$120,000 in the construction and they could take that, and pay their interest out of it, and what little would be due us would be a small thing if they choose to do it, but I think it would be not a wise undertaking to do it at the present time.

115. Of course your remarks are entitled to all consideration, Mr. Temple.—Yes, well, so are yours.

116. I am not receiving as much consideration from the Government perhaps?—I don't know about that. I think the Government has been pretty stringent with us. I can tell you something more. They had got us pretty well cornered before the bridge was completed at all, before it was almost started, the little money we drew they charged us with \$3,000 interest. I thought they might have waited until the thing was completed. So, I think they have been tight enough to us. That is what I think about it.

117. I understand that came out of Government money; that did not cost you much?—Did not cost us much, probably not.

118. This is a matter of some consequence and you want to be careful about it.—There is no mistake about that. I feel it so.

119. Did you collect in the shape of calls?—In the shape of tolls.

120. In the shape of calls?—In the shape of calls?

121. 20 per cent of this \$400,000?—Well, I don't know whether it was in the way of 20 per cent of the \$400,000.

122. Well, in the shape of calls.—There was \$20,000 in the first place paid in.

123. On \$400,000, that would be 5 per cent. What other calls were made. Have you told us?—On \$200,000, I think. No, the first capital (after a pause) I am mistaken about that. The first paid-up capital would be \$200,000, what I mean by subscribed stock.

124. Then the nominal capital was \$400,000 and the subscribed capital \$200,000?—Yes.

125. Any other call ever made?—There were moneys called to be paid after the other money was all paid, out of which, as I told you before, I think there is a debt due the company—at least they have in it something like \$120,000, and I think there is some other property that they bought last year. I have not been there for a year, and I could not tell how to make that, and I think myself there is some other property.

126. Just let us adhere to the call. In the first place were there any other calls to your knowledge except this first ten per cent?—Well there was money paid by the company, but I could not tell you exactly how it was called in, because that was only \$20,000. Then there is \$100,000 paid by the company besides that. There is \$100,000 more than that paid by the company.

127. Paid in various ways. Do you remember, as a matter of fact, whether there was not another call than the first call of ten per cent that was paid?—I don't know as it was done in that way. I know they paid \$100,000.

128. That we will attend to afterwards. But so far as you know there was just this one call made?—Yes.

129. So far as you know? Now, Mr. Temple, can you tell us who are the shareholders of that company?—Well, there are some of the first names that are out. It has got down now to Mr. Gibson.

130. Yes.—Mr. Temple.

131. Yes.—F. S. Hilyard.

132. Who else?—Alfred Rowley and Alexander Gibson, jr.

133. The Secretary-Treasurer, Mr. Vanwart, still continues I suppose?—Yes, I think so, but I do not know; I have not been there for a year.

Mr. DAVIES—What is Vanwart's name.

Sir RICHARD CARTWRIGHT—Vanwart, I think, is the name.

WITNESS—Yes, Vanwart.

134. How much stock do you hold in this company?—I could not tell you just now.

135. Not even approximately?—Each one at the time twenty per cent, I think it was.

136. It was divided into fifths, in fact?—I think it was done that way.

137. I see. But you do not know how much you held yourself?—I could not tell you just now, I could not be clear about it. I don't hold the whole of it fortunately.

138. Of what you originally took or the whole stock?—I don't hold all I originally took.

139. Do you know how much the others held?—No, I do not know what they hold, I know what I held myself.

Sir RICHARD CARTWRIGHT—Then I think we will have to send for the Secretary-Treasurer and order him to appear with his books in that case.

140. Were these the original stockholders?—Yes, these were the first.

141. These five gentlemen, Mr. Hilyard, Mr. Rowley, yourself and the two Mr. Gibsons?—I could tell you when I come back myself. I am going over to-morrow.

By Mr. Mills (Bothwell) :

142. Is Mr. Vanwart a stockholder?—No.

Sir RICHARD CARTWRIGHT—As I understand these five whose names have been given are the stockholders.

WITNESS—No.

Sir RICHARD CARTWRIGHT—At present Mr. Temple does not know whether any other call was made excepting the first one of ten per cent. (To witness). Mr. Temple, you stated just now that the company had put in \$120,000?—That is something near it. I would not say exactly; I think it is something near that.

143. Oh, by the way, with respect to this you wish to amend your first statement that there was \$400,000 subscribed capital. The nominal capital is \$400,000, but the subscribed stock is only \$200,000?—Only \$200,000.

144. So that each of you would own \$40,000 roughly?—Well, probably.

145. Now, with respect to this other \$120,000, Mr. Temple. That \$120,000 is exclusive, I suppose, of the \$330,000 you received from the Government?—\$330,000?

146. Yes?—No, there is \$15,000 paid or deducted from the moneys received from the Government.

147. Which you include in the \$120,000 paid?—Not the \$15,000, but the \$15,000 of that bonus goes into that account.

148. Into the \$120,000?—Yes, that goes into the work.

149. Then as I understand you the company put \$120,000 in. The government put \$330,000 in, less \$15,000 for interest?—That is it.

150. That is \$315,000?—Yes.

151. From what source was this \$120,000 derived?—From what source?

152. Yes.—Why from the pockets of the company, if that is a source. It might be got by notes from a bank.

153. You told us that \$20,000 of it was got by a call?—Pardon me, for one thing there were \$50,000 of bonds.

154. How much?—\$50,000 are bonds and \$20,000 call, you say. The other \$50,000, you do not know how this was advanced?—It was advanced in money.

155. Yes, but it was not apparently advanced in money?—It is all in the report of the Railway Department. The whole thing is there, stock and everything in that report.

By Mr. Haggart :

156. The details of the expenditure and of the stock paid and everything?—All the details and everything.

Fredericton and St. Mary's Bridge Inquiry.

By Sir Richard Cartwright :

157. It does not contain such details as the names of the stockholders for example ?
—What is the matter with that.

158. We want to know who they are ?—I have told you who they are.

159. Nor I presume would it show in what manner this other \$50,000 was obtained. You had apparently about \$40,000 originally of this stock ?—I forget whether it was \$40,000 or \$50,000,

160. But somewhere in that vicinity ?—Yes.

161. It was divided into fifths or something of that kind. With respect to that did you pay any cash on the call that was made ?—Yes, I did.

162-3. That would be \$4,000 or \$6,000 ?—Paid out of the British Bank.

164. You say that this road altogether cost you about \$418,000 ?—Something in that neighbourhood I think, or it may be a little more now. That is to capital account. I think there is some property we have been dickering about for the last two or three years, about \$4,000 or \$5,000. I think they have closed last fall, but it is not in this account you are speaking of now.

165. I am speaking of the original account. The cost you say was \$418,000 ?—About that. Between that and \$420,000.

166. Even taking the amount of \$15,000 from the Government grants or loans of \$330,000, that would show that the Government had advanced \$315,000 of that and that would leave only \$103,000, you see, instead of \$120,000 as you said put in by the company ?—Certainly, you are right there. I think it is \$105,000. Yes, \$118,000. I was reckoning it \$120,000 when I said it was \$105,000 with the \$15,000 taken off.

167. You spoke of the company having put in \$120,000 ?—\$118,000 or \$120,000, but I was reckoning on \$120,000. That would leave to the company \$105,000.

168. Then the company could only put in \$103,000 or \$105,000 not \$120,000. You stated that the company had put in \$120,000. You also stated that the cost of the bridge was \$418,000. And if you deduct \$315,000 which was obtained from the Government that would only leave \$103,000 not \$120,000 ?—You are right there. There was \$120,000 they had in originally. I am speaking of the cost of the bridge, including that \$30,000. That is what I am speaking of.

169. You are speaking of the cost of the bridge including the \$30,000 ?—That is what I am speaking of. I told you before that \$15,000 was in that to be deducted from that \$120,000.

170. Then the company would only put in, so to speak, \$90,000, plus, if you choose, the \$15,000 which was afterwards deducted from the \$30,000 grant ?—Well, do not you think that would be quite enough to do for the interests of the people and for the individuals to lose themselves ? I think it is quite enough.

171. Well I recollect what a splendid speculation you proved it to be on the floor of Parliament ?—Oh, that is gone by. You have lots of money sunk in Ontario.

172. I am not so sure of that. I was pointing you out as being a remarkably astute man of business ?—Thank you.

173. I am glad to find we are getting on so well ?—Now I will tell you about that. If the C. P. R. had carried out their contract —

174. You would have made a fine thing out of it ?—I do not know whether we should have made a fine thing out of it, but it would have been a good thing for the country. If they had carried out their contract by building that third section across there it would have paid the Government and the company.

By Mr. Gibson :

175. That is the missing link ?—That is so. They built into the St. John and Main Line and then they abandoned the third section. It was laid out in three sections. They built two sections, but when they came to the Harvey section across from there to Moncton they left the Government and the company with the bridge on our hands.

By Sir Richard Cartwright :

176. You were left in fact?—Yes.

177. And that handsome profit you were to have made did not materialize?—Did not materialize.

178. Then the sum you put in was \$103,000?—Yes, or \$105,000.

179. Well, we will not split hairs over that 3 or 5. That would leave, apart from the call of \$20,000, and the bonds of \$50,000, it would leave \$30,000 to be accounted for?—I do not know how you are going to account for it, other than that it was paid out.

180. It might have been obtained on your original notes?—That we had to do.

181. Who are these gentlemen, Mr. Hillyard and Mr. Rowley?—He is a clerk in some establishment up there.

182. What is that?—He is a clerk, a very decent man and a man of some means.

By Mr. Davies :

183. Whose clerk?—He is a clerk I say, in some establishment there in Fredericton. He has been in Fredericton and also Mr. Gibson's clerk.

184. And Mr. Hillyard?—Mr. Hillyard is my son-in-law. That is what you want I suppose, and I am not ashamed of it.

By Sir Richard Cartwright :

185. Not in the least, we only want to know, having an interest in the solvency of this company, who they are?—Oh, well the bridge is worth the money. I think so. I hope we will all get something out of it yet.

186. \$360,000?—Oh, it is only a bagatelle. Look at the millions sunk in Ontario. Millions sunk in Ontario only in water in canals.

187. Millions have been sunk in canals, do you say?—It is a good thing for New Brunswick to have something.

By Mr. McMullen :

188. Do you refer to the Tay Canal?—No, I do not refer to anything.

By Mr. Gibson :

189. You wanted your share?—I beg your pardon.

By Sir Richard Cartwright :

190. It may be a question as to whether you have got your share in Fredericton which might be a matter of calculation, but we will waive that question. Do you remember yourself, Mr. Temple, what place these \$50,000 bonds you spoke of as having been issued occupied? Are they a second mortgage?—I do not think it. I wish they were. I mean I wish they were a first mortgage.

191. You mean they are a second mortgage?—I think so. I know in the Act the Government were to have a first mortgage.

192. I suppose the Government might make it a first mortgage?—I think they are lying in the bank at the present time.

By Mr. Mills (Bothwell) :

193. But they must be owned by somebody?—I told you as far as the bonds were concerned they were given for a certain time. That time expired and the bonds were taken up by the company. They had to be. The bonds were guaranteed and the money had to be found some other way. They say it is no debt against the company at all. It is a debt against the company.

Fredericton and St. Mary's Bridge Inquiry.

By Mr. Gibson :

194. You say that these bonds were redeemed by the owners of the bridge and that \$50,000 was paid to redeem these bonds?—Yes.

195. They were taken up by the company?—Yes.

196. And they are only occupying the place of a second mortgage against the bridge?—Well that was all it was, but they were guaranteed as I told you by the individuals of the company.

197. But seeing that they occupied a secondary position to the Government claim how did you come to occupy the second position and not pay the Government?—Because we wanted to take up these bonds.

198. But you say they were a second mortgage?—Supposing they were.

199. What about the Government mortgage bonds?—They have their remedy. They have their remedy to step in and take it any time there is default in the payment of interest. The Government has their remedy under the law to step in and take all the property connected with it.

200. But they have been six years in this position?—I cannot help that, if it is ten years, it is just so. There is a law that provides for it.

By Sir Richard Cartwright :

201. Mr. Temple, what roads use this bridge at the present moment?—Well, at the present moment prospects look a little better for the bridge. The C. P. R. has commenced to use one end on the other side of the river, on the east side. Fredericton is on one side and St. Mary's on the other.

202. The C. P. R. is commencing to use the bridge. What other roads use it?—The Canada Eastern connecting with the Intercolonial.

203. The Canada Eastern? What length is that?—169 miles, I think, something like that.

204. Where does it run from?—Chatham.

205. Chatham to where?—Fredericton.

206. And crosses this bridge?—And crosses this bridge.

207. Any other road?—Not at present. There are other roads now in contemplation. The Central Road, I think, will be able to now.

208. But as a matter of fact—?—There seems to be a prospect of something being done now.

209. As a matter of fact at this present moment the Canadian Pacific is beginning to use it, do you say, and the Canada Eastern has used it all through?—What I think makes me speak more confidently about the prospects, I know from the one road, the Canada Eastern, last year, I think it is, I see by the account it is something like \$1,500 more than it was before—the tolls.

210. On which, on the Canadian Pacific?—No, on the Canada Eastern.

211. What were the total tolls do you say?—I cannot exactly tell you; between four and five thousand dollars last year.

212. And you don't know what was received from the Canadian Pacific?—Nothing yet.

213. That is in prospective?—Yes.

214. I think I shall have to move that your secretary-treasurer be summoned and bring his books with him?—I don't know whether you can get him or not. I don't know about that.

215. We have the power. I want to know what the company's position is?—I have told you all that anybody can tell you about the position.

Sir RICHARD CARTWRIGHT.—I think the secretary-treasurer and his books would tell us a good deal more.

By Mr. McMullen :

216. Now, Mr. Temple, from the report you sent in the cost of the bridge was \$419,486? That is according to the report of the Minister of Railways?—Oh, you have that. I thought you had not it at all.

217. Well, it is according to your own report to the Minister of Railways?—Yes.

218. And the capital stock subscribed was \$200,000 with 10 per cent to pay. That is \$20,000?—Yes.

219. Now, you borrowed \$300,000 from the Government and you got \$30,000. Well, only \$15,000, \$15,000 you say, of that went to pay interest. That is \$335,000. Then there was \$50,000 of bonds issued?—Yes.

220. That made \$385,000?—Yes.

221. Well, now have you not a floating debt?—I think there is.

222. How much is that?—The company is liable for it.

223. We know all that, but we want to know what your floating debt is?—I think it is about \$19,000.

224. That makes \$404,000 counting all the items?—Yes.

225. That only includes \$20,000 of cash. You have altogether received \$404,000 while your bridge cost \$419,000. How did the \$105,000 go into the bridge in the way you say it has done?—How do you suppose it was built? Without money?

226. I am now counting the money. I am pointing out where you got the funds?—You are a man of good judgment, I have no doubt at all. I suggest you go down and look at that bridge and see what is in it. It could not be built without money or built for the amount of money which I have stated.

227. I am only merely wanting to know where the money went to, Mr. Temple?—It went into the bridge. If you want to know anything, that is where it is.

228. According to your own report the bridge cost \$419,486. Well, you had \$20,000 of paid up stock, you have got \$315,000 from the government, you issued \$50,000 of bonds, you have \$19,000 of floating debt; that makes \$404,000, including the paid up stock. Where did the other go? Deducting \$20,000 from the \$105,000 would leave \$85,000. Where did that go to?—Went into the bridge.

229. It could not?—I can't tell it went anywhere else, I am sure about that.

230. According to your report, your bridge cost \$419,000. Where did the \$85,000 go to. You say this was paid and you ought to know what was done with it?—(No answer.)

By Mr. Haggart :

231. Did you give the contractor for the bridge any bonds?—Gave him \$50,000.

By Mr. McMullen :

232. The contractor holds \$50,000 does he?—No, he does not hold it. We took them up afterwards.

233. Including all these your sworn report to the Minister of Railways declares your bridge cost \$419,486. That is what it cost. You have got the items I have mentioned to you including your floating debt which makes \$404,000 of actual money?—Yes.

234. Now you say there was \$105,000 paid into it. Where has the money gone, that is what we want to know?—I cannot tell you where it has gone, only it has gone into the bridge, nowhere else.

235. Gone into the bridge?—I do not know where it could go, but to the bridge. Except that, I don't know where it has gone; I have not got any of that money.

236. I am pointing out the items of the cost of the bridge?—I cannot answer you in any other way, but that I don't know where it has gone, any other place; I know I have not it.

237. Are you prepared to say, Mr. Temple, what has been the annual receipts in the way of tolls since the bridge was built?—Just another moment.

The CHAIRMAN—The returns will show that.

WITNESS—The returns.

By Mr. McMullen :

238. I want to know if it is here. The return does not show last year. You say you make a sworn return that the cost of the operation is \$2,000?—That is some repairs.

Fredericton and St. Mary's Bridge Inquiry.

239. You make a return that the cost of the operation of the bridge is \$2,000, and you make a return that the earnings by tolls are \$2,000?—Yes.

240. Not a dollar over, or a dollar under, or a dollar less? Now, how is it that the earnings and the tolls just amount to the same thing?—I cannot tell you just why it is. The interest was paid on these bonds out of the earnings.

241. Oh, the interest was paid on the bonds out of the earnings?—Yes, for \$50,000.

242. Who held them at the time the interest was paid?—The bank.

243. They were deposited as collateral security?—Yes.

244. To what?—To what?

245. What, were they collateral security to the notes that were in the bank?—Oh, yes, I did not understand you.

246. The notes that were in the bank?—Yes.

247. And you paid interest on the bonds, on the \$50,000 of bonds out of the earnings?—Out of the earnings.

248. They were a second mortgage on the undertaking; the government held the first, did they not?—Yes.

249. Well, now, you paid interest on the second incumbrance, but you paid none on the first?—You are right.

250. That's right. And at the time you paid the interest on the second incumbrance they were in the bank as collateral security—the notes of the company?—Yes, that is the way we raise money sometimes you know, when we get stock.

251. It was the most urgent, I suppose. The interest on the \$50,000 was more pressing, you understood it to be so?—Certainly, there is no doubt about that. It was an individual liability.

By Sir Richard Cartwright :

252. You stated, Mr. Temple, that you paid the contractor partly in cash and partly in bonds?—Yes, sir.

253. Those bonds ran for what length of time, five years?—I think it was five years.

254. So that when you stated the total cost was \$419,000, it was \$419,000 not paid in cash, but paid to the extent of \$320,000 let us say, in cash, and \$50,000 in second mortgage bonds, having five years to run?—Yes.

255. That is the contract made by you five years ago?—Yes, but that was still a debt just the same as money, because they had to give a guarantee.

256. I am aware it was a debt?—Not against the government.

257. But you, as a man of business, Mr. Temple, will understand this that when a bridge is built and when the payment is made, not in cash, but partly in second mortgage bonds, that there is in most cases a pretty handsome discount also?—I don't say whether they were second or first. They were given, I think, before the mortgage was given to the government. They stand in that way just as I have told you; but, of course, afterwards the mortgage was given to the government, and which I consider of course they had the first lien on it under the law. That is the way the matter stands. I don't know whether it was a second mortgage or not, I cannot tell you that.

258. The Department of Justice can inform us. But the point I call your attention to is this—or rather the attention of the committee to is this—the payment made was made no doubt largely in cash, that cash being the amount handed over by the government?—\$350,000 was the contract, that was just for the superstructure and the piers.

259. Well, that will just equal the government loan and the government gift and your \$20,000 subscription to the first contract?—Yes, I suppose.

260. And the \$50,000 was for extras, but that is not quite the same, you see?—Extras? There are no extras. There are two miles of road to build and all the approaches.

MR. HAGGART—Besides giving the bonds as personal guarantee to the parties you have had to take them up and pay them?

SIR RICHARD CARTWRIGHT—They had to take them and pay them five years afterwards. (To witness.) The bonds running five years. What rate of interest did these bear?—6 per cent.

261. Still bonds running for five years, and second mortgage ones, as I presume they would prove to be?—But they were guaranteed, as I told you on the back of the bonds by the individuals.

262. By the individuals?—So they had to take them.

263. They would be fair security, but they would not be absolutely the same as cash in the contractor's hand, although I suppose he could obtain advances on them?—I guess he did that, anyway.

264. If he had good paper, Mr. Gibson's and your own endorsation, I suppose he would?—I would like to have yours on it.

SIR RICHARD CARTWRIGHT—That is more than I would, under the circumstances.

Mr. EDWARD JACK called, sworn and examined.

By Mr. Foster :

265. Did you come here with the purpose of giving testimony with reference to this matter, that is, I mean, when you left Fredericton?—No, sir, I came here with regard to the Grand Falls Water Power Company.

266. And since this matter came up, you recollect me asking you if you would be willing to give testimony with reference to the bridge, and on your saying that you would I intimated to you that you would be called before the committee?—I told you I would give such testimony as I could.

267. What is your profession?—I am a land surveyor, an explorer of timber lands.

268. You are well acquainted with the province of New Brunswick and the section that lies contiguous with and what may be called in a business sense tributary to this line of communication?—I am well acquainted by personal travel with the whole district.

269. Instead of me asking you a lot of individual questions, would you give your views as to what would be the probable traffic and of what kind, that would find its way over this bridge naturally in the course of development, coming from the roads that centre upon it, and business accruing therefrom?—I cannot give the probable traffic. I cannot say that, but I can say this, that the best forests in New Brunswick, that is to say, those on the Miramichi, are, or will be, wholly dependent upon this bridge. Not only that, but one-third, I think nearly one-third, of the people of New Brunswick when going to Boston or New York will shorten their distance about seventy-six miles by taking the Gibson Road and the Fredericton Bridge rather than by going by the Inter-colonial.

270. Can you state your reasons for that?—My reasons—a glance at the map will show the reasons. I have a map here. The Gibson Road passes about through the centre, or nearly so, of New Brunswick; beginning at Chatham, or below Chatham on the Gulf of St. Lawrence, it connects with Fredericton and the connections with the United States, thereby connecting the Gulf of St. Lawrence, or a large portion of the Gulf of St. Lawrence, with the United States, in the readiest way. Now, the counties which will be benefited by this road are Restigouche, Gloucester, Northumberland, part of Kent, part of York, and part of Sunbury. There are fifteen counties, I think, in the province. Quite a change has taken place in business in the maritime provinces and elsewhere. Lumber that went wholly by boat, by schooner to the markets of the United States, now wholly goes by rail, and I am informed by Mr. Wm. H. Gray, of 71 Kirby Street, Boston, a large lumber dealer there, that lumber going by rail—

Mr. DAVIES objected to evidence of this kind being given.

Mr. FOSTER thought it was relevant. The purpose of the inquiry was to show whether or not this bridge was an available asset to the Government.

Fredericton and St. Mary's Bridge Inquiry.

After considerable discussion the CHAIRMAN said :—The inquiry has already taken the direction of asserting or endeavouring to assert the value of the bridge as an asset. I think under these circumstances the production of the evidence of an expert is justifiable, but I quite agree with Mr. Davies that the expert must be confined to his own personal knowledge, to such information as he is personally able to give to the Committee, and that he is not justified in giving the evidence of third parties in support of his own opinion. In this case it was mentioned incidentally and a great deal of the time of the Committee has been taken up in hearing an objection that is in the main well founded. I rule that under the circumstances the evidence of Mr. Jack is admissible, but I decide that Mr. Jack in giving that testimony must confine himself to his own knowledge and that it is not allowable for him to support his position by the *ipse dixit* of third parties.

By Mr. Foster :

271. Now, Mr. Jack, will you go on after this breezy introduction?—One that tends very greatly to the value of that bridge as an asset to the Dominion is the fact that the duty is removed from American lumber.

By Mr. Davies :

272. You mean Canadian lumber going into the United States?—That lumber, hemlock boards for example, can go by rail to Boston. Not only that but the cedar and all the short lumber. I know one stream that empties into the Miramichi down there where the cedar when sawn can go direct to Boston. Probably there would be a saving on that line of \$25,000 by going on that bridge. I could not go into details, of course, but I am satisfied from what I know of New Brunswick that that bridge is the most important bridge for the development of the country.

273. Has any development already taken place in view of the advantages of that shorter cut?—Yes, there are developments, mills are going up. Of course it takes some time to start and develop a business and it is only a short time since the duty was taken off lumber. You see the road from Chatham around Nova Scotia is long. This is a short route, and lumber going into the United States as I was very properly corrected when I called it American lumber, lumber going by rail will command a higher price than it will by water, because if it is dry or seasoned lumber, when it is shipped by water it is no longer dry when it reaches its destination.

274. You have regard to certain kinds of lumber of secondary value which would become valuable on account of that?—Short lumber such as cedar and hemlock, of which there are vast quantities in the forests of the Miramichi, which we have been allowing to rot. We have cut the tree down, pulled the bark off and left the tree to rot.

275. Formerly they were cut down simply for the value of the bark?—Yes, and now it is being sawn up and taken over this bridge to the markets of the United States.

276. That is the testimony you would have to give with regard to the value and the increasing value of that opening?—Yes.

By Sir Richard Cartwright :

277. You spoke of this bridge being especially valuable to the Gibson Road?—Yes.

278. Very well, which is the Gibson Road?—The Canada Eastern.

279. Why do you call it the Gibson Road?—It is owned by Mr. Gibson, he is the owner.

By Mr. Hazen :

280. Mr. Jack, you have paid some attention to the mineral interests of New Brunswick, I believe?—Yes.

281. Do you know anything about the mineral resources of the counties of Queen's and Sunbury?—There is a very large bed of coal there.

282. There is a large coal area, is there not?—Yes, very large indeed and very valuable.

283. What effect will this bridge have on the coal interest?—It will bring this coal to St. John for manufacturing purposes.

284. How would it be with regard to the western market?—It would be of advantage and for the United States also.

285. When this bridge was not in existence it would be impossible to send that coal to the west or to the United States?—Only by boat. It would go by boat in summer.

286. For how many months in the year would that be?—During the winter months you could do nothing.

By Mr. McMullen :

287. Who are the owners of the coal areas?—Some are owned by individuals, some by companies, but I think chiefly by Mr. R. G. Leckie. He lives over at Londonderry.

By Mr. Davies :

288. You spoke of the Canada Central as Gibson's road?—Canada Eastern.

289. The one you speak of runs from Chatham to Fredericton?—Yes.

290. It is the same road that runs up the Nashwaak?—Yes.

291. Who owns those timber limits?—Mr. Gibson owns those on the Nashwaak.

By Mr. Foster :

292. Mr. Gibson does not own those on the Miramichi?—No.

By Mr. Hazen :

293. Who owns that on the South Miramichi?—They belong to the South Brunswick Railway Co.

294. And how much belongs to the Crown?—Well, yes; there is a good deal that belongs to the Crown. I cannot tell you exactly; that is below Boiestown, 48 miles from Fredericton, the road strikes the Miramichi.

By Mr. Taylor :

295. As I understand the situation, it is this: the company have a certain amount of money invested in that bridge—\$105,000 or \$115,000. The government have a mortgage of \$300,000?—I know nothing about the financial matters.

296. I just wanted to ask you, do you consider it a good asset for the Dominion having \$300,000 invested in it?—Do I consider the Fredericton bridge a valuable asset?

297. Is it a valuable or a safe asset?—I most undoubtedly do consider it a valuable asset.

By Mr. Davies :

298. Do you consider it a valuable asset to the shareholders of the company?—I am not inclined to think it is at present, but it might be in the future; I don't know.

By Mr. McMullen :

299. Do you know the value of bridges? Did you ever build any bridge?—No.

The witness was then discharged.

Fredericton and St. Mary's Bridge Inquiry.

Mr. J. M. COURTNEY recalled and further examined.

WITNESS—I have seen the accountant of the department since I left. Those four items were not taken into calculation at all.

By Mr. Foster :

300. You only expressed your opinion ; that is not correct ?—I believed so at the time.

By Mr. McMullen :

301. Are you in the position to say whether they were not taken into account ?—We had a discussion about it, and arrived at that result ; I forget what the reasons were.

301a. We would like to know what the reasons were. You will be required at the next meeting to give the reasons why they were not taken into account ?—I will consult with the accountant.

The committee then adjourned.

COMMITTEE ROOM No. 49,
HOUSE OF COMMONS, 14th June, 1895.

The Committee met.

Mr. WESLEY VANWART called, sworn and examined.

By Sir Richard Cartwright :

302. Mr. Vanwart, you are the Secretary-Treasurer of the Fredericton Bridge Co., I believe?—I am.

303. You were, I understand, directed to bring with you certain transfer books of the company and so forth?—I was directed to bring the stock and transfer books.

304. Have you got them there?—But unfortunately the company never had any.

305. Ahem! The company never had any transfer books?—None.

306. Well, if my recollection is right, it was the duty of the company to have a transfer book and other matters of that kind?—I am speaking of the fact there was no stock book ever made.

307. Then, ahem, Mr. Vanwart, can you tell from your own knowledge who were the original shareholders of the company? Did you say there was a stock book?—No stock book.

308. No stock book, nor transfer book?—None.

309. Can you state then who were the original shareholders of this company?—I can.

310. Who were they?—Alexander Gibson.

311. Ahem.—Alexander Gibson, Thomas Temple,—

312. What amount did they receive individually, can you give them?—The two first named 985 shares each.

313. How much?—I think \$100 a share.

314. Go on, Mr. Vanwart?—Alexander Gibson, jr., 10 shares.

315. Yes?—Alfred Rowley 10 shares.

316. Yes?—F. S. Hillyard 10 shares.

By Sir C. H. Tupper :

317. Alexander Gibson, jr., who next?—Alfred Rowley, 10 shares, F. S. Hillyard, 10 shares.

By Sir Richard Cartwright :

318. The total number of shares was 2,000?—Two thousand.

319. 985 to Mr. Temple, 985 to Mr. Gibson, and ten shares to each of the other three gentlemen. Mr. Gibson, jr., Mr. What do you call his name—Mr. Rowley—and who else?—F. S. Hillyard.

320. Each of whom had ten shares. Well, you state there has been no stock book nor transfer book?—None.

321. Then as a matter of course these shares, I presume, remain as they were?—So far as I know.

322. Now what is the business of Mr. Rowley and Mr. Hillyard? Or whatever his name is?—At the present time I think Mr. Rowley is in the employ of Mr. Gibson. Mr. Hillyard at the present time is Postmaster at Fredericton.

323. I see. What calls have been made upon this stock?—There have been no calls made, regular calls.

324. No regular calls have been made. Has any money been paid in upon the stock as far as you are aware?—There has been paid for the uses of the company somewhere about ninety odd thousand dollars.

Fredericton and St. Mary's Bridge Inquiry.

325. You say "paid for the uses of the company." I asked, have any calls been paid or any amount been paid on this stock?—I answer, there has been no regular calls made.

326. No regular calls paid?—But there has been paid for the purposes of the company about \$90,000 in cash.

327. A curious way of doing business. However, this \$90,000 in cash includes, I presume, a certain amount advanced by some of these parties on \$50,000 worth of bonds?—None whatever.

328. Some bonds we were informed by Mr. Temple had been issued?—Indeed. If you will permit me I would probably get on much better by stating the whole facts that would be a quicker way to get at it.

329. Go on.—There was a contract entered into by the bridge company for the construction of the foundation piers and steel superstructure for \$350,000. Of that \$350,000, \$287,000 was a loan from the government. There was an issue of \$50,000 of bonds payable in six years with interest at six per cent bearing the personal guarantee of Alexander Gibson and Thomas Temple. Those bonds were paid in August, 1893, and are now held by me as secretary-treasurer of the company.

By Mr. Foster :

330. When paid?—In August, 1893.

By Sir Richard Cartwright :

331. You say that \$287,000 were received from the government?—Yes.

332. Now, the loan is \$300,000.—The government deducted \$3,000 for interest from the time the first payments were made until the last payment was made.

333. Ahem, you say nothing at all in your statement of \$30,000 which were received from the government besides the \$300,000?—I will come to that as I get along.

334. Go on.—That contract for \$350,000 was simply for the foundation of the steel superstructure. In addition to that there was to be constructed the approaches to the bridge, about two miles of road. There was the land damages to be provided for, the construction of the track, the furnishing of steel rails, the building of fences, the doing of riprap work about the piers, the building of a jam pier in front of the pier sustaining the draw. These moneys amounted to \$119,000 additional.

By Mr. Foster :

335. What you have just enumerated?—What I have enumerated. The other details amounted to about \$119,000 additional. Of this \$119,000 there was a subsidy granted by the government of \$30,000 of which the company got \$15,000, the rest being retained by the government for arrears of interest. Those moneys with the exception of \$119,000—I am now speaking in round numbers—which is a floating liability; that money was provided by the company and went into the works.

By Sir Richard Cartwright :

336. You say it was provided by the company?—Yes.

337. And yet you say they made no calls?—None.

338. You have no stock book nor transfer book?—None.

339. Pray in what proportion was it provided by the members of the company?—When money was required I called the attention of either Mr. Temple or Mr. Gibson to it and the money was forthcoming to pay the bills.

340. Without any tedious formalities in the way of making a call?—None whatever.

341. Then in point of fact you say that no call has been made on this stock at all?—No formal call.

By Mr. Mulock :

342. No kind of call, formal or informal?—No, nothing further than the statement when money was required I would advise the president.

By Sir Richard Cartwright:

343. You are the treasurer, Mr. Vanwart?—Yes.
 344. You are the treasurer of the company?—Yes.
 345. What is the amount of your present receipts?—I beg pardon. The returns will show. I cannot speak from memory.
 346. You know generally, I suppose, within a thousand or two, what your returns are?—Well, they are small. I would not venture to state.
 347. And your expenses, are you quite ignorant of those?—Oh, I would not attempt—
 348. You don't know the expenses either?—I would not venture to swear.
 349. You would not venture to swear?—No, unless I had the book before me.
 350. Could you not say within a hundred or two hundred dollars?—The returns will show. I will not attempt to speak from memory.
 351. Now what did you state was the total cost of the bridge?—Speaking in round numbers \$419,000.

By Sir C. H. Tupper :

352. How much?—\$419,000 in round numbers.

By Sir Richard Cartwright :

353. Has interest been paid on these bonds?—The bonds? Yes, sir. Not only the bonds but interest as well has been paid.
 354. Well, the bonds are not cancelled?—The bonds are cancelled.
 355. Are cancelled, are they?—Yes, sir, cancelled.
 356. Then the present liabilities consist of this \$300,000 loan by the government and the amount of interest which has accrued?—I beg your pardon.
 357. I say the present liabilities consist of \$300,000 loan the government made and the interest which is not paid?—Yes, sir.
 358. Anything else?—And about \$19,000 of a floating debt.
 359. That covers the road and a couple of miles of railway?—Yes, it covers the bridge and the approaches.
 360. The bridge and the approaches?—The bridge and the approaches.
 361. How much are they? Two miles?—About two miles, I think, speaking roughly.
 362. You received from time to time, I observe, a number of communications from the Finance Department calling your attention to the fact that from year to year large amounts of interest were accumulating against the company. On receipt of these what steps did you take, if any?—I notified the management and acknowledged the receipt of the letter, that is all.
 363. You took no further steps?—No.
 364. And your company took no further steps?—I do not know what the company did, but personally I did nothing further.
 365. You are the secretary?—I know.
 366. Has the company appointed any directors?—Yes.
 367. Who are the directors?—The returns will show, I cannot speak from memory.
 368. You do not recollect?—No.
 369. You do not know how many directors you have?—I am under the impression there are five; I would not say.
 370. And I suppose all have to be shareholders?—I beg pardon.
 371. I say all the directors have to be shareholders, and you just told us there were five shareholders, so I presume the five shareholders are the five directors?—If there are five shareholders no doubt that would cover it.
 372. You say there are five directors?—The returns will show.
 373. But you do not know. You, secretary and treasurer, do not know who your directors are?—I would not swear that, certainly not. I do not know whether there are three or four.

Sir RICHARD CARTWRIGHT—I do not think it is worth while examining you further.

Fredericton and St. Mary's Bridge Inquiry.

By Mr. McMullen :

374. How many meetings have the directors had?—Very few.

375. Have they had a meeting at all as directors?—Oh, yes, several.

376. Have they had meetings each year?—They had last year.

377. Any this year at all?—No.

378. I notice that in 1889 you made a return stating that the length of your line is $1\frac{3}{10}$ miles and you made a return in 1890 to the same effect. You say you do not know what your earnings were?—I cannot speak from memory.

379. Were the earnings more than the expenses of operating the bridge?—Speaking from memory, I think so.

380. Cannot you speak definitely? Was there any year in which the earnings were less than the operating expenses?—I could not say.

381. You could not say, you have no recollection?—No.

381a. When did you lengthen your line from a mile and a third to two miles and a tenth?—As I understand it, the whole line when completed was about two miles.

382. Well, in your return that you make to the Government you say in several years that you report the line as a mile and a third?—Yes.

383. Recently you have reported it as two miles and a tenth?—That would include the whole thing. If you take the bridge and the approaches it is two miles and a tenth.

384. When did you extend it?—At the time the return was made.

385. When did you make that extension? You know the company was in arrear. Out of what money did you make the extension?—Out of the aggregate amount of \$419,000.

386. What was done with the balance of the receipts of the bridge? The receipts were considerably in excess of the expenditure. You report the expenditure to be about \$1,300 each year, one year \$1,400, and the receipts run up over \$3,000, one year \$4,000. What did you do with the balance of the receipts?—I cannot tell from memory as to what the earnings were or the receipts.

387. But this money came into your hands?—That may be. I cannot speak from memory.

388. But you surely have some idea of what became of the money?—It might have been, if there was any surplus during the currency of those \$50,000 bonds, that it went towards paying the interest on the debentures.

389. On the \$50,000 bonds?—It might have been.

390. Do you know whether it did or not?—I cannot say.

391. And you have no knowledge now from recollection as to what you did with the surplus? Now, you collected something like \$17,000, over that amount of earnings, and you paid out not \$12,000, but \$11,000, for operating expenses, and you cannot tell us what you did with the rest?—Not having the figures before me, I venture no opinion.

392. What condition is the bridge in now? What are your relations with the Government? Is it just in the same state as it was?—As secretary I have no knowledge.

393. As an individual have you any knowledge?—(No answer.)

By Mr. Davies :

394. I would insist upon an answer?—Well, I know nothing at all.

By Mr. McMullen :

395. You do not know at the present time from your own personal knowledge or in the capacity of secretary to the company in what relation the company stands to the Government? Are they lessees at the present time?—Not to my knowledge. I do not know.

396. You do not know whether they are or not?—I cannot answer.

397. You do not know what are the arrangements at the present moment?—I have no knowledge.

398. Do you know has the company ever taken a lease from the government of the bridge?—Not to my knowledge.

399. You are not aware of anything of the kind?—Not to my knowledge.

400. Are you the general manager as well as the treasurer?—Simply secretary, I told you, and treasurer.

401. Who is the manager?—Last year Mr. Temple, I think, was managing director. If you will show me the returns, I can soon tell you.

402. Who is manager this year?—There has been no reappointment made this year. There was no meeting.

403. There was no meeting?—I stated before there was no meeting.

404. Who was the manager before last year?—I think Mr. Temple. I have stated so already.

405. How long before last year?—The previous year.

By Mr. Davies :

406. Has there ever been any other manager besides Mr. Temple, and if so, who?—No, think not.

By Mr. Mulock :

407. What railway company uses this bridge?—The Canada Eastern.

408. Any other?—The C. P. R.

409. What is the bargain between Canada Eastern and the bridge company?—I do not know. I may answer this that I think tolls have been established and the Canada Eastern pay the tolls.

410. Is there any agreement in writing?—Not to my knowledge.

411. Who keeps the records of the company?—Which company.

412. The bridge company?—I do.

413. Have you any document in writing shewing the terms on which the Canada Eastern uses the bridge?—None. There would be none.

414. There is nothing in writing?—There would be none. The rates are fixed by the government for the use of the bridge.

415. By an Order in Council?—I think so.

416. And the Canada Eastern uses it on the terms of the Order in Council?—Yes.

417. When were those terms fixed?—Some years ago, and they were amended two years ago.

418. Was the bridge company represented before the government when these rates were fixed?—I could not say.

419. Was the railway company?—I could not say.

420. Was neither company consulted as far as you know by the government before increasing the rates?—No, not to my knowledge.

421. Who is the president of the railway company?—Which railway company?

422. The Canada Eastern?—Mr. Gibson, I think.

423. Who is the president of the bridge company?—Mr. Gibson, I think.

424. Do you know any of the directors of the railway company?—No.

425. You do not know any of them? You do not know anything about it?—Well, from hearsay.

426. Well, I do not suppose you were present when they were elected. Who are, as you understand, the directors of the railway company?—I only know as street rumour, not of my own knowledge.

427. Well, as a matter of common repute, who are they?—E. Brown Winslow, of Fredericton and James S. Neale is another. Mr. Winslow, of Chatham, is another. I cannot name any more. I have heard of these.

428. Are any of those gentlemen directors of the bridge company except Mr. Gibson?—No.

429. Has the bridge company ever made any representations as to the rate of tolls being sufficient or insufficient?—I do not know.

Fredericton and St. Mary's Bridge Inquiry.

430. You are the secretary?—I admit it.
431. Who sends communications?—I send communications at times.
432. Have you ever sent any communication to the government in respect to the rates charged?—No, I have not.
433. Have you been asked to do so?—No, I do not remember.
434. Have you heard the bridge company complaining with reference to the rate?—In what way?
435. That they were too low?—No, I cannot say that I have.
436. The bridge company seems quite satisfied with the rates charged?—They are fixed.
437. They are not unalterably fixed?—That may be.
438. You are not aware of the bridge company ever making any representations to the government in respect to the rates?—I have answered that. No.
439. You say that the \$50,000 of bonds were guaranteed by Mr. Gibson, Mr. Temple and others?—No, I did not say others. I said Mr. Gibson and Mr. Temple.
440. Mr. Gibson and Mr. Temple. Have they been repaid?—Yes.
441. And the bonds are now awaiting cancellation?—They are cancelled.
442. Out of what moneys were they paid?—The money was handed to me by Mr. Gibson and Mr. Temple, and I went and paid them. That is all I know about it.
443. Are you the treasurer?—Yes.
444. You keep the accounts?—Yes.
445. How did you enter that money?—Paid to debentures so much.
446. How did you credit the money?—Marked it in the company's account "credit debentures."
447. How did you credit the money?—In the accounts.
448. Is the accounts here?—No.
449. Why not?—I brought simply what the committee ordered.
450. I think you had better return and get these accounts?—I can get them.
451. To whom have you given credit for them?—I have simply given credit to the company and charged the company with having paid the debentures.
452. To no person?—None whatever.
453. How did you enter it?—In the company's account received so much, paid debentures so much money.
454. From whom?—Simply received, received so much money for a certain purpose, and on the other side charged it.
455. And you have not credited it to anybody?—No.
456. Not to Mr. Gibson's stock?—No.
457. Nor to Mr. Temple's?—No.
458. To what extent is Mr. Gibson a shareholder?—I told you. 985 shares.
459. Of how much each?—Of \$100.
460. How much was paid on the subscription of that stock?—There were no regular calls, I told you, made at all. When any money was required I reported it and the money was forthcoming.
461. But you have not credited anything on the stock?—No.
462. So that as far as the books stand the stock remains unpaid?—Yes.
463. Does not that seem a remarkable state of things?—I had no instructions to that effect.
464. The stock remains still unpaid so far as the books are concerned?—Yes.
465. Mr. McMullen was asking about the state of repair of the bridge. Can you say how much was spent on the bridge this year?—No.
466. Last year?—No.
467. Any year?—No.
468. Do the books show that?—Partially.
469. Are they not accurate?—They are accurate as far as they go.
470. If they did not contain proper entries they would be inaccurate?—I should think so.
471. Have you entered up against the bridge all expenditure for maintenance?—No.

472. Then the accounts have not been accurately kept?—They have not come in this year, send me of them.
473. Prior to this year they ought to have been good?—I cannot say for that.
474. Can you tell me at any time what expenditure has been made for the bridge?—No.
475. Can you tell me, not as secretary only, or as a lawyer, but in any capacity, as a witness can you tell me what labour or what repairs have been paid upon that bridge at any time?—I would not venture.
476. You can tell me who is employed upon the bridge by the company?—No.
477. You do not know whether any one is employed on it or not?—I take no interest in it at all.
478. How far do you live from the bridge?—My residence is a quarter of a mile away.
479. Is there one man employed upon the bridge all the year round?—I would not answer that.
480. Will you swear there is?—I could not say.
481. Do you not know?—I do not know.
482. Do not you know that when navigation is closed there is no one employed on the bridge at all?—There is a caretaker, I know that.
483. All the year round?—I cannot swear that, but he is employed.
484. Who would pay him his wages?—The company.
485. And you are the treasurer?—Yes.
486. Then you would pay him?—Not necessarily.
487. Who would pay him then?—Somebody else.
488. Who else?—I cannot tell you.
489. Who employs the caretaker?—The manager.
490. Who is manager?—I told you it was Mr. Temple.
491. Has he been dismissed?—Not to my knowledge.
492. Has he resigned?—Not to my knowledge.
493. He is still manager?—I cannot answer. I presume he is, but don't know.
494. Then it will be Mr. Temple who employed these men, would it not?—I cannot say, sir.
495. Cannot say?—I am here, I take it, simply to answer what I know.
496. You are here to tell the truth, the whole truth, and nothing but the truth.—I appreciate the truth, sir, just as well as any other man.
497. Now, can you tell me who was employed? Can you give me the name of any employee upon the maintenance of that bridge by the company?—Well, when?
498. I will let you choose your own time.—Well, I have no choice, sir.
499. Give me the present time.—I think there is a gentleman by the name of—I will give you his name in a moment—there is one by the name of Chappell, is on the bridge, and another man by the name of Rogers, these two men are on.
500. Chappell and Rogers, what are their duties?—To care for the bridge and attend to the draw.
501. Caretakers on the bridge?—Yes.
502. What are they paid?—I cannot say what they are being paid.
503. Who pays them?—I have not paid any money to them this year.
504. Who pays them?—Last year I paid part, and the management of the bridge paid part.
505. Whom did you pay?—I paid part to the first and last named.
506. Rogers?—I paid him a certain payment last year on the certificate of the management, and I also paid the other man.
507. On whose certificate?—On the certificate sometimes of Mr. Gibson, and sometimes of Mr. Temple.
508. Do you know how much you paid them?—I cannot say.
509. No recollection?—No.
510. So much a month?—By the month, I think.
511. About the wages of workingmen, would it not be?—I could not say.

Fredericton and St. Mary's Bridge Inquiry.

512. A dollar a day?—I cannot say.
513. Was it more?—I cannot say.
514. Less?—I cannot say.
515. No idea?—No. I did not tax my memory with it only as it was in my business.
516. Were they engaged in the ordinary work? Attending to the business?—I presume. I don't know what their duties were.
517. Don't know what their duties were?—Don't know anything about them.
518. What were they doing there?—Caretakers of the bridge.
519. They were being paid caretakers' wages?—I don't know what caretakers' wages is. My duty was simply to pay what was presented when I had the funds.
520. How long were they employed? All summer?—All last summer.
521. Were they in the employ of the government?—Can't say.
522. Don't know?—No.
523. Do you know whether they were in the pay of the company when navigation closed?—Could not answer.
524. Do you know if there is anybody in charge of the bridge after navigation closes?—Could not answer, don't know.
525. Can you say if there was any person in the employ of the bridge company doing any service in the maintenance of the bridge or looking after the bridge during last year otherwise than during the period of navigation?—Can't answer.
526. Can you say whether there were any repairs made on the bridge last year?—I know it was wholly repainted. I know that.
527. By whom?—The bridge company, I presume.
528. Will you swear it was by the bridge company?—Wholly, I don't say that.
529. How much was charged to that?—That is one of the bills that has not been entered in the book.
530. These are very curious books?—No, they are not.
531. Can you tell me in any form as witness, lawyer, secretary-treasurer or in any other capacity, how much money was spent in any year since you have been in a position in the maintenance of that bridge?—I have answered, I cannot.
532. You cannot? So that you don't know what surplus earnings remain after paying the true cost of maintaining the bridge?—I cannot speak from memory, sir.
533. You cannot? Will the books show it?—The returns show it.
534. Will the books show it?—Which?
535. Will the bridge company's books show what profit and loss there was on the earnings of that bridge?—I think it will show the first two or three years. It will not show last year. The accounts are not all in.
536. Will they show every year succeeding to last year?—I think probably for the first two or three years.
537. For the first two or three years commencing with what, 1887 or 1888?—1887 I think the bridge was completed.
538. It is 8 years since 1887. Will they show the transactions for three years?—When you spoke in your question you asked me to show it accurately. I suppose they will show accurately down to last year.
539. I see. Were your accounts never audited?—No.
540. Never audited?—No, sir.
541. Where did you keep your cash?—What little there was at—
542. Did you have no bank account?—No.
543. Who was your cashier?—Well, I was cashier as far as funds were given me.
544. Well, did you not receive all the earnings of the bridge?—Well, I can only account for what I got. I presume I saw the greater portion of it; I don't know.
545. Tell me. Who kept the accounts showing what the bridge company ought to have received from the Canada Eastern?—How is that?
546. The rate of toll was so much a car, was it not, or so much a ton?—Yes.
547. Could you say from memory what the scheme of remuneration was?—(To Mr. Temple) What was it?

Mr. TEMPLE—So much a car. Some \$1, some \$2 and so on.

Examination resumed :

548. Well, who kept the accounts to show that the railway company accounted for what it properly owed?—An account was rendered by the Canada Eastern.

549. Kept by the Canada Eastern?—Yes.

550. Did the bridge company keep no one to check the accounts?—As far as the cars were concerned ; as I understood it the caretaker checked the cars.

551. The caretaker checked the cars?—Yes.

552. Was the caretaker employed by the president of the Canada Eastern or the president of the bridge company?—By the bridge company.

553. By the bridge company. Mr. Gibson as president of the bridge company?—I don't say that.

554. Were these caretakers in the employment of the railway a'so?—No.

555. They were not?—Well, have you got the check account as checked by the caretaker?—No.

556. There is nothing on record then showing that anyone on behalf of the bridge company kept a check on the traffic for the purpose of collecting duties from the railway?—The caretaker would send it in.

557. Answer my question. Have you such records?—As what?

558. You say, you stated a moment ago, that the caretaker of the bridge would keep a check on the freights passing over the bridge as against the railway company?—Yes, I said so.

559. You said that?—Yes.

560. Then I ask you have you a record of those checks?—I would have the statement they file.

561. The what?—I would have the statement that the caretaker would file with me—that is what I would have.

562. Have you kept these statements continuously during this arrangement?—No.

563. For what period have you these statements?—I don't think we have anything for the last year or eighteen months.

564. How do you account for that?—I have no explanation.

565. No explanation?—I am not managing.

566. Well, should not those verifications be in your custody or in the custody of your bridge company?—I told you what has been filed. That is all I can say.

567. You can only tell us that and there is nothing, then, in the last year or eighteen months on record showing that the bridge company exercised a supervision over the earnings of the bridge?—What the company did, I don't know.

568. You don't know?—No.

569. Do you know, then, how much the railway company owes the bridge company?—No.

570. You don't know. Does it owe it anything?—Can't answer.

571. Can't answer it at all? Is there any way except by reference to the railway company to prove what it owes for tolls to the bridge company?—I don't know.

572. Who would know anything at all about these affairs?—What?

573. On behalf of the bridge company?—I can't say.

574. It looks very much as if the bridge company was absorbed by the railway company, does it not?—Not at all. It has got a separate existence.

575. Now, do you think, sir, that the bridge company's affairs are being looked after as independently as if they were wholly independent in management from the railway company?—Oh, I think so.

576. You don't think so?—I think so.

576a. You do think so. Do you think if the bridge company and railway company were total strangers in management that the bridge company's account would be kept as laxily as these are being kept?—I would not venture an opinion on that.

577. You would not venture an opinion on that?—I would not say.

578. I need hardly have asked that?—I should think not.

Fredericton and St. Mary's Bridge Inquiry.

By Sir Richard Cartwright :

579. What salary do you receive in your joint capacity as secretary-treasurer?—I could hardly say. It has been so long since I received any.

580. You are a lawyer, Mr. Vanwart?—Yes, sir.

581. Are you solicitor for the company?—I say they have no solicitor now. I was, yes at the time of construction ; I am not now.

582. Well, I suppose, you have no action against the railway company. Did you receive any salary at all?—No. I have not, as a matter of fact.

583. As a matter of fact you have received no salary?—No.

By Mr. McMullen :

584. Did you receive any pay as solicitor?—I did during the construction, sir.

585. You received pay during the construction of the work?—I had my pay in connection with a large number of suits and an injunction in the vicinity of \$1,000 or \$1,500.

586. You received pay for legal services during the construction of the bridge?—Yes, sir.

587. Now you made returns for the government, you say. They were made I suppose prior to the returns that were sent in?—I cannot say.

588. You don't know?—Which returns : what are they?

589. The annual returns made to the Minister of Railways of the receipts and expenditures and cost of operations of the bridge. Who made these returns?—Tell me what are they? I can hardly tell.

590. You, as a corporation, are bound to make returns annually to the government of the receipts and expenditures in connection with your company—with your organization. Now who made the returns?—I would not say whether I made them or not. It is probable I looked over them.

591. I hold in my hand a return of the receipts and expenditures of this bridge. I see that you have received altogether \$17,832.62. That is your sole return to the government of your receipts?—That is.

592. Then your return of expenditure in the operation of the bridge is \$7,650, which leaves a balance of \$10,200 of receipts. Of course all the money for the earnings of the bridge went into your hands, did they not?—I don't say it ; that is what I answered a moment ago, that is what I said.

593. You don't know whether you made this return or not?—I did not say I did not make those returns. I may have seen them.

594. From the returns made to the Minister of Railways as laid on the Table of the House every year, I see you say the cost of operation was \$1,300, the next year \$1,300, the third year \$1,300, the fourth year 1892, \$1,750 and 1893-94, \$2,000. Now in 1893-94 the earnings were \$4,544. You don't know who made these annual returns of the bridge at all?—I don't say that. I say I might have made them.

595. You don't know whether they are correct or not?—I presume they are correct.

596. Well, is there any other officer in connection with the company that would be possessed with the necessary information to enable him to make those returns unless yourself?—Yes, because I would get certain of that information from other persons.

597. That is a copy of the returns that have been made to Parliament?—Yes.

598. There are the receipts?—Yes.

599. And there are the expenditures?—That is so.

600. Now, what I want to know from you is this, is there any other person so intimately acquainted with the books of the company as to be able to make these returns besides you, in place of you?—I think that probably I would have as full information as any one in regard to them.

601. Then you must have made the return?—I don't say I did. I at last seen the returns before they were forwarded.

By Mr. Mulock :

602. Mr. Secretary, would you tell me when this company was incorporated?—I think it was incorporated in 1886.

603. By what legislature?—By charter of this Parliament.

604. Was it a special Act?—Yes, sir.

605. Do you remember whether it organized after the special Act was passed?—When?

606. As required by the law?—Yes, sir.

607. It did organize?—Yes.

608. Do you remember who were the first directors?—I cannot remember.

609. I want to get the name of the caretakers for the purpose of subpoenaing them.

What is the first name of Chapelle?—I cannot tell you.

610. Well of Rogers?—John.

Mr. MULOCK—Do you know, Mr. Temple?

Mr. TEMPLE—No, I really do not.

By Mr. McMullen :

611. You said that you kept no bank account?—No.

612. When you receive money, for instance, from the parties that are supposed to collect the tolls, what do you do with it?—There are generally sufficient bills for me to pay it out immediately.

613. And you just pay the accounts that are pressing upon you out of the fees?—Accounts that are presented and certified when I am in funds I pay them. If I am not they lie over.

614. Who was present at the meeting when you were engaged as secretary, at the meeting of the Board?—I think I was appointed by the shareholders.

615. Well who was present?—I could not tell from memory. It is some years ago.

616. You do not remember it?—It is some years ago.

617. Were any of them present?—Probably not. I do not know.

618. You do not remember when the meeting was held or who was present?—I would not like to say from memory. It took place six years ago.

619. What books or papers are there?—As a matter of fact the books will not give you very much information.

By Mr. Davies :

620. Will you kindly state what books are in your custody or control?—A record book.

621. Is that a minute book?—Yes, you can call it a minute book if you like. We call it a record book. That is the only book we have. On the back of that is a memorandum of the cash that I deal with.

622. That is the sum total of the company's books?—That is the sum total of the company's books, if you want to know. There are a lot of vouchers.

623. Have you vouchers which would show the receipts and expenditure of the company year by year, papers or vouchers of any kind that would show that?—I would have the returns and the data on which the returns were made. I think I have those and they are all I have.

624. That would be returns from the railway, or what?—The return would be from the Canada Eastern. I think I have the return from the Canada Eastern.

625. The returns and the data on which they were made up?—I think I have them.

626. Will Mr. Gibson be able to give us information other than what is here?—None whatever.

627. Could you forward the books to the Clerk of the Committee?—I could consider that, but unless I am here I do not think they could make much out of it.

628. We could examine them and see?—I will look them over.

Fredericton and St. Mary's Bridge Inquiry.

629. If you are satisfied to do that you may be summoned at any time, if it is necessary.—I shall be glad to be summoned at any time, but I have pressing engagements next week.

By Mr. Mulock :

630. Could you forward the books in the meantime, and perhaps we would be able to dispense with your further examination?—I would consider that, but I should like it really understood whether I am to come or not, because I do not want to be in the position that you would require me at a day's notice. ¹⁸⁵¹

THE CHAIRMAN—The order is that the witness is to send the books to the Clerk of the Committee and to await a further summons from the Committee.

The Committee then adjourned.

COMMITTEE ROOM,
HOUSE OF COMMONS, 12th July, 1895.

The committee met.

Mr. THOMAS TEMPLE, M.P., recalled and further examined.

By the Chairman :

631. Mr. Temple, you have already been sworn ?—Yes.

632. Mr. Temple, what paper is that ?—That is the stock-list.

Mr. MULOCK—I will read it to you :

“We, the undersigned, under the provisions of the Act of the Dominion Parliament, 48th Victoria, chapter 26, intituled ‘An Act to incorporate the Fredericton and Saint Mary’s Railway Bridge Company,’ do hereby subscribe for and take the number of shares of stock in the capital stock of the ‘Fredericton and Saint Mary’s Railway Bridge Company,’ set opposite our respective names.

Name.	Residence.	Number of Shares.
Alex. Gibson.....	Marysville, N.B.....	985
Thos. Temple.....	Fredericton, N.B.....	985
Alfred Rowley.....	Marysville, N.B.....	10
Alex. Gibson, jr.....	do	10
Fred. S. Hilyard.....	Fredericton, N.B.....	10

633. Does this stock-list correctly show the state of the stock-list to-day ?—I think so.

634. There have been no transfers then ?—No ; I thought there had been, but there have not.

635. How much was paid on the stock when subscribed ?—\$20,000, I think.

636. The face amount of these shares was \$100 a share, I think ?—I forget. I cannot say what it was.

637. There were 2,000 shares, this stock list shows a description of 2,000 shares ?—Whatever is there is true.

638. 985 to Mr. Gibson, and 985 to you, make 1,970, and three tens make up 2,000 ?—2,000.

639. And those 2,000 shares represent all the shares of the company that were ever issued ?—Yes.

640. And the face amount of these 2,000 shares is \$200,000 ?—\$200,000.

641. And ten per cent was paid on this stock at the time of subscription ?—Yes.

642. Making the total cash collected on the stock at that time \$20,000 ?—Yes.

643. How much has since been paid or what calls have been made on this stock ?—I don’t know that there were any calls made.

644. What was done with the earnings of the bridge ?—Of course the expenses were paid out of the earnings and any repairs or anything required in that way.

645. And the balance went to pay interest on some bonds, did it not ?—Yes, that is all there was.

Fredericton and St. Mary's Bridge Inquiry.

646. What amount of bonds had the company issued?—\$50,000 of bonds.

647. How were they secured?—How do you mean? To the parties they were given to?

648. Yes.—By a guarantee from Mr. Gibson and myself.

649. Mr. Gibson, senior?—Yes.

650. You and he personally guaranteed the principal and the interest of the bonds?—Yes.

651. After payment for the maintenance of the bridge, the surplus earnings went to pay interest on the bonds?—As far as it would go.

652. As far as it would go; it would not go very far?—It did not.

653. One more question. I observe in the returns made by the bridge company to the Government, which you have sworn to, that for the last two or three years you were unable to swear from knowledge as to the earnings of the bridge, but swore as to their correctness from returns made by the railway company, which was it?—The Canada Eastern.

654. The Canada Eastern Railway Company?—Yes.

655. Will you explain why you could not of your own knowledge swear as to the correctness of those returns?—Because we did not keep the account. They kept the accounts, and we had access to their books when we settled up with them every six months. Therefore we had to take their accounts, the same as other railways do. They have to take each other's account for it and pay over whatever the difference is.

656. Did you at any time have any person on behalf of your bridge company to check the earnings?—We had one year.

657. What year was that?—Well, I could not tell exactly.

658. At the commencement was it?—No, it was about the middle of the time. I think it was about 1892 and 1893.

659. 1892 and 1893?—I think so. I am not positive as to that, but it was one year anyway.

660. I suppose it was when you had to qualify your return that you discontinued having a person to check the earnings?—No, we only had one one year out of the five.

By Mr. McMullen :

661. Mr. Temple, has your company within the last year or two taken a lease from the government of this bridge?—No, sir. That is a mistake. That is a mistake in our account somewhere. I don't know how that came about. I don't know anything about it.

662. On page 240 of the Report of the Department of Railways and Canals, the Minister of Railways reports under the date December 31st, 1892, we have the entry, "Lease Fredericton and Saint Mary's Railway and Bridge Company, twenty-one years" ?—Yes.

663. Well, are you aware of the existence of any lease?—I told you I know nothing about it.

664. Could it exist without your knowledge?—I could not think it could very well.

665. Well, would it be possible for it to exist without your knowledge?—Well, many things may be possible. I could not tell you that. I tell you I know nothing of it. That is all I can tell you.

666. Are you not head of the company?—No, I am not.

667. Who is head of the company?—Mr. Gibson, he is the president of the company, and I have been manager of the company, and therefore I don't think it would be possible unless I knew. It is a mistake somewhere or other. They have got it into their accounts and their books from some other road. As far as I can trace the thing, since you are speaking of that, I went to the department one day to find out what it meant, what it was, and I found they knew nothing at all about it. It was a mistake in the books.

668. Was there no speaking about it? Was there no conversation in the House about it?—No, I am speaking now of the department, or the gentleman who has charge of those things.

By Mr. Daly :

669. Your attention was called to it?—Yes, by seeing it here (*i. e.*, in the report of the Department of Railways and Canals).

By Mr. McMullen :

670. Was the bridge ever under lease to any person?—Not that I know of.

671. Was there ever any proposition for a lease on the part of the company?—Not that I know of.

MR. MULOCK :—“Department of Railways and Canals, general statement showing water power and other public property leased by the Department of Railways and Canals during the fiscal year ended 30th June, 1894.” Then under date December 31st, 1892—“Term of lease twenty-one years. Lessees Fredericton and St. Mary’s Railway Bridge Company. Property leased, use of St. John River Bridge and connections with Fredericton Railway westward, and Gibson Branch of Canadian Pacific Railway eastward.” It is evidently identical with this undertaking. This is from the Department of Railways and Canals annual report.

672. You are still on the board?—Yes.

673. Have you been at all the board meetings?—I cannot say I have. I have been away for a year. We have no board meetings this year.

MR. MULOCK—This entry was dated in December, 1892?

MR. DALY—That is clearly a mistake.

MR. McMULLEN—Well, surely the Minister of Railways and Canals would not make a mistake like that.

THE CHAIRMAN—Mr. Temple says most explicitly he knows nothing about it.

MR. McMULLEN—That may be true, but after all it may have existed without his knowing anything about it. There are so many things that he knows nothing about.

MR. TEMPLE—I think I know where the mistake has come in. I think probably it was about this time we were talking of leasing the road to the Canadian Pacific Railway Company, and this memorandum was drawn up at that time, but it fell through. I think when we have been here at the Railway Committee meeting, this document has got astray in some way or other, and they have got hold of it in the department and put it in. Some of the clerks have done it. They have had no authority to do it. I think that is the way they have got it.

MR. DALY—The way it is put here would almost bear that out.

MR. TEMPLE—I think it is likely. This memorandum was drawn up at that time, but it was not carried out, and therefore fell through.

By Mr. Wood (Westmoreland) :

674. Were these negotiations with the Canadian Pacific Railway?—Yes, these were with the Canadian Pacific Railway, not with the Government at all. The Government had nothing to do with it.

MR. DALY—You see the heading of it is “Water power and other public property leased by the Department of Railways and Canals during the fiscal year ended 30th June, 1894.” It says “leased by the department.” They would have no power to lease this.

SIR RICHARD CARTWRIGHT—Unless as mortgagees, the company probably being in default.

MR. DALY—The mortgagees would not lease without the consent of the mortgagees, and Mr. Temple says they never made any such lease.

MR. TEMPLE—The Government had nothing at all to do with it whatever.

MR. McMULLEN—Under the covenants of that mortgage the agreement sets out that, whenever you are in arrear, without any action of foreclosure, or anything else, the Government can of its own act, come into possession and become the owner. That is virtually the contents of the mortgage you gave the Government. No action is necessary on their part, simply to come into possession. Now they knew they were in arrear for interest. It was open to them to take possession for interest at any moment.

Fredericton and St. Mary's Bridge Inquiry.

Mr. TEMPLE—They never did. They never took possession.

Mr. McMULLEN—It remains for you and the Minister of Railways to settle it between you.

Mr. TEMPLE—Well, I tell you it is not so positively. The mistake is just what I told you in this memorandum, that it was drawn up for the Canada Pacific Railway. It has got into the railway department without any authority at all.

By Mr. Daly :

675. It is dated December 31st, 1892?—That was about the time of the negotiations. That memorandum was drawn up at the time of the negotiations with the Canadian Pacific Railway. The government knew nothing at all about it. When it had come to a head, we should of course, have let the government know. We could not have done it of our own accord under the circumstances. But it fell through.

By Mr. McMullen :

676. You say it was an attempt to lease the use of the bridge to the Canadian Pacific Railway?—Yes.

677. Well, now, who was to execute the lease?—Well that is another thing. I tell you it went no further than that, and that is all I can tell you. It stopped there. Of course we could not go any further without going to the government.

678. But if there were any negotiations for the lease, they must have taken place between some party representing the bridge, and some party representing the Canadian Pacific Railway. Who was the party that represented the bridge?—The bridge company.

679. Well, then, if the bridge company represented the bridge in the negotiations for the lease, how is it that it appears in the report of the Minister of Railways and Canals that the lease was to be executed by the government?

Mr. DALY—There is nothing to that effect here (*i.e.* in the report of the Department of Railways and Canals).

By Mr. McMullen :

679. It could not have got in there unless the Government had something to do with it?—I told you they never had anything to do with it. They knew nothing about it, unless the clerk put it there by mistake.

By Mr. Mulock :

680. Who is in possession of the bridge?—The bridge company and always have been.

681. From the beginning?—Yes.

682. And you have simply collected toll for the use of the bridge?—Yes.

683. The bridge company have been in uninterrupted possession of the bridge from its construction to this moment?—Until this moment.

By Mr. Ouimet :

684. Under what kind of an agreement are these railways using your bridge?—Under the tolls.

685. But is that agreement made out for a term of years?—It was passed by the Railway Committee here, so much per passenger, so much per hundred weight, and so much per ton.

686. How long is that agreement to last?—That is subject to the will of the railways and the bridge company and the government. Whenever there is any dissatisfaction on the part of either party they can appeal to the Committee on Railways and have it settled.

687. But that agreement between you and these railway companies has been made without the government's interference, but subject to their approval?—It is subject to their approval.

688. How long is that agreement to last?—It will last, as I tell you, until there should be some disagreement probably; if they wanted to raise the tolls or lower the tolls, then you have got to come to the Railway Committee. They were changed once since they were made.

By Mr. McMullen :

689. What change was made in the tolls?—The change was made with reference to engines and cars from the Canadian Pacific Railway.

690. You say, Mr. Temple, that there were changes made in the tolls from time to time?—That is what I am speaking of.

691. Was there ever any other change made in the tolls?—No.

692. Who regulated the tolls in the first place?—The tolls were regulated by the bridge company, and then brought to the government at the committee, and sanctioned by the government.

693. And the bridge company are the same men that own the lines approaching the bridge on each side?—Yes; they own the road; it is not the bridge. You speak about the bridge; why, there is nearly as much cost to the road as to the bridge.

694. You own the line approaching the bridge on one side, and Mr. Gibson the line on the other?—Yes.

695. And you and Mr. Gibson, with others, compose the bridge company?—Yes.

696. You say that the company arrange the tolls?—Yes.

697. And then got the government sanction to the tolls?—Yes.

698. Well, now, would it be in the interest of the company to make the tolls low?—It would at that time. We would have got nothing to do if they had not been low. We could not get any traffic unless they were low, because the roads were too poor, and not able to pay high tolls. We were anxious to get something to help pay the expenses. After the Canadian Pacific Railway abandoned their contract to build that section of the road, the bridge was left there without anything.

699. When you commenced to regulate your tolls, what guide did you make use of?—We had lots of guides from other roads and bridges, and other things.

700. Did you take the ordinary toll charged on other bridges?—Not altogether, we may in some instances. If we had adopted the same tolls we adopted on the St. John Bridge below we should have had nothing to do.

701. You had to adopt a lower rate?—Yes; but if we had the same rate and the same traffic, we could pay something, which we should have had if the Canadian Pacific Railway had gone that way.

702. And in order to get work for the bridge to do, you had to fix a rate of tolls away down?—Oh, I don't know that it was away down.

Mr. MULLOCK—Here are the rates—"Minutes of board meeting on the 10th December.

"A meeting of the shareholders of the Fredericton and Saint Mary's Railway Bridge Company was duly called and held this day at 3 o'clock, p.m., at the office of Alexander Gibson, Esq.

"Present—All the stockholders.

"President in the chair."

703. That would be Mr. Gibson, was it?—Yes.

Mr. MULLOCK (continuing)—"Minutes of meeting held on June 4th, 1889, read and confirmed.

"On motion the following by-law was made and passed by unanimous vote :

"That the tolls for the use of the bridge of the Fredericton and Saint Mary's Railway Bridge Company for the time being be fixed at the following rates :—

" Passengers, each.....	\$0 10
" Merchandise, per car	2 00

Fredericton and St. Mary's Bridge Inquiry.

" Shingles and clapboards, per car	\$2 00
" Other manufactured lumber, long and short, per car	1 00
" Flour, meal, grain and grain products, per car	2 00
" Live stock and fresh fish, per car	2 00
" Grindstones, per car	2 00
" Sleepers, bark, wheels, ship timber, cordwood, stone, logs and timber, per car	1 00
" Coal (car load), per ton	0 10
" Merchandise, fresh fish, live stock and unenumerated articles not provided for, per 100 lbs	0 02

704. Then there were some variations later on? There was a change in the schedule?—I think the lumber of all kinds was put at \$1 in the next change.

Mr. MULOCK—On the 9th of March, 1894, it appears from the minute book there was a meeting held, and the following minute is recorded:—

" On motion of Mr. Rowley, seconded by Alex. Gibson, jun., the following by-law was enacted: ' Resolved, that the following additional tolls for the use of the bridge of the Fredericton and Saint Mary's Railway Bridge Company be fixed and charged:—

" Passenger cars, each	50 cents.
" Box and flat cars, each	30 "
" Locomotives, when hauling trains	Free
" Locomotives, light, or when hauling conductors' van	75 "

705. These are the existing rates now; I find no other minute?—No.

By Mr. McMullen:

706. There were no other reductions made?—No.

By Mr. Daly:

707. These are the usual charges, I suppose?—Yes. Some charge nothing—we did not for some time—for empties.

By Mr. Mulock:

708. There was a mortgage executed to the government for the government loan?—Yes.

709. And then the company issued a second mortgage to secure the \$50,000 bonds?—I don't know. That is more than I can tell you. I think the bonds were issued before the other was given.

Mr. MULOCK—I will read you from the minute of July 30th, 1888:—

" A special meeting of the shareholders of the Fredericton and Saint Mary's Railway Bridge Company was duly held at the office of Alexander Gibson, Esq., Marysville, on Monday, the 13th day of July, 1888, at 2.30 p. m., pursuant to notice.

" All the stockholders present.

" President in the chair.

" Minutes of meeting held on the 5th day of June last past, read and confirmed.

" The object of the meeting was to consider the issue of bonds on the bridge and its approaches and railway connections.

" Ordered that the directors be authorized and empowered to issue bonds bearing date August 1, 1888, in due form under the seal of the company, to the amount of two hundred dollars on any part thereof with interest at six per cent per annum payable half yearly on the first day of August and February in each year at the company's office, Fredericton, N.B. Fifty thousand dollars thereof payable in five years from the date thereof, and the balance in twenty-five years from the date thereof, denominators of \$1,000 each with interest coupons attached, and that the directors be fully authorized to mortgage all the property of the company, its assets, rents and revenues both present and future to trustees to be by them named to secure the

payment of said bonds and interest, subject to the provisions of the Act of Parliament relating thereto and the lien of the Dominion Government for loan, and that such mortgage be duly executed by the president and signed by the secretary and the corporate seal of the company be thereto affixed and when executed be duly registered."

710. Well, then, Mr. Temple, will you just please look at that minute and tell me if that is the minute under which this \$50,000 of bonds were issued?—I think it is quite likely. I cannot recollect now.

711. There was no other issue of bonds than the \$50,000 you referred to?—No.

712. There are no bonds outstanding now?—No.

713. The only debt due now is the debt due to the government?—Yes, those bonds are due to the parties who took them up.

By Mr. Daly :

714. Subject to the provisions of the agreement with the government?—Yes, of course. It could not be done in any other way. The Act provides for that.

By Mr. Mulock :

715. The minister, I think, produced the mortgage to the House?—I suppose he did so. I do not know. I think he produced the contract, too.

716. He produced the mortgage and the contract, I think.—The mortgage shows how it was to be done and how it was to be arranged supposing they took the bridge over.

717. Did the government ever press you to pay up the interest on the bonds?—They wrote pretty sharp letters some times.

718. They never took any proceeding? They did nothing but write letters?—That is all. There was a contract, they could take it over at any time they liked, paying us a certain amount.

By Mr. McMullen :

719. Are the tolls that you collect increasing?—I think last year, so far as I recollect, they were about \$1,580 more than they were before, and I can only say this, speaking of that, that I am quite satisfied it will increase a great deal more during the next two or three years, more than three times that, I should judge from the appearance of things, and from the traffic that will and must come over the road, because it is 130 miles nearer, now the bridge is built, to the Boston market, than it would be to go round by Chatham Junction, Moncton, St. John, and back to Fredericton Junction again. It is over 130 miles difference, so you can easily judge the difference there would be in the expense of carrying the lumber, that is shingles, clapboards and hemlock boards. Now the duty is taken off it is going to make a vast trade. The district of the Miramichi River is the best section of the country we have got for this kind of lumber, and it may be there are now 400 carloads of bark lying there to be shipped. I am quite satisfied that it will pay the government something yet, and in a short time, but it will take some time to get saw-mills up and all those things along the road. Some parties are building now.

By Mr. Mulock :

720. Can you tell me from this document (produced) how much you spent on the maintenance of the bridge?—Yes, I think so.

721. Are you willing to swear that that is correct?—I have no doubt it is. It is taken from the book, I am satisfied about that. It must be so. They could not make the figures.

722. Well, what are the gross earnings of this bridge in 1889?—\$1,546.34.

723. And what were the gross earnings for the year ending 30th June, 1890?—\$1,546.34.

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Mr. DALY—That is the same you said before.

Mr. TEMPLE—I know it is the same, that is what Mr. Mulock is asking.

Mr. MULOCK—Just give it to us for each year, the gross receipts, the gross earnings, and the operating expenses.

Mr. TEMPLE—\$1,546.34.

By Mr. McMullen :

724. That is for 1889?—That is for 1888 and 1889. That is just the commencement. Then the expenses are \$1,300.

725. That is right?—That is what you have there?

726. Yes?—Well, it is a copy of this. Year ending June, 1890, the next is —

727. Receipts?—\$2,461.02.

728. That is right?—And expenses, \$1,300.

729. That is right?—There are no other expenses than there were before.

730. Now, 1891?—1891 is \$2,564.24.

731. There must be something wrong there, Mr. Temple?—Oh, yes, I took the wrong line. It is \$2,908.69.

732. That is right. Operating expenses?—\$1,300.

733. That is right. Now, 1892?—\$3,360.99.

734. That is right. Operating expenses?—\$1,750, this year.

735. That is right. 1893?—Receipts, \$3,011.28, a little less than before.

736. That is right?—And expenses, \$1,400, a little worse than before, both worse.

737. 1894?—In 1894 the receipts were \$4,544.30.

738. That is right?—And expenses, \$2,000.

739. That is right?—There were some repairs that caused that.

Mr. DALY—Well, Mr. Temple, you had other expenses in 1893 than the operating expenses, because I find in the minute book a minute dated January 21st, 1893, with a detailed statement of the expenses incurred in effecting a junction with the Canadian Pacific Railway on the eastern side of the St. John River. If you will look at that you will see the total given is \$5,766.59.

By Sir Richard Cartwright :

740. That is on capital account?—That is on capital account, it is not included in this at all.

By Mr. McMullen :

741. You have not these figures added up there, the gross receipts and expenditure?—No, I have not. You take each year by itself. You want to know what was done with the balance, I suppose.

By Mr. Mulock :

742. You have told us that. The only thing is the amount?—That is all. I have told you the amount.

743. That is what you have not told us. We cannot get at the amount so?—Why, you can see what the balance is.

744. I know from my memory that the figures given there include more disbursements than would be properly termed operating expenses?—These things are paint, oil, and all the expenses put into these operating expenses.

Mr. DALY—These returns are sworn to.

Mr. MULOCK—Here is the foundation for that mistake about that railway lease. This a letter from Mr. Collingwood Schreiber to the Secretary of the Department of Railways and Canals, Mr. Balderson: "I send you herewith for file a copy of an agreement, dated the 31st day of December, 1892, between the Fredericton and St. Mary's Bridge and Railway Company and the Canadian Pacific Railway Company, with reference to the railway bridge over the St. John River crossing from Fredericton to St. Mary's in the County of York."

Mr. DALY—What is the date of that?

Mr. MULOCK—The date of the letter is the 18th of April, 1894.

Mr. TEMPLE—That is what I was referring to.

Mr. DALY—And more than that, I find by the report of the railway department of 1894 that it is not shown in any returns at all, but it is shown in 1895.

By Mr. McMullen :

745. I find on adding up the receipts and expenses for the years given, that the receipts altogether for the six years come to \$17,832.62?—Yes.

746. And the expenses during the same time for operation come to \$9,050, leaving a net balance of earnings of \$8,782.62?—Yes.

747. That is the way they add up?—I dare say.

748. Those are the figures you gave me?—I dare say that is all right.

By Mr. Boyle :

749. Do you keep an interest account other than the interest due to the Dominion government?—Yes. The balance every year was paid on the \$50,000 bond, and the balance that was left was paid out of the company's own fund.

By Mr. Daly :

750. As I understand it the surplus earnings went as far as they could towards paying the interest on the bond?—Yes.

751. And the difference was made up out of your private pocket?—Yes.

By Mr. Taylor :

752. I understand you to say that you expect that the income from the increased traffic will be ample to pay the interest on the whole amount?—No, I do not say that. I say in the next two or three years I am satisfied that it will be a great deal better. You can see by the last returns there. I think there is about \$1,500 difference.

Mr. McMULLEN—There was over \$2,000 of gross earnings after paying the running expenses, about \$4,000 the last year.

Mr. BOYLE—That is after paying the interest on the bond.

By Mr. Wood (Westmoreland) :

753. Were the bills for the cost of this bridge all paid in cash except \$50,000, which was paid in bonds?—\$300,000 that we got from the government was paid direct to the contractors.

754. Well, I say the contractors received all cash for the work except \$50,000 bonds?—All cash.

755. They received this \$50,000 bonds?—Yes.

756. And they were guaranteed by Mr. Gibson and yourself and afterwards taken up at par?—They were afterwards taken up at par.

757. Do you consider it a cheap work?—I do. All the engineers that have ever looked at it say it is the cheapest job that was ever done in this Dominion, according to the work, and I think it is myself.

758. At all events the bonds were taken up at par and all the rest were paid in cash—that is what I want to get at?—It is all paid for.

759. Upon what do you found your expectations of increased traffic developing?—As I said before, the Canadian Pacific Railway at the time the bridge was commenced or just after it was commenced, had a contract to build a short line, and they built two sections of the short line, but they failed to complete the other section. The bridge was built in the meantime, and they left the thing on our hands. We expected large traffic.

Fredericton and St. Mary's Bridge Inquiry.

760. That explains the disappointment you underwent. Now, I ask you upon what do you found your expectations of future increase?—Well, the reason is that there are other roads being built there. There is a road that will be commenced this year probably, going into the coal fields there. There are about 40 miles of coal fields, and the commencement of it is about 25 miles from the bridge. It runs over a large area.

761. And it is inevitable that this new line must use your bridge?—Yes; it could not be otherwise.

By Mr. Daly :

762. I read to you a few minutes ago, out of your minute book, the record of an expenditure of \$5,766, an expenditure incurred in making that connection in 1892 with the Canadian Pacific Railway; where did that come from?—Out of our own pockets.

763. Is there a floating debt?—Yes; of \$19,000.

764. And that money came out of the pockets of Mr. Gibson and the shareholders?—Yes.

By Mr. Taylor :

765. And the government has security on the whole thing?—Yes; on the bridge and on the road. There is a mile and a half, or a mile and a quarter, of an approach on the western side that connects with the Canadian Pacific Railway. There are a great many people who do not understand this matter. They speak about the bridge, and think it cost a great amount of money. The bridge only cost about half the expense, and we have had to pay the other ourselves.

By Mr. Daly :

766. The approaches?—The approaches and the land damages, and the building of this road to connect with other roads on the western side, with the United States road and the Canadian Pacific Railway.

Mr. Temple was relieved from further attendance.

The Committee adjourned.

58 Victoria.

Appendix (No. 1A.)

A. 1895

REPORT

OF

PUBLIC ACCOUNTS COMMITTEE

WITH REFERENCE TO THE

SAULT STE. MARIE CANAL

TOGETHER WITH

EVIDENCE ADDUCED BEFORE SAID COMMITTEE AND EXHIBITS
IN CONNECTION THEREWITH

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

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EXCELLENT MAJESTY

1895

Sault Ste. Marie Canal Inquiry.

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Sault Ste. Marie Canal Inquiry.

REPORT.

The Select Standing Committee on Public Accounts beg leave to present the following as their Fourth Report :—

Your Committee have had under consideration certain payments made to Hugh Ryan & Co., for work done on the Sault Ste. Marie Canal, as set out on pages 2, 11, 12, 43, 44, 45 and 46 of the Auditor General's Report on Appropriation Accounts for the fiscal year ended 30th June, 1894, and in connection therewith have examined witnesses under oath, and for the information of the House, report annexed hereto the evidence given by such witnesses, and the exhibits filed during said examination ; and the Committee recommend that the said evidence and exhibits, with the exception of exhibits Nos. 5, 6, 7 and 8, be printed.

All which is respectfully submitted.

GEO. B. BAKER,
Chairman.

COMMITTEE ROOM,
Thursday, 11th July, 1895.

Sault Ste. Marie Canal Inquiry.

EVIDENCE

TAKEN BY THE

PUBLIC ACCOUNTS COMMITTEE

WITH REFERENCE TO THE

SAULT STE. MARIE CANAL

Sault Ste. Marie Canal Inquiry.

MINUTES OF EVIDENCE

COMMITTEE ROOM No. 49,

HOUSE OF COMMONS, 17th May, 1895.

The Select Standing Committee on Public Accounts met at 10.30 a.m., Mr. Baker in the chair.

Mr. COLLINGWOOD SCHREIBER called, sworn and examined.

By Mr. Davies :

1. You are the Deputy Minister and Chief Engineer of Railways and Canals, Mr. Schreiber ?—Yes.

2. You are summoned here to produce the tenders in the Sault Ste. Marie Canal contract ?—They are all here.

3. Will you produce them, then ?—Here they are.

(Witness then produced two volumes of documents marked "Sault Ste. Marie Canal, volume 1," and "Sault Ste. Marie Canal, volume 2".)

4. You have returned the specifications, have you, Mr. Schreiber ?—Yes, the specifications and the contract.

5. Have you the estimates with you ?—No; the Auditor General has them.

6. Have you a copy of the tenders yourself ?—No, but there is a copy of all the estimates in our department in the Accountant's office.

7. Will you look them up, Mr. Schreiber, please ?—The Auditor General will have them.

(At this point the Auditor General put in a file of papers marked "Sault Ste Marie Canal, Hugh Ryan & Co. Estimates from Auditor General's Office.")

8. Are these the papers ? I want to see that they are here ?—I suppose they are the estimates, the Auditor General undertook to send.

9. Will you open them and see that they are there ?—These are the last estimates, yes.

10. What other estimates were there than those ?—The estimates from the commencement of the work.

11. That is what I wanted. Have you those ?—I have not them here.

12. Are they in your department ?—They are with the accountant.

13. Will you have them produced and sent here ?—Yes.

Mr. HAGGART—Send for them now.

The AUDITOR GENERAL—These estimates include everything up to that time.

By Mr. Davies :

14. But there are other estimates ?—Part of those are monthly progress estimates, but the whole of them are embodied in that. Each month embodies all the work done previous to that.

15. These will show all the estimates ?—They will show what is covered by all the estimates.

16. The contract is there ?—The contract is there.

17. Were there any changes made in that contract ?—There were changes made in the plans.

18. I want you to be accurate, please, and tell me what the changes were that were made in the plans. Did they form part of the contract?—They did.

19. Then if changes were made in the plans changes were made in the contract?—Certainly.

20. Will you kindly detail to the committee the changes made in the contract?—The original plans show a lock 600 feet long by 85 feet wide, and my recollection is 16 feet 3 inches of water on the mitre sill.

21. Yes?—These were changed subsequently to 650 feet long, 100 feet wide, and again there was a further change.

22. Was there any change in the depth the first time?—I do not think so.

23. Be sure, please, I want you to be accurate. I do not want any trouble about it afterwards?—I do not think there was any change.

24. Can you inform yourself accurately by looking up the papers?—Yes.

25. Do so, please, and the date of the changes?—They are all in the orders in council. I do not think there was any change, so far as I remember. (After examining the papers.) Yes, I think it was 19 feet it was changed to at that time.

26. Are you sure?—No, I am not.

27. But you say the orders in council will show that clearly?—The orders in council show clearly what the changes were in each case.

28. We will keep to the first change, please. Can you give me the date of that first change?—I think it was October, 1891. (After examining the papers.) It was the 23rd December, 1891.

29. That is the first change?—Yes.

30. Now, was there any other change made afterwards?—Yes.

31. If so, what was it?—The lock was changed from those dimensions I have given.

32. From 650 feet long?—To 900 feet in length by 60 feet in width by 20 feet 3 inches on the mitre sill.

33. Now, what date was that?—That was in 1892.

34. What time in 1892?—The order in council shows the exact date.

35. Well, you need not wait to look that up. Now, did you make estimates of the probable cost of this work for the Minister before the tenders were called for?—No, but I see by the correspondence that the then chief engineer did make statements.

36. Estimates were made by the chief engineer for the time being?—Yes.

37. Have you got those?—They are here.

38. Do they agree with the work done? Do you know?—In what respect?

39. In any respect?—Do you mean as to prices?

40. Yes.—The prices are different to those in the schedule.

41. Can you detail the differences?—It is all shown there.

42. I know I could work it out for myself, but surely your skilled knowledge should be a help to us. In a very few moments you should be able to tell me. (Witness then proceeded to examine the papers).

43. If it is going to take any time I will not keep the committee waiting?—I will tell you in one moment.

44. I will get Mr. Gibson to work that out. He will understand the estimate?—The masonry in the lock walls on the original estimates was \$11 a yard. The additional masonry, not the quantity that would have been in the original masonry, but the additional masonry.

45. Caused by what?—Caused by the change—would be \$16 a yard.

46. Yes.—Then again in the third change the additional masonry.

47. Excuse me, there are only two changes given by you.—There was the 650 feet estimate, \$11, which I told you was the original. The \$16 was the additional quantity of masonry under the first change; then under the second change of 900 feet, the additional masonry was \$12.60.

By Mr. Haggart :

48. Are those the estimates or the actual prices?—Those are the actual prices given under the engineer's recommendation.

Sault Ste. Marie Canal Inquiry.

49. You were asked for the estimate?—That is the same as the engineer's estimate.
50. The prices are the same?—Just the same in the report of the chief engineer.

By Mr. Davies:

51. The estimate made by the chief engineer agrees with the cost of the work generally. Do I understand you to say that?—These are the terms, or rather the estimate of the then chief engineer upon which an arrangement was made with the contractor to make these changes.

52. At the time the changes were made?—At the time the changes were made.

53. At the time the changes were made, was any arrangement reduced to writing?—Oh, yes.

54. And a new contract made each time?—An agreement made each time.

55. And that agreement is there and specifies the price to be paid?—It does.

56. So that anybody reading this agreement which was made at the time will see exactly what the contractor was to get?—Exactly.

57. Is the contract finally completed?—It is not quite, almost.

58. I want you to give me an idea, as accurately as you can, in what respects that contract is not completed?—Where the earth during the winter settled, to fill in all those places, and levelling up.

59. It is only a mere matter of levelling up?—Small things to be done, very small.

60. About how much of it is practically completed?—It is practically completed.

61. How much would require to be done?—That is the lock contract. There are two contracts we have. There is the lock contract and there is the lower entrance. The lower entrance is dredging and crib-work.

62. We will keep to the lock contract, if you please, for a moment. Is the lock contract finally completed?—It is practically completed.

63-4. How much more will it take to complete it?—

Hon. MR. HAGGART—You made an estimate, Mr. Schreiber, and you have it in the estimate.

MR. DAVIES—Can you give an approximation within a few dollars?

WITNESS—Well, I don't remember what I have given in the estimates to the House. There are other things besides Ryan's work, you know, and I cannot remember what the details of it were, but I can get it for you.

65-6. Other things not in the contract?—Other things not in the contract, not belonging to that contract.

67. Which will require to be done before the work is said to be completed?—Before the whole work—

68. Keep to the lock?—Well, I say the lock is practically completed. There is very little to be done.

69. If you say very little it may mean one dollar or ten thousand, I cannot tell?—It may be ten thousand. I don't remember. I don't think it will be more than that.

70. You say it is a matter of ten thousand dollars before the lock is completed. Ten thousand dollars will require to be expended, for what class of work?—Levelling the ground chiefly.

71. Levelling the ground chiefly?—I think so.

72. Now, then, there was another contract for deepening the entrance?—That was excavating the lower entrance.

73. Deepening the entrance?—Deepening the entrance and building cribwork along the side of the piers.

74. Now, is that contract completed?—It is completed with the exception of about 500 feet of cribbing, I think.

75. How much? In the neighbourhood of what?—I think about 500 feet.

76. In the neighbourhood of what cost?—I really don't remember what it was now, but I can give you those particulars.

77. Now, about 500 feet of cribbing you estimate to cost, about what?—I really forget what it was, but I can give you the figures.

78. I don't want the figures within a dollar or so ; I want an approximation.—I don't remember just now.

79. Because I do not know what five hundred feet of cribbing would cost.—I would rather give you the figures.

80. When will you give me the figures ?—To-day.

81. This morning, so that it will go in as part of your evidence ?—Yes.

82. Then, with those two exceptions—500 feet of cribbing and possibly ten thousand dollars to level up around the lock—that contract is completed ?—Practically completed. There is a little rock to come out of the mouth, which is just about finished.

83. Have you got a statement of the amount paid and when paid ?—The accountant has.

84. Have you got it ?—I have not it.

85. When you get the other estimate here of what it will cost to finish that cribbing, will you also bring a statement of the amount paid and when paid ?—Yes.

86. That is, this morning ; I mean so that we will get this thing over ?—Yes.

87. Was the contractor to receive any bonus ?—He was.

88. What bonus was he to receive ?—\$90,000.

89. Has he received it ?—I think he has.

90. When ?—As the work progressed, I think.

Hon. Mr. HAGGART—It is provided in the order in council.

WITNESS. He has received it according to whatever the agreement is ; he has received it all now.

By Mr. Davies :

91. Then, I will ask you if you will kindly bring me that estimate of the cribbing work and also a statement of the amount paid and when paid ? I understand from the Minister the orders in council are all brought down ?—They are.

By Mr. McMullen :

92. Did the original schedule of prices regulate the additional work done under the new orders in council ?—All the work done up to the quantities of the original plan, they regulated it. But the new prices for extra work were not regulated by those.

93. Not regulated by the original contract ?—Not regulated by the original contract.

By Mr. Davies :

94. Did the original contract contain a schedule regulating them ?—It did, yes.

95. At the time it was entered into ?—In each case, yes. It is given there (pointing to documents in front of him).

By Mr. Haggart :

96. The engineer's reports by which these changes were made, have you brought them all down ?—They are all there.

97. Who was engineer at the time, or who was Minister ?—In 1891 Mr. Bowell was acting, I think, when this was done.

By Mr. Davies :

98. When this was done ?—When the first change was made.

By Mr. Haggart :

99. Who was the engineer ?—I think it was Mr. Trudeau.

100. Who was Minister at the last change ?—The last change, Mr. Haggart.

101. Who was the engineer in chief ?—Mr. Trudeau.

102. Did you get his recommendation ?—Yes.

Sault Ste. Marie Canal Inquiry.

By Mr. McMullen :

103. With regard to the levelling you say has yet to be done, Mr. Schreiber, is there any schedule of prices regulating the prices to be paid for that?—Yes.

By Mr. Davies :

104. Has any claim been preferred for extras?—No, none yet.

105. Do you know of any claim? Have you been spoken to with respect to any claim for extras?—They said they intend to put in a claim, but I don't know what it is.

106. Have they told you what the extras were for?—No, they have not.

107. Have they told you the amount?—No, they have not.

108. Have you any report from sub-engineers or anything?—No, I have not.

109. Calling your attention to any extra work?—No.

110. Did the department authorize any extra work?—I think not.

111. Don't think; I want you to know. Did the department authorize any extra work?—I don't know of any.

112. So that if any extra work was done it was done without any authority of the department?—Without any authority of the department.

113. As far as you know? Is there anybody else who could give authority without your knowledge?—Yes.

114. Who is that?—Mr. Trudeau and Mr. Page.

115. And neither of them is to the fore now?—No.

116. Would they give authority without giving it in writing?—I think I might say yes.

By Mr. McMullen :

117. Without reporting immediately to the department?—I think so.

By Mr. Haggart :

118. You would know by estimates, Mr. Schreiber, whether they ever did it or not?—There is nothing in the estimates to show.

By Mr. Davies :

119. Do I understand you to say you gather that the practice of the department has been for the chief engineer, or so and so, to authorize extra work to be done without making any record?—Mr. Page used to.

By Mr. McMullen :

120. And not supposed to report? Would he not be supposed to report when he did so immediately to the department?—Well, he did not, no.

Mr. HAGGART.—The reports of the engineer upon which these changes were made are here and the dates as well. You can consider them just as put in.

By Mr. Davies :

121. Are they amongst the papers produced?—They are amongst these papers.

By Mr. McMullen :

122. What amount of work has been done to complete the canal that is not regulated by the schedule of prices in the original contract?—I don't understand you. What amount of work has to be done?

123. What amount is to be done, or has been done that has not been so far as prices are concerned regulated by the original schedule of prices?—I could not tell you. The estimate will show you, that document there.

124. Will you kindly turn up and see the amount of work that is not regulated by the original schedule of prices in connection with the contract?—There is one estimate, \$18,296. Another \$228,953. Then there is \$90,000.

By Mr. Foster :

125. Is that the bonus?—Yes.

126. What was the bonus for?—It was for having the lock built by a certain date.

127. Before the contract time?—Yes.

By Mr. McMullen :

128. Was it finished then?—My recollection is that it was.

By Mr. Davies :

129. Was it finished before that time?—About that time.

130. About what time?—1st July, 1894.

131. When did the contract call for?—They extended the time under one of the agreements from 31st December, 1893, to 31st December, 1894, but these documents will show exactly.

132. Then they did not finish it before the contract date?—They finished the lock itself in July, 1894.

133. Was the bonus to be paid for the finishing of the lock?—It was for the whole of the work that is there described.

134. How long before the contract date were they to finish it in order to get that bonus?—My recollection is that it was 31st December, 1894.

135. When what?—The lock was to be finished.

136. If the lock was to have been finished on the 31st December, 1894, they were paid a bonus to finish it, how much sooner?—31st July, 1894.

137. A bonus of \$90,000?—I am not sure.

By Mr. Haggart :

138. Now, be correct. Why do not you refer to the order in council?—I have it here, and I have the date when the lock is to be built.

By Mr. Davies :

139. Give us that to start with?—\$90,000 to build the lock by July 14th.

140. You have already stated that the original contract called for December, 1894. Have you got that document?—I have the document before me, but I am not looking at it now.

141. Well, let us get that to start with; let us get one thing at a time.—I am trying to get it. (Examining the papers.)

142. Do you know if the original contract provided for the completion of the lock by 1893 or 1894?—1893, I think it was.

143. The original contract was for 1893?—I think so.

144. And the correction was for 1894?—Yes.

145. And the bonus was given for 1894?—Yes.

146. Are those the correct dates?—I think so.

147. And the bonus was paid at the time specified?—I think so.

148. Where will I find the time when the bonus was paid?—The estimates will show it.

149. In the estimates?—Yes.

150. So that the order in council, extending the contract, extended it six months beyond the time you gave a bonus to complete it?—Yes.

151. Is that a correct statement, Mr. Schreiber?—Here it is, the 14th October, 1892. It states here that the construction of the lock walls is to be completed by 31st December, 1893. That was under the original contract.

Sault Ste. Marie Canal Inquiry.

By Mr. Haggart :

152. That is the lock wall. He wants to know when the lock was completed—wooden culverts and everything?—31st July, 1894. It is the lock wall.

Mr. HAGGART—No; it is the whole lock. Look at the documents.

Mr. DAVIES—If Mr. Schreiber is to bring these two statements, I consider he should take time to look for these things. We want three things: the date when that original contract was to be completed, the date when the *bonus was proposed to be paid to them upon its completion within a shorter time*, the date of that shorter time, the date to which the contract was extended, and the time when it was extended.

Mr. OUIMET—It might be well to add the date of the different changes, and the extent of the changes made in the contract.

The WITNESS—You will want the whole letters before you to do that.

By Mr. Davies :

153. Have you got the original contract?—The original contract is here.

154. On what date did the original contract call for the completion of that lock—On or before the 10th day of May, 1892.

155. That was the original contract for the construction of the lock?—That was the original contract for the construction of the lock.

By Mr. Ouimet :

156. Is that the date of the contract or the date when it was to be completed?—This is the date of the contract, the 20th November, 1888.

By Mr. Davies :

157. Was that all?—It was.

158. Then the next?—On the 5th April.

159. That is the date of the document you have got, is it?—Yes, 5th April, 1892. Yes, the lock wall was completed I see on the 1st December, 1893, that was it.

160. So you were right in your first statement?—I was right, yes.

161. Now, will you give us some data we can rely upon exactly?—Well, by the agreement of the 8th November, 1892, I see the contractors undertook to build the lock masonry by the 1st December, 1893.

162. Well, now, by that particular agreement dated 8th November, 1892, the lock was to be completed by the 1st December, 1893. Very well.

Hon. Mr. HAGGART—That is the lock masonry.

By Mr. Davies :

163. Is that the original contract?—No.

164. Well, there was a contract previous to that by which the lock was to be completed at an earlier date. Is that correct?—The whole thing was to be completed in 1892, that is 31st December, 1892.

165. Then the agreement of the 8th November, 1892, was for an extension?—To 1893.

166. The agreement dated 8th November, 1892, for the work to be completed by the 1st December, 1893, was an extension?—That was an extension of time.

167. Was there any further extension?—I don't think so.

168. Now then, when was the lock completed?—The lock masonry, not the lock.

169. But by the agreement the lock was to be completed. Will you read what the agreement says?—“And whereas in reply the said Hugh Ryan & Co. stated on the 30th September, 1892 (file No. 141562) that if concrete were substituted for masonry in the backing of the lock chamber walls, and the order to proceed given at once, they would undertake to build the lock masonry by the 1st December, 1893, for the additional sum of ninety thousand dollars (\$90,000).”

170. The lock masonry was then to be completed by the 1st December, 1893?—Yes, the lock masonry.

171. When was it completed?—It was completed by that time. The estimates will show it, I think when you get them.

172. It was completed by that time?—Yes. Oh, the estimate was right.

173. Can you refer to the estimate to make your recollection sure?—Yes, the estimate is before you.

174. Then there they are (handing documents to witness).—Those do not give it.

175. I thought you said all the estimates were there?—That covers all the work done by all the estimates.

176. What is missing that you want to refer to?—Each month's work; the estimates for each month. That embraces all the work.

177. When you come back you will bring that document with you?—Yes.

178. Was that the time the bonus was agreed to be given, 8th November, 1892? Does that contract provide for the giving of the bonus?—It does.

By Mr. Haggart :

179. I will ask Mr. Schrieber when he comes back again to have just a memo. so that he can state quickly why it was the contract was extended from 1892 to 1893; if they had to finish the contract in 1892; why a bonus was given for its completion in 1893 and what were the reasons?—These documents will show it. It was the Americans who put a toll on all vessels passing through the American canal, and which was affecting the trade; and I think you will find it from correspondence here upon that subject in which I think some boards of trade urged.

180. But this is the point Mr. Davies is at. Under the original contract the lock walls were to be finished in 1892. Ninety thousand dollars were given for the completion and finishing of them in 1893. Why was it that this sum was given for the performance of work that was to be done in 1892? Give us the reasons and the documents and have them here at the next meeting. They are all in writing.

By Mr. Davies :

181. Can you do that before the committee adjourns this morning?—I will give all I can before the committee adjourns, but if you require these here I cannot do it.

182. Then give me what I asked for before? You have a memorandum?—Yes.

183. You will bring them over in a short time to resume your examination?—Yes.

The committee adjourned.

Sault Ste. Marie Canal Inquiry.

COMMITTEE ROOM, No. 49,

HOUSE OF COMMONS, 21st May, 1895.

Committee met.

MR. SCHREIBER, Deputy Minister of Railways and Canals, recalled, produced two of the statements asked for at the last meeting of the committee, which were marked Exhibits Nos. 1 and 2.

By Mr. Davies :

184. Have you got the information I asked for? I gave you three items of information I wanted at the last meeting?—One was the value of cribbing to be done by Ryan & Co., \$27,000.

185. Was what?—The value of crib-work yet to be done on section No. 1 at the lower entrance.

186. The value of crib-work yet to be built at the deepening of the entrance, is how much?—\$27,000.

187. This is the estimate made by whom?—The estimate made by myself as well as by others.

188. I want to know did you make the estimate? Is it your estimate or somebody else's estimate? Is it the residential engineer's estimate or your own, or whose is it?—No, it is my officer's, the chief draughtsman's, Mr. Spence's.

189. That is Mr. Spence's estimate. He is the draughtsman in your office, is he?—No, he is in charge of the draughting work.

190. Is he an engineer?—Yes.

191. Then Spence's estimate is \$27,000?—\$27,000.

192. That is for the crib-work at the entrance yet to be done?—Yes.

193. Did you test that estimate in detail so as to be able to endorse it or not?—I did not go into figuring on the contract prices.

194. You did not test it, you do not endorse it, you cannot endorse it; it is just Mr. Spence's estimate. I just want to see where it goes? Now, then, there was something else, you had the deepening of the entrance, had you not?—The deepening of the entrance is just about completed now.

195. Well, you were to give me some figures in reference to that. You said you were unable to do it the other day?—I am unable to do it now. I cannot give it.

196. Do you know how much it will take to complete?—We will have to sweep the whole channel to find out what rocks are remaining in the channel.

197. Had you any reports in your department which you might have examined, or you ought to have examined, which will enable you to form an approximate estimate?—I think probably two or three thousand dollars.

198. Have you any reports in your department as to the condition of that entrance which will enable you to form an approximate estimate?—I have nothing further than the report from my engineer up there saying that excepting these rocks that may be scattered about, the channel will be completed about this time.

By Mr. Gibson :

199. Loose boulders?—Yes.

By Mr. Davies :

200. It will cost you how much?—Two or three thousand dollars.

201. So that the resident engineer reports to you that it will cost two or three thousand dollars more?—What he reported was with the exception of any loose bould-

ers there might be through the channel—this channel is half a mile or three quarters long—any loose boulders left in, it will be completed about now.

By Mr. Gibson :

202. It is done to grade, is it ?—All done to grade.

203. Well, then, he estimates that the picking up of the loose boulders will in all likelihood cost between two and three thousand dollars.

Mr. HAGGART—Mr. Schreiber does that.

The WITNESS—It won't cost that.

By Mr. Davies :

204. Is there anything more, sir ?—I don't think so.

205. Was there not another statement you were to give me to-day ?—I think the payments you asked for (producing papers.)

206. Yes. This is the lock, is it ?—Section 2 is on the lock.

207. These are the dates and the amounts and the payments made up to date ?—Up to 30th June.

208. We will put these in evidence then. Now give us the date when that original contract was completed ?—There was two contracts. Contract No. 1, that was dated 30th January, 1889, and it was to be completed on 10th April, 1891.

208½. That is the first one ?—That was the first one. It was extended to the 10th April, 1892, when a change was made abolishing the —

209. When was it extended, what time ?—About November, 1891.

210. Extended November, 1891 ?—About that time.

211. To the 10th April, 1892 ?—That was at the time the beacon was abolished, and 390 feet of crib was extended 390 feet in lieu thereof at the contract prices.

212. The beacon was abolished and the crib-work extended 390 feet ?—Yes.

Mr. HAGGART, (to witness)—Are you sure about that ?—(To Mr. Davies). He was not in the department, you know, and is only reading from the documents.

Mr. DAVIES—I know, that is why I want to get possession of the facts.

WITNESS—Supposing I read that.

213. What are you reading ?—I am reading a memorandum I have taken from the papers.

214. Prepared by yourself ?—Prepared by myself.

215. Read it please ?—Will I read it from the beginning.

Mr. HAGGART—Commence at the first, about the contract.

Mr. SCHREIBER then read the following statement :—

“ On the 30th March, 1889, a contract was entered into with Messrs. Hugh Ryan & Co. for the forming of channel ways and constructing of beacons and piers at the lower entrance of the canal, the work to be completed by the 20th of May, 1891, excepting 60 lineal feet of the channel and pier works at the upper end of the section, which was to be completed by the 10th of April, 1892.

“ On the 24th of November, 1891, the Chief Engineer recommended that the beacon which was to cost \$13,000, should be done away with and that the north pier be extended a further distance of 390 feet, the cost of which he estimated at the contract price to be \$20,000, and that the amount of the cost of the beacon be transferred to the lengthening of the pier at the contract rates.

“ On the 2nd of May, 1892, an order in council was passed approving of the change and on the 18th of May, 1892, an agreement was entered into with the contractors for the changed work, the time for completion being stipulated as the 1st of December 1892. This change entailed an additional expense of about \$7,000.”

By Mr. Davies :

216. When was the bonus proposed to be paid ?—That is on that section ?

217. That is No. 1 section ?—That is No. 1 section.

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218. You have a similar memorandum with reference to section No. 2?—Yes.

Mr. DAVIES—Go on, then.

Witness then continued reading as follows :—

“ Section No. 2.

“ On the 20th November, 1888, a contract was entered into with Messrs, Hugh Ryan & Co., for the construction of a lift lock and prism, the lock to be 600 feet in length, 85 feet in width, with 16 feet 3 inches of water on the mitre sill, the work was to be completed by the 10th May, 1892.

“ In the latter part of 1890, and the early part of 1891, the Toronto Board of Trade, and others engaged in the shipping interests urged the great importance of the size of the lock being increased. Mr. Walter Shanly was called in to consult with the chief engineer, and report on the subject, which he did and finally the chief engineer on the 14th May, 1891, reported favouring the enlarging of the lock to 650 feet in length, 100 feet in width, with 19 feet of water on the mitre sill, and on the 21st May, 1891, an order in council was passed adopting his report. Negotiations were then opened with the contractors and an understanding was reached as to the conditions on which the contractors would carry out the change.

“ The chief engineer recommended the adoption of the conditions and on the 14th June, 1891, an order in council was passed approving the arrangement and on the 13th June, 1891, an agreement was entered into with the contractors for the execution of the additional works caused by this (the first) change in the plan of the lock.

“ The time for completion was extended to 10th May, 1893. The change involved the execution of the following additional work which at the prices named in the agreement, amounts up to the following figures taken from the progress estimate for the month of August, 1894 :—

“ ADDITIONAL WORK.

Rock from sides of lock pit	9,187 c.yds at	\$1.50	\$ 13,790.50
do bottom of lock			
pit and 50 feet above			
and below lock pit.	14,622 do	1.75	25,588.50
Rock from filling and emptying culverts	13,343 do	1.75	23,350.25
Loose rock, boulders and other material	3,230 do	1.50	3,230.00
Lock masonry	5,591 do	16.00	89,296.00
Puddle	nil do	1.25	nil.
Unwatering	lump sum		35,000.00

Total additional cost by reason of first change of plan . . 190,245.25

“ Towards the close of 1891, several transit companies addressed the minister urging the necessity for a further enlargement, or change in the dimensions, and the matter was brought up in Parliament when a promise was made that the subject should receive most careful and full consideration, which resulted in the chief engineer being called upon to investigate the matter and report his views. Accordingly on the 17th December, 1891, he presented six different plans, suggesting that he should be at an early date instructed to obtain from the contractors a price at which they would be willing to undertake the additional work involved by the change.

“ On the 22nd December, 1891, the chief engineer asked the contractors upon what terms they were prepared to undertake the execution of this additional work involved in the increase of the lock to 900 feet in length, 60 feet in width, with 19 feet of water on the mitre sill. On the 23rd December, 1891, an order in council was passed approving of the change, provided reasonable terms and conditions could be made with the contractors. Negotiations were opened with the contractors, and Mr. Walter

Shanly was asked to assist in arranging reasonable conditions. On the 1st of February, 1892, he submitted his views, and on the 29th March, 1892, the chief engineer, concurring in Mr. Shanly's views, reported the terms and conditions, and, on the 1st April, 1892, and order in council was passed adopting the terms and conditions and giving authority for the issue of an order to the contractors to proceed with the work. On the 5th April, 1892, the chief engineer issued the necessary authority to the contractors to proceed with the work upon the terms and conditions agreed upon for the change of the dimensions of the lock to 900 feet long, 60 feet wide, with 20 feet 3 inches of water on the mitre sill. The time for completion was extended to 31st December, 1894.

"The additional cost entailed by this change of the plan of the lock at the prices established as taken from the progress estimate for the month of August, 1894, is:—

" ADDITIONAL WORK.

1. Earth excavation in lock pit.	425 c. yds. at \$0.60	\$ 255.00
2. Rock do do	24,270 do 1.40	33,978.00
3. Ditto in culvert trenches, . . .	8,924 do 1.50	13,386.00
4. Concrete in foundations	17,808 do 8.30	147,806.40
5. Lock masonry	18,155 do 12.60	228,753.00
6. Timber in mitre sills and filling,	1,687 M. ft. B.M., 2.00	3,374.00
7. Plank in platforms	401,391 do 45.00	18,062.59
8. Iron bolts in sills and plat- forms	449,997 lbs. at 0.08	35,999.76
9. Pressed spike	106,694 do 0.05	5,334.70
10. Unwatering and contingencies, lump sum.		15,000.00

" NEW WORKS.

11. Filling behind lock walls	44,719 c. yds. at \$0.75	\$ 33,539.25
12. Timber in culverts and mitre sills	125,033 c. feet at 0.50	62,516.50
13. Plank in culverts and mitre sills (See No. 7)	M. ft. B.M. at 45.00	Nil.
14. Iron bolts in culverts and mitre sills (See No. 8)	lbs at 0.08	Nil.
15. Pressed spike in culverts and mitre sills (See No. 9.)	do 0.05	Nil.

Total additional cost attributable to second
change of plan. \$498,004.80

By Mr. Haggart :

219. In the former works the culverts are not included at all?—The culverts were not in the original contract with Ryan & Co. It was at first intended that the culverts should be of iron. Then when the changes were made it was determined to make them the same as on the American side in wood. When I say additional cost it is not entirely additional cost because the wooden ones are substituted for iron.

The committee adjourned.

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COMMITTEE ROOM, No. 49,
HOUSE OF COMMONS, 7th June, 1895.

The Committee met.

Mr. COLLINGWOOD SCHREIBER, Deputy Minister and Chief Engineer of the Department of Railways and Canals, re-called and further examined.

By the Chairman :

220. You have been sworn already, Mr. Schreiber?—Yes.

By Mr. Lister :

221. Mr. Schreiber, what was the contract let to Hugh Ryan & Co.? What was the amount of it and what was the work done?—The first contract?

222. The first contract?—The first contract was the lower entrance to the canal—deepening the channel at the lower entrance and the piers.

223. No, that was not the first, that was the subsequent contract. The lock was the first, was it not?—No, it was not. (After examining the papers.) The first contract was the lower entrance, let on the 30th January, 1889.

224. That was the lower entrance. How much was that contract? Have you the contract here?—Yes, it is a schedule contract, it is in the room here somewhere.

225. You can get it, I suppose?—Yes.

The CHAIRMAN—It is before the committee.

By Mr. Lister :

226. Very well, as a fact tell us how much the contract was let to Mr. Ryan for?—It is a schedule contract at schedule rates.

227. Well you figured them all out, I suppose?—It will amount to about \$421,000.

228. Turn up your figuring. I want to know just what it amounted to. How many tenders were put in for the lower entrance?—A. I really could not tell you. I was not connected with the canal at that time.

229. But you would know by looking?—I would by looking, yes.

230. Then you do not know how many tenders were put in?—I do not know.

231. Have you taken the trouble to look?—I have seen them a number of times.

232. Have you seen them lately?—Yes, in that book. I think I handled them the other day. I did not look at them specially. I fancy they are there (pointing to Exhibit 1).

233. Well you may as well look, you are familiar with the papers?—Here it is, but it has not the names. It is moneyed out.

234. No, the names are not there. You can identify the tender with the column, and there is a report to council and an order in council?—Here are the tenders for the lower entrance.

235. Well now what are they?—(Reading from Exhibit 1) Ryan, Ryan & Haney, \$299,313; Murphy & McGreevy, \$322,027; Allan & Fleming, \$329,842; Sutton et al, \$330,474; Fraser & Poupore, \$368,422; Peter Whalen, \$373,560; Edward Dawson, \$375,496; John Nicholson, \$377,200; Raynor, \$390,438; George Goodwin, \$411,902; Macdonald & Aylmer, \$461,867; Gilbert & Hutchinson, \$500,291; Larkin & Connolly, \$523,509; McNamee, \$705,295.

236. Those are the tenders for the lower entrance, Mr. Schreiber?—They are, yes.

237. Now look at the tenders for the upper entrance as moneyed out?—This has not the names added. There is one, \$348,821; \$508,085; \$529,676; \$405,131; \$529,904;

\$467,209 ; \$325,926 ; \$807,884 ; \$841,282 ; \$231,049 ; \$477,173 ; \$1,150,842 ; \$545,288 ; \$529,534.

238. Well now, if you look at the engineer's report you will see a summary of the tenders?—Whose report is that?

239. I think it is Mr. Page's report to the Minister?—Oh, yes.

By Sir Charles Hibbert Tupper :

240. Were these tenders received in Mr. Page's time?—Yes. Here it is signed "John Page."

By Mr. Lister :

241. Now, then, read from that, please?—Do you want the whole thing read or just the figures?

242. No, you need not read the whole report?—For the lower section, A, Hugh Ryan, \$299,313 ; B, \$322,027.

243. What is that?—That is Murphy's. G, \$329,842. These appear to be the lowest tenders.

244. Allan & Fleming, \$329,842?—\$329,842, yes.

245. These are the lowest tenders?—They are. Upper entrance, John Nicholson, \$231,049 ; William A. Allan and S. H. Fleming, \$325,926 ; Hugh Ryan, John Ryan and M. J. Haney, \$348,821.

By Mr. Haggart :

246. What is Mr. Page's recommendation? Have you it there?—He says: "It will be seen that the lowest tender for the lower section is that marked 'A' from Hugh Ryan & Co., \$299,000. It is desirable that that firm should under the circumstances have this part of the work, inasmuch as they could arrange their operations so as not to interfere in any with the delivery of materials for the lock, and other parts of the works, all of which it is believed must be brought to the place by way of the lower end of the lock sections. It may at once be stated that I am fully of opinion that tender 'J'."—

247. Whose tender is "J"?—John Nicholson's, I think. "It may at once be stated that I am fully of opinion that tender "J," which is the lowest for the upper section, should not be entertained, as the rate stated for the excavation or removal of the material to form channel-way is very little more, if any, than about one-half of what will be the cost of the work, a matter which of itself alone is believed to be the strongest possible reason for the course above recommended. The tender next on the list is "G," which although low, cannot be classed as unreasonable."

248. That is W. A. Allan & Co.?—Yes. "Which although low, cannot be classed as unreasonable. Still I fully believe that it would leave no margin for profit. The lowest tender for the lower and upper sections combined is the objectionable one marked 'J', \$608,249, above referred to, which cannot reasonably be considered. The next in order is the tender marked 'A', \$648,134, from Hugh Ryan & Co. I have the honour to be, &c."

249. Well, now, Mr. Schreiber, who got the contract for the lower entrance?—Hugh Ryan & Co.

250. And who was awarded the contract for the upper entrance?—Allan & Fleming, I think they are the contractors.

251. Allan & Fleming?—Yes.

252. Then the two entrances were awarded to different contractors?—They were.

253. As a matter of fact Hugh Ryan & Co. were the lowest tenderers for the lower section?—According to this, yes.

254. Their tender being \$299,313?—Yes, that is it was a schedule contract moneyed out at certain quantities, I suppose.

255. I suppose so. And Allan & Fleming were awarded the contract for the upper section at \$329,842?—\$325,000.

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256. No, \$329,000?—That is the lower section.

257. That is the lower section? What is the amount for the upper section?—\$325,926.

258. \$325,926?—Now they were higher than John Nicholson & Co.?—Apparently so, yes.

259. The report which you have just read awards the contract to Allan & Co., because it was thought that the tender of John Nicholson was too low?—So it is stated in this report.

260. Is that the habit of the department to be sure that the man who tenders for a work must make a profit out of it before they will award him a contract?—The usual practice has been to award it to the lowest.

261. So the practice of the department has been to award the contract to the lowest tenderer, eh?—Yes, I think so.

262. Why was that practice departed from in this case?—For the reasons stated here, I suppose.

263. What are those reasons again, please?—Because the Nicholson tender was considered too low, apparently.

264. Then as a matter of fact the department considers whether the contractor is to make any profit out of the contract or not?—I don't know. It is a question of carrying it through, whether he is able to carry it through, not as to what profit he will make.

265. The question of carrying it through involves the question of whether he can make a profit out of it or do it at the amount of tender?—Possibly so.

266. Well, would it not be so, Mr. Schreiber?—No, I do not know that.

267. Well, then, tell me what you do know? I am asking for an explanation of the facts, why it is in some cases you award the contract to the lowest tenderer whilst in other cases you pass over the lowest tenderer and award it to somebody who desires the contract at a higher figure?—Well, there are various reasons. This one especially appears to be because Mr. Page reported that he did not consider the work could be done for the money, I think.

268. Well, then, so far as that instance was concerned, the tender was refused because in his judgment, the work could not be done for the money?—No, that is what he recommends, I don't know why.

269. Was it your custom?—Well, I don't know that I have ever done that.

270. Have you always awarded to the lowest tenderer?—Not in all cases, I think.

271. Not in all cases?—No.

272. Now, when you invited these tenders was it a condition of the advertisement that the people offering should put up a certain amount of money as security for the performance of the contract?—I think the practice—I know what it is now but I don't know what it was with these tenders particularly—the practice has been that the deposits should be made with the tender, which if the party whose tender was accepted refused to enter into the contract, he would forfeit it.

273. He forfeited the amount put up?—Yes.

274. What percentage of the contract would that be? Was the amount an absolute arbitrary amount?—Sometimes it is a lump sum; other times, I think, there is 5 per cent when the contract is entered into.

275. It would be an arbitrary sum when the tender was put in?—It is in many cases, yes.

276. Did the advertisement in this case require that persons tendering to put up a fixed sum?—Well, that I really could not tell you.

277. Cannot you tell by the advertisement itself?—Well, it is here (pointing to papers in front of him). Did you see the advertisement in here?

278. I did not notice it, Mr. Schreiber, but I have no doubt it is there —Well, I am not sure.

279. Well, is it not always the practice?—It is the usual practice to do so.

280. You can say, can you not, from your experience in the department that it is always the practice to insist upon the deposit of a fixed sum as security that the contract would be performed if awarded to the tenderer?—Yes, I think so.

281. So that so far as Nicholson is concerned, the rule that applied to all others would be applicable to him?—I assume so, yes.

282. So as a matter of fact, I suppose Mr. Nicholson put up this money?—I presume so.

283. At all events it was not rejected because the deposit was not put up?—I don't know whether it was rejected, but I see the reason given by Mr. Page why he recommends it should not be accepted—because he considers it too low.

284. The report says he considered the offer too low?—Yes.

285. Now, then, tell me, suppose the contract had been awarded to Mr. Nicholson, what amount of money would he have been required to put up as security for the performance of the tender that he sent in?—5 per cent.

286. That would be over \$100,000? No, over \$12,000?—Yes, about \$12,000.

287. Do you know John Nicholson?—I have seen him. I don't know him.

MR. HAGGART—Surely the order in council returning the money speaks for itself; it must be there. That is all Mr. Schreiber knows about it.

MR. LISTER—It is there.

By Sir C. H. Tupper :

288. Read the order in council?—This appears to be the order in council: "On a memorandum dated 13th December, 1888, from the Minister of Railways and Canals representing that tenders have been sought for the work of deepening and forming the lower and the upper entrances to the Sault Ste. Marie canal, and 14 have been received for it.

"The minister further represents that under date 12th December inst. the chief engineer of government canals reported showing the prices of the several tenders extended to their bulk value on the approximate estimates of the work to be done furnishing a list of such values.

"That the lowest tenders, according to this statement, are as follows: Lower section, A. Ryan & Ryan & Haney, \$299,313; upper section I, John Nicholson, \$231,049. That with regard to the lower section the chief engineer reports to the effect that Messrs. Ryan & Co. who have the contract for the work should have this part of the work, inasmuch as they could arrange their operations so as not to interfere with the delivery of materials for the lock and other parts of the work, all of which must, it is believed, be brought to the place by way of the lower end of the lock section.

"That with regard to the upper section, he states that he is of opinion that the lowest tenderer, that of Mr. Nicholson, should not be entertained, as the rate given for the excavation or removal of the material from the channel way is very little, if any, more than about one-half of the cost of the work.

"That he considers the tender next on the list, marked 'G,' that, namely, of William A. Allan and S. H. Fleming, \$325,926, is one that cannot be classed as unreasonable.

"The Minister on the report of his chief engineer recommends that the contracts for the work on the upper section be given to Messrs. Allan & Fleming in conformity with their tender, that of Mr. Nicholson being passed over. The work for the lower section being placed in the hands of Messrs. Ryan & Co., the lowest tenderers for the same. The Committee submit the same for your Excellency's approval."

By Mr. Haggart :

289. Who is the minister?—Mr. Pope.

By Mr. Lister :

290. So that John Nicholson was passed over, for the reason given in that report to the minister?—Yes.

291. And the result of that, Mr. Schreiber, was that there was a difference in the cost to the country, so far as that portion of the work was concerned, of ninety-four thousand and some odd hundred dollars; Nicholson's tender being \$231,049 and Allan's tender \$325,926?—That would be \$68,000.

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292. \$68,000 the difference between \$325,925 and \$231,049?—Yes.

Sir C. H. TUPPER.—That is hardly a fair question, and it comes from the mouth of Mr. Lister.

Mr. LISTER.—I am simply asking.

Sir C. H. TUPPER.—We have lots of opinions as to whether the difference in the contract was anything whatever.

By Mr. Lister :

293. Well then, put it in this way, as the Minister of Justice objects. If John Nicholson's tender had been accepted at \$231,049, and he had done his work, what would have been the difference—the cost to the country—between his tender and that of Allan & Co.?

The CHAIRMAN.—It is simply a question of arithmetic.

By Mr. Lister :

294. \$94,000 would be the difference, would it not?—That is the difference in the two tenders.

295. Did you know John Nicholson as a contractor?—I have heard of him and I have seen him, but I don't know him.

296. Had he ever contracts with the Government?—I think he had, but I am not sure.

297. You are not sure about that?—I really do not know.

298. You have never taken the trouble to look it up?—I had nothing to do with him.

299. Had he any contracts with the Government since you held the office of Deputy Minister?—No.

300. Did you know, or is there anything in the department to show that John Nicholson withdrew his tender?—If there is it will be here, but I am not aware of it.

301. Is every paper, every bit of correspondence relating to this Sault Canal to be found here?—Everything in connection with the letting of these contracts is here as far as I know.

302. Is all the correspondence there?—In connection with the letting of the contract.

303. Between Nicholson and the department?—Yes, I think so.

304. You will say that?—As far as I know.

305. Did you go over these papers yourself?—I did.

306. Who selected them?—I went over and ran through them to put them in order.

307. You went over them after they had been selected?—Yes, after they had been selected.

308. Who selected the papers and put them into the files?—I put them into the files chronologically as they are here.

309. You put them in the order they are now?—Yes.

310. You undertake to say, Mr. Schreiber, all the papers in connection with the Sault Canal are to be found there, in the other papers returned to this committee?—All in connection with the letting as far as I know.

311. Did you find any letter or paper from John Nicholson withdrawing?—I am not aware of ever having seen such a thing, but if there is it would be here.

312. Do you know whether John Nicholson became a partner with W. A. Allan & Co. in the contract they had entered into with the government at \$325,926?—I do not.

313. You do not know anything about that?—Nothing whatever.

314. Do all of the members of the firm of W. A. Allan & Co., or any of them live in Ottawa?—Yes.

315. They are all here?—Yes.

316. Now you told me that the contract for the lower entrance was the first contract entered into by the government?—Yes, I thought so.

317. Are you positive about that?—No, I am not positive; I will see.
318. I am told not?—Perhaps you are right. (After examining the papers). No, section No. 2 was the first let; on the 20th of November, 1888.
319. What contract was that?—That was the lock.
320. That is what I thought.—Yes.
321. Then the lock was the first contract entered into?—I think so, yes.
322. The lower and the upper entrances were entered into subsequently?—Yes.
323. Were the contracts for the entrances entered into simultaneously?—No, they are not the same date.
324. Is there any considerable difference in the dates?—No, there is no great difference.
325. They are about the same time?—Yes.
326. Who received the contract for the lock?—The department. Oh, you mean who was awarded the contract?
327. Yes?—Hugh Ryan & Co.
328. Now, will you tell me how many tenders were received for the construction of the lock?—14.
329. How do those tenders read?—George Goodwin, \$1,163,692; Conmee, Ray, Dwyer & McTeigue, \$1,225,990; Ryan, Ryan & Haney, \$1,282,567; Neelon, Conmee & Shields, \$1,320,282.
330. Well, the contract was awarded to Ryan & Co.?—Yes.
331. What was the highest tender?—Parry, McDonald, McCallum & Lattimore, \$1,990,144.

By Mr. Gibson:

332. What is that?—\$1,990,144.

By Mr. Montague:

333. Will you read all the tenders, Mr. Schreiber?—I read down to Neelon, Conmee & Shields. The next is McArthur Bros., \$1,385,650; Raynor & Belden, \$1,450,806; Murphy & McGreevy, \$1,525,155; Murray & Cleveland, \$1,547,132; Macdonald & Aylmer, \$1,604,511; Ross, Holt & McKenzie, \$1,656,524; R. G. Reid, \$1,805,120; Larkin & Connolly, \$1,912,686; McLennan & McLennan, \$1,954,165; Parry, McDonald, McCallum & Lattimore, \$1,990,144.

By Mr. Lister:

334. Then what was Goodwin's tender again?—Goodwin's tender was \$1,663,992.
335. What was Conmee & Co.'s?—\$1,225,990.
336. What was Ryan & Ryan's?—\$1,282,567.
337. Yes; well now, the contract was awarded to Ryan & Haney?—Yes.
338. At \$1,282,567?—Yes.
339. Why did you pass over Goodwin, \$1,163,692?

By Mr. Haggart:

340. Read the engineer's report and the memorandum to council.—The memorandum to council?

341. The engineer's report to his minister?—I will read the order in council first; I have it here.

342. Yes, that will do, it will contain the engineer's report.—“On a memorandum dated 10th November, 1888, from the Minister of Railways and Canals, representing that under the authority of an order in council dated the 2nd of May, 1888, tenders have been called for the works embraced in the construction of a canal and lock at Sault Ste. Marie, and that a number of tenders, sixteen in all, have been received, of which, however, two were informal and were not entertained, the deposit receipts required as evidence of good faith on the part of the contractors being in the one case un-

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endorsed, and in the other not marked "good" except in respect to \$5,000 out of the \$20,000 called for. The minister further represents that the several items of each tender have been figured out to their money value on the approximate quantities of the work, by the chief engineer of canals, who, under date the 9th of November, 1888, furnishes a schedule of such tenders, showing the bulk value to be \$1,990,144, and that the the chief engineer reporting on the same states that the two lowest tenders, those, namely, of George Goodwin, \$1,163,692, and Messrs. Conmee, Ray, Dwyer & McTeigue, \$1,225,990, are in a number of items below the prices for which the material could be purchased and delivered, and that in each case they were below what the work will cost. He therefore considers that these two tenders should not be entertained. Passing on to the next or third lowest tender, that, namely, of Hugh Ryan John Ryan and M. J. Haney, the figured out value of which is \$1,282,567, the chief engineer states that the rates are low, but that as a whole they are a small percentage over what is likely to be the actual cost, and adds that as some members of the firm are known to be skilled and energetic contractors he advises that their tenders be accepted. The Minister, on the foregoing expression of opinion on the part of the chief engineer, recommends that he be authorized to pass over the two lowest tenders above mentioned and to accept that of Messrs. Ryan, Ryan & Haney."

343. May I ask a question in regard to the first contract before we pass from that? Did you notice any evidence in the department that the contract for the upper section was offered to Mr. Nicholson?—No; I do not think so; but if there is it is here. (After examining the papers) Oh, yes; there is a letter from Mr. Nicholson declining.

344. Because he was not given the two contracts? Read the letter.—"If correctly informed —"

By Mr. Montague :

345. Whom is this letter from?—Mr. John Nicholson. "Ottawa, 14th December, 1888. Sir,—If correctly informed, your department intends to give the lower end of the work advertised to be done at Sault Ste. Marie to Messrs. Ryan, Haney & Co. The advertisement asking for tenders included all the work of the approaches at each end; and, as I understand I am the lowest on the whole, I will absolutely refuse to accept any portion of the work. I have the honour to be, sir, your obedient servant, John Nicholson. To the Hon. the Minister of Railways and Canals."

By Mr. Hughes :

346. Were the advertisements calling for these tenders the same advertisement or were they separate?—They were separate tenders apparently.

347. Were there two tenders?—There were two tenders but also in one, if I understand it rightly by this.

By Mr. Lister :

348. Then according to the records there is a letter from Mr. Nicholson refusing to take the contract for the upper entrance because he was the lowest on the upper and lower?—Apparently so.

349. Well, was that so?—According to the letter I read.

350. Nicholson on the lower entrance tendered at \$377,000 and on the upper at \$231,049, making \$608,249 on the upper and lower entrances?—That is correct.

351. Mr. Ryan's tender on the two would be \$299,313 and \$348,321, making \$648,134 on the two entrances, or a difference in favour of Nicholson of \$40,000?—Yes, apparently so, that is it.

By Mr. Haggart :

352. Would you read the advertisement for tenders so that we may understand it?—It does not seem to be here.

By Mr. Hughes :

353. Were these tenders opened on the same day, Mr. Schreiber? Have you the dates when they were opened?—Yes, they appear to have been opened on the 8th December, 1888, both of them.

By Mr. Lister :

354. Eh?—They appear to have been both opened on the 8th December, 1888.

By Mr. Amyot :

355. You have not the advertisement with you?—It does not appear to be here.

By Mr. Lister :

356. Then how much did you say was the lock contract awarded to Hugh Ryan & Co., one million?—As figured out here, it was.

357. \$1,282,567?—Yes.

358. Then a contract was entered into for that work?—It was entered into at the schedule prices.

359. At the schedule prices? Who made the prices?—The contractors, the tenderers made the prices.

By Mr. Gibson :

360. Who?—The tenderers made the prices.

By Mr. Lister :

361. But you had it figured out, had you not, the quantities and the prices?—You mean who made the quantities?

362. Yes.—I suppose the chief engineer.

363. Now, was a contract entered into for the construction of the lock?—Yes.

364. What date was that?—20th November, 1888.

365. You say the contractor figured out the prices?—Well, his own prices, yes; the schedule prices.

366. But the department figured them out?—They extended upon quantities, they moneyed them out.

367. Well, you see, Mr. Schreiber, that the Government under the department were induced to reject certain tenders because in the opinion of the department the prices were too low?—Yes.

368. Well, now, do they figure out the prices themselves, do they estimate the cost?—Well, they did not in this case; I could not tell you.

369. Well, how could they say the prices were too low?—I could not say how Mr. Page arrived at that, I do not know.

370. How would you do it?—I should figure them out.

371. You would figure them out, eh?—Yes, and I suppose he may have done it, I don't know.

372. Is there anything in the department to show they were figured out?—These? No, I don't know. There is an estimate of the engineer, but the engineer had all the tenders extended upon quantities, approximate quantities which he supplied.

373. Which the contractor supplied?—No, no, which the chief engineer supplied.

374. Which the chief engineer supplied, do you preserve those?

By Mr. Hughes :

375. Pardon me for a moment, may I ask who the engineer was, Mr. Schreiber?—Page.

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By Mr. Lister :

373. Are those papers kept at the department—the papers showing what, in the opinion of the department, are the proper prices?—I don't know. There is nothing that I am aware of but the tenders extended upon quantities furnished by the engineer.

377. The engineer gives the quantities?—Yes.

378. The contractor says I will do that particular work for a certain figure?—No, he says he will do the earth work in the basin, we will say, at so much a yard.

379. Yes.—We will do all the masonry in the lock at so much a yard, and so forth. He has no quantities before him, that I am aware of.

380. No? Then he takes the kind of work he says he will do at so much?—Yes.

381. Well, what I want to know is whether the department, before these tenders come in at all, have come to any conclusion as to how much the work would cost?—I have seen no estimate of that kind.

382. You have seen no estimate of that kind?—No.

383. If an estimate of that kind had been prepared by the department would it not be amongst the paper?—I think it would be; it should be.

384. Then as a matter of fact you found no paper of that kind amongst the papers?—I have found none.

385. You have found none, and you say this was the practice to estimate in that way before letting the contract?—Not in all cases, but usually I have done that.

386. Usually you have done it? Have you done it in any contracts you have let to Ryan & Co.?—Yes.

387. Subsequent contracts?—Yes.

388. You have done it as regards those?—Yes.

389. Then that would be the proper way to do in order that the department may satisfy itself that what the contractor is offering, the amount the contractor is asking, is a reasonable sum?—I did not understand that.

390. It is necessary in order that the department might know that what the contractor is offering to do the work for is a reasonable sum?—Well, upon the report of the chief engineer. The chief engineer reported here that he considered the lowest tenderer was too low.

391. I know that?—And upon that apparently they acted.

392. Then there ought to be something in the department supporting the views of the chief engineer, showing that it had been figured out by the engineer, ought there not?—Well, I don't think there is.

393. You don't think there is? There ought to be?—I am not sure. He may have explained it all.

394. But you do it?—I have done it in many cases.

395. Now, this contract was let, when?—20th November, 1888.

396. Goodwin withdrew, did he?—I have no idea.

397. No, he did not withdraw, his tender was rejected. Now, what was the informality as to Goodwin's tender and Conmee's?—I don't know.

398. Was there any?

By Mr. Haggart :

398a. Would you look at the memorandum of Mr. Page? Does he give any reason?—Here is the report, this is the report of the chief engineer, but I think I read that, did I not?

398b. You read the order in council?—This is dated Ottawa, 9th November, 1888 and is addressed to the Secretary of Department of Railways and Canals. It reads as follows:—

“SIR,—The tenders received on 7th inst. for the formation of a canal and the construction of a lift lock on the island situated on the north side of the Sault Ste. Marie

have been applied to the respective approximate quantities of work to be done and the four lowest tenders are as follows :—

Tender "L"—George Goodwin.....	\$1,163,692
do "E"—James Conmee.....	} \$1,225,990
S. H. Ray	
Michael Dwyer	
James McTeigue.....	} \$1,282,567
do "M"—Hugh Ryan.....	
John Ryan.....	
M. J. Haney.....	} \$1,320,828
do "B"—Sylvester Neelon.....	
John Carroll.....	
John Shields.....	

399. What is the reason of their rejection ?

Mr. LISTER.—Of Goodwin and Conmee.—“It may here stated for the information of the minister that tenders “L” and “E” are in a number of items below what the material could be purchased and delivered for, and in the aggregate are in each case below what the work will cost.”

By Mr. Haggart :

400. That is the only reason?—“I am of opinion that the marginal note on the form of tender is fully applicable in both cases and therefore believe that these two tenders should not be entertained.”

401. What is the marginal note?—“The rates in tender ‘M’ are low, but taken as a whole they are a small percentage over what is likely to be the actual cost. Still as some members of the firm are known to be skilled and energetic contractors I advise that their offer be accepted.

“I have the honour to be, your obedient servant,

“JOHN PAGE,

“*Chief Engineer of Canals.*”

402. Then according to the report of the engineer Goodwin’s tender was rejected as well as Conmee & Co’s., because they were too low in the opinion of the engineer?—According to that report I should judge so.

403. Now I ask you again, Mr. Schreiber, if it is not necessary, not usual but necessary, that the engineer should make a price for himself so as to make up the total cost prior to asking for tenders?—Prior to recommending you mean?

404. Yes, recommending—Well, of course it is desirable, no doubt.

405. Is it not necessary?—No, I do not think it is necessary. It is not necessary in all cases.

406. You ask for tenders and your department take no consideration at all as to what the proper price is?—Oh, I do not say that. The chief engineer here states that he considers these too low and he thinks the other, although low, is reasonable.

407. I know he states that, but I am asking you again if it is not necessary to make up the total cost in the department before considering the tenders at all. You make up your minds what it is going to cost.

Mr. HAGGART—The report of Mr. Page says so, that he has made an approximate estimate of the cost and that these are too low according to it.

By Mr. Lister :

408. Now let us see. It was awarded to Ryan & Co., whose tender was \$1,282,562. Conmee’s tender was \$1,225,990, or a difference in favour of Conmee of \$56,577?—Yes.

409. Is that much of a difference on a contract of that kind?—The difference is not large.

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410. In other words do you think that the difference would be sufficient to justify the department in refusing the tender of Connee & Co.?—Well, I am not in a position now to say. Mr. Page was in a much better position to decide.

411. Had Connee & Co. ever had any contract with the department? Have you any record about them?—That, I do not know. They have had none since I was in the department.

412. Then Goodwin's is \$1,163,567 as against Ryan's \$1,282,567. That is, Goodwin's is \$118,875 less than Ryan's tender?—Yes.

By Mr. Amyot :

413. And Ryan's tender is low, too?—Mr. Page says so.

By Mr. Lister :

414. Now you tell me, taking the upper excavation, that you passed over the tender of Nicholson because the rate for excavation was too low?—That is what Mr. Page says.

415. That is what Mr. Page says?—It is what the order in council says.

416. Now looking at the tenders put in by both contractors, is it not true that while the rate for excavation in the case of Nicholson may be lower than that of Allan & Co., the rate for much of the other work to be done is considerably higher?

Mr. MONTAGUE—I understood that Nicholson was offered the work and withdrew.

Mr. LISTER—Well, the reason given in all these reports is that the rate is too low. What I asked the engineer is whether if a particular portion of the work is lower in the case of Nicholson than in that of another contractor, whether certain other portions of the work are not much higher than the rates of the contractor who received the contract.

The WITNESS—It might be as you said that they might be very low on a class of work that there was a great deal of, and on another item it might be high where there was only a small quantity of work, and although the prices would appear to adjust the thing it would not necessarily follow.

By Mr. Lister :

417. Unless there was figuring up and figuring down?—Quite so.

418. Now that contract was let to Ryan & Co.?—Yes.

419. There was a movement, I believe, made for changes?—Yes.

Mr. HUGHES—Which contract?

Mr. LISTER—The lock.

By Mr. Haggart :

420. If you are going to another part of the business let me just ask a few questions. You have no information in the department of the reasons for Mr. Goodwin withdrawing his tender. You do not know that Mr. Goodwin withdrew his tender on the advice of Mr. Page because he was too low?—I am not aware of it.

Mr. HAGGART—Those are the facts.

By Mr. Lister :

421. How long after the contract had been let was it that a movement was started by some person for the deepening, widening and lengthening of the basin?—The contract was let in November, 1888. In the latter part of 1890 and in the early part of 1891 the Toronto Board of Trade and those engaged in the shipping interest urged the great importance of the change.

422. What did they urge?—The great importance of the size of the lock being increased.

423. To what size?—I cannot tell you that. Mr. Walter Shanly was called in to consult with the chief engineer and report on the subject, which he did, and finally the chief engineer, on the 14th May, 1891, reported favouring the enlarging of the

lock to 650 feet in length, 100 feet in width, with 19 feet of water on the mitre sill, leaving the gates 60 feet wide.

424. Were there letters from Sir Frank Smith?—I think there was a letter from him. Yes.

425. Will you turn up that letter?—Witness then read the following:—

“TORONTO, June 29th.

“To the Right Hon. Sir John Macdonald.

“MY DEAR SIR,—When I last saw you in this city I said that I would write you a few lines with regard to the finishing of the lock you are building at the Sault Ste. Marie. It is like this, the Americans are building a lock at the same place. They are making the approach, or entrance to the lock straight, and the same width as the rest of the lock. This will enable a vessel to go in and take all she may have with her without delay or dropping off when taking vessels in tow, and will also pass in in one-half of the time. You will understand what I mean. They are also making the lock 20 feet deep. Now if you could see that these improvements could be done without costing more than the estimate it might be a great benefit in the future, as this lock will last for ages. Kindly give this matter your serious consideration and oblige.

“I remain, dear Sir John, yours truly,

“FRANK SMITH.”

By Mr. Lister :

426. There is also a letter from Mr. Van Horne, of April 3rd, 1891?—Yes, I think so.

427. Advising the enlargement?—Yes, I think so.

MR. FOSTER—Do you want the letter?

MR. LISTER—Oh, no, I am not particular.

By Mr. Lister :

428. Now, who was the engineer in charge of the works at that time?—In 1890?

429. In 1890 and 1891?—I think Mr. Thompson.

430. I find a letter there from Mr. Thompson of March 30th, 1891, disapproving of the scheme to enlarge the canal and giving the reasons?—What is the date of that?

431. March 30th, 1891.—Are you sure it was March 30th?

432. Yes, sir.—There is one of March 28th, 1891.

433. Perhaps that is it. Is it a letter from Mr. Thompson?—Yes, from Mr. Thompson.

434. Well, there is one of the 30th too, but read that one?—This is to Mr. Bradley :

“OTTAWA, March 28th, 1891.

“SIR,—I beg to acknowledge the receipt of folio No. 133070 under cover of which the Hon. Frank Smith suggests that the plan of the lock on Messrs. Hugh Ryan & Co's. contract for the Sault Ste. Marie Canal should be changed to the extent of making the lock the same width throughout and deepening it to 20 feet. I cannot advise the adoption of the course suggested, for the reason that such a departure from the plan would be breaking the contract, in view of which it would seem unprofitable to discuss the matter at greater length.

“I have the honour to be, Sir,

“Your obedient servant,

“W. G. THOMPSON.”

435. Well, then, there is another letter?—From whom?

436. From Mr. Thompson.—Subsequent to that?

437. What date is that, Mr. Schreiber?—28th March.

438. Subsequent to that?—No, it must be previous to that, surely.

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439. Well, never mind I won't take up your time in asking you to find it?—Here is another dated 28th March, 1891, is that it?

440. Read that one please?

“OTTAWA, March 28th, 1891.

“SIR,—Referring to the resolution of the marine section of the Toronto Board of Trade, under cover of No. 133682, in which approval is expressed of the width, 85 feet, designed for the Sault Ste. Marie Canal lock now under contract to Messrs. Hugh Ryan & Co., but suggesting an increase of depth to correspond with that of the lock now under contract in Sault Ste. Marie, Michigan, I beg to say that to deepen the lock only at the present time with a view to deepen throughout ultimately, would be a serious mistake. To deepen the prism of the canal after the provision for securing a water tight canal had been completed to the depth provided in the contract, would be to make that water tight provision of no effect. An estimate of the cost of deepening as above suggested must therefore embrace the full length of Messrs. Hugh Ryan & Co.'s contract for the canal and lift lock and would be approximately \$180,000, apart from any claims for extras that might result from the contract now in force.”

441. Yes. Now, as a matter of fact the Government did enter into a contract for the deepening and widening and lengthening of that lock?—I did not catch that.

442. A contract was entered into for the deepening, widening and lengthening of that lock?—It was, sir.

443. So that there would be 19 feet of water on the mitre sill?—Yes.

444. At lowest water?—Yes.

445. And that it should be 100 feet wide and 650 long?—Yes.

446. The recommendation of the Board of Trade was that it should be 85 feet wide, as I understand it?—85 feet, yes.

447. How long?—It did not state the length, I think.

448. You adopted 16 feet odd, was it not?—I think it was.

449. Sixteen feet and some inches in depth, 85 feet wide, and, I think, 600 feet long?—That was the first contract.

450. No?—Yes; 600x85x16-3.

451. Then the contract was changed so as to make it 650 feet?—650x100x19.

452. 620x100x19?—That is right.

453. That was ultimately adopted by the Government and those changes were made?—They were.

454. And the contract entered into?—Yes.

455. How much did those changes—an additional charge upon the country—involve?—The first change in the lock entailed additional work.

456. What was that?—To the value of \$190,245.25.

457. What change was that, Mr. Schreiber?—That was the change from 600x85x16-3 to 650x100x19.

458. What was the total increase?—That was the total increase on that occasion.

459. Well, then, what other changes?

By Mr. Haggart :

460. Was that on the lock alone, or on the upper and lower entrances?—That is on the lock alone. Then there were subsequent changes to that.

By Mr. Lister :

461. What were the subsequent changes?—There was a change from 650x100x19 to 900x60x20-3.

462. Then the lock was extended to 900 feet?—It was.

463. 900 feet?—Yes.

464. How wide?—60 feet.

465. Added?—No; 60 feet wide.

By Mr. Foster :

466. Instead of 100 ?—(No answer.)

By Mr. Lister :

467. It was underrated, then ?—It was underrated, yes ; and when it was 100, the lock gates were only 60.

468. So it was reduced to 60 and lengthened 100. Anything added to the depth ?—one foot three inches added to the depth ; 20.3 on the mitre sill.

469. So it would be 20.3 on the mitre sill ? What was the additional cost there, that was at what time ?—1892.

470. Fifth April, 1892 ?—Yes.

471. Well, now, what does that involve ?—That involves an additional cost of \$498,000.

472. \$498,000 ? Did you make any change afterwards ?

By Mr. Foster :

473. Is that an addition to the \$190,245 ?—Yes. Then later on, in October, 1892—

By Mr. Lister :

474. One moment. Now, up to that time, Mr. Schreiber, the additions involved an expenditure of \$688,249 ?—Yes. Then in October, 1892—

By Mr. Haggart :

475. Be sure of your figures first, Mr. Schreiber ?—I will give all the figures afterwards.

476. The first contract contemplated iron ?—I will give you that afterwards.

477. He says it was an increase ?—The first change to 650 feet involved an expenditure of \$190,245. The second change—the actual increase by the change—was \$376,091.25, but in making that change, there was originally the culverts—the supply culverts were not in the contract at all. They were to be of iron, and it was concluded to build those of wood, the same as they are on the American side, and they were then placed in this contract, and they cost \$121,913, the two together. These two together made \$490,000.

By Mr. Lister :

478. What about those culverts again ?—These culverts were originally to have been in iron. They were not embraced in Ryan's contract at all. They were not let at the time this change was made, when it was determined to build these culverts of wood.

479. Then the culverts were not Ryan's contract at all ?—They were not.

480. Then you made up your mind that Ryan should have the contract for the culverts ?—I was not in the department at all. In this agreement the culverts were embodied at certain prices.

481. When were the culverts introduced ? Do you mean the agreement of April, 1892 ?—On the 5th of April, 1892.

482. So that the culverts were awarded to Ryan & Co. at \$121,913 ?—That is what they came to, yes.

483. And the additional cost then outside of the culverts, was ?—\$376,091.25, and for the culvert, \$121,913.

484. Making ?—Altogether \$498,000 in round numbers.

485. \$498,000 odd. Then how much of that could be considered extra work ?—\$376,091.

486. \$376,091, in addition to the \$190,245, was extra work ?—Yes.

487. \$121,913 was for the culverts ?—Was new work for the culverts.

488. Well, how was it that these culverts were not estimated and provided for in the contract ?—I really could not tell you that. I do not know.

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489. That would be a very important part of the work?—It is an important part of the work.

490. Did the estimates provide at all for the culverts?—What estimates?

491. In your office?—The \$4,000,000 provided for the culverts.

492. The four million what?—The \$4,000,000, the original estimate of the work, embraced the culverts.

493. So that, as a matter of fact, the \$121,913 was a part of the work that would have to be done?—Undoubtedly.

494. And a very important part of the work?—A very important part of the work.

495. And that was let without any tender at all?—That was let in the way I told you.

496. In what way?—When this change was made to the 900 feet.

497. The excavation, I believe, was in the original contract for these culverts?—Yes.

498. The excavation was for the culverts and that formed part of the original contract?—I think so.

Mr. DAVIES.—There is no “think” about it. It is recited there in clause 7 expressly: “In addition to the excavation for the discharge and supply culverts which is covered by the existing contract, and certain works to be done in connection therewith.”

By Mr. Lister :

499. So that the excavation in connection with these culverts was included in the contracts with Ryan & Co.?—Stop a moment, I am not able to say. Here is Ryan excavation, \$24,970. Now, I have not included that in these culverts, and I do not think it was in these culverts.

500. Do you say, then, that the \$121,000 includes making the excavation?—No, it does not.

501. Then, making the excavation must have been included in some other contract?—I presume so.

By Mr. Haggart :

502. Be sure, Mr. Schreiber?—Well, I cannot be sure.

503. Would it not strike you at once if the first lock was only 16 feet and the next 19 feet in depth that it could not possibly have been in it?—There is extra rock, \$24,000. There is no doubt about that.

504. You can see at once it could not possibly have been in the first contract?—Yes. Then I have not included that \$33,928 in the culverts.

505. You forgot that?—Yes.

By Mr. Lister :

506. Now what was the next change?—In October, 1892, there was a change made in the depth of the prism of the canal to make it conform to the 20 feet 3 inches in the lock on the sill. That increased the depth of the prism 4 feet.

507. Yes, how much was that?—And also there was the masonry and piers of the bridge. The two together made \$107,842.

By Mr. Gibson :

508. What is that?—\$107,842.

By Mr. Lister :

509. \$107,842. Now any further changes?—No, those are the only changes.

510. Those are the only changes in the lock?—Yes.

By Mr. Davies :

511. No, no, that is not correct, because the great change was made in October, 1892?—I do not hear what you say.

512. I see the greatest change of all, so far as I gather from reading the papers, was made in October, 1892, and not in April?—No, I am speaking of October, \$107,842.
Mr. DAVIES—Then I misunderstood you.

By Mr. Lister :

513. That included the piers of the lock?—The piers and the abutments of the bridge and the excavation for that as well as the deepening of the prism.

514. That is included in that \$109,000?—Yes, in the \$107,000.

515. Who authorized the construction of a pier in that lock?

Mr. HAGGART—There is no pier in the lock.

Mr. GIBSON—In the channel.

By Mr. Lister :

516. Does that include the pier in the channel?—Yes.

517. Who authorized that?—I think that was authorized by order in council under the recommendation of the chief engineer.

By Mr. Haggart :

518. Say who authorized it and when it was, and let us have the full particulars with regard to this pier?—I have the order in council. It is attached to the tracing.

519. Upon the recommendation of Mr. Page?—No, on the recommendation of Mr. Trudeau.

520. Well, when was it? Give us the whole particulars and tell everything about it?—It will be in October. I think I see the plan there. I can see the tracing.

521. How far is the pier above the lock?—It will be 1,500 feet.

By Mr. Lister :

522. On which side of the lock?—On the upper side.

By Mr. Davies :

523. But you say in Mr. Trudeau's report of that date he recommended that that pier should be placed in the canal there?—I think so, yes, I think you will find it there.

524. I don't wish you to say what you thought, but whether you know that to be the case, I have it in my hands?—I have seen the recommendation either of Mr. Thompson or Mr. Trudeau, I don't remember which.

525. It is not by Mr. Trudeau in the papers that are here?—Well, it is either Mr. Trudeau or Mr. Thompson, I don't know which; I thought that plan was prepared by Mr. Thompson.

By Mr. Lister :

526. I ask you what authority there was for the construction of the pier?—It is (the tracing) attached to an order in council.

527. That was before your day, Mr. Schreiber?—Yes.

528. It was in Mr. Trudeau's time?—Yes, it was.

529. Now, how much has that work cost up to the present time?—There are certificates issued to the amount of \$3,171,584.

530. And how much is yet to be paid?—I think the whole cost will be \$3,520,000, that includes offices, residence for the superintendent, shops and so forth.

By Mr. Haggart :

531. What was the estimated cost?—\$4,000,000 is the original estimated cost.

By Mr. Lister :

532. The original estimate as stated by the minister was \$750,000?—\$4,000,000 I have always supposed.

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533. According to Hansard of 1888, page 1642, the estimated cost the first time was \$1,000,000, then it was in 1889 placed at \$2,657,809, including everything, as Sir Charles Tupper said?—I am taking this from the records of the department.

534. What records?—From the reports of the engineers. In the canal reports you will find it.

By Mr. Davies :

535. Before you pass from that order I want to try and understand these changes that were made in this order of October, 1892?—Yes.

536. Now, will you shortly state the main changes made—I don't want you to go too much into detail—by the order of 1892, in the work, in the pay for the work, and in the time in which the work was to be completed? Those are the three points?—As I have stated in April, 1892, there were works to the extent of \$376,091. The work was then to be finished under contract in December, 1894.

537. Yes, the time was extended to December, 1894, by that agreement of April?—The agreement of April, yes.

538. Well, now I am bringing you to the agreement made in October following?—Well, then, in the October following there was \$107,000 of additional work authorized by the change.

539. You say the additional work there was \$107,000?—Well, one hundred and seven thousand eight hundred odd dollars.

540. Now, tell me the character of the work—the changes made in the character of the work in October, 1892?—The lowering of the prism of the canal.

541. How much was the prism of the canal lowered?—Four feet.

542. That is one item?—Yes. Then the underwatering there was \$10,000 also.

543. That was not a change in the character of the work, the underwatering?—That is in connection with it.

544. I am asking you to state to the committee the change in the character of the work by the order of October, 1892. Keep to that for the moment. There was a lowering of the prism four feet?—Four feet, yes.

545. Very well, what else?—Then the piers and the abutments for the bridge.

546. The substructure for the railway bridge, that is two things?—Yes.

547. Go on. What was the great pre-eminent change made over that of everything else?—There was no change made in the contract excepting as to time.

548. Yes, there was a great change?—No, there was not.

549. Was there not a change from masonry to Portland cement concrete in the agreement?—I don't know when that was, I had nothing to do with it.

550. You had nothing to do with this; you had nothing personally to do with it?—I mean I don't know when that was first done.

551. You ought to know. You know the other two things which were in the agreement?—Yes, but I don't think that is in the agreement.

552. Yes, it is in the agreement, excuse me?—I don't know that.

553. Is it a matter of fact that the backing, as stated here, in the south walls of the lock chamber were ordered to be built of Portland cement concrete in place of masonry, so that a completion could be effected at an earlier date?—Yes.

554. Very well. Was that change effected by any agreement of October, 1892?—The agreement permitted them to build the work in that way, but they did not build it in that way, they built it of masonry. It permitted them to do that to expedite the work, if they found they could not do it in time the other way.

555. Well, as a matter of fact, that memorandum of 1892 was put in the form of an agreement of the 8th November, 1892?—Yes.

556. And did that not provide explicitly, sir, they were to substitute Portland cement concrete for masonry in the backing of the lock chamber wall?—They were permitted to do that.

557. Was that not on condition they agreed to build the locks?—That was one of the conditions. They found they could not complete in any other manner and they did so

558. Very well. So that the reason which appears to be given here did not apply?—No, they did not carry that out. They continued to use masonry in the stone work instead of the concrete.

559. Well, sir, I will just call your attention to this official document here to show you the only reason they gave which would enable them to finish it was this change that I referred to?—I remember that.

560. "At the outset the contractors distinctly stated that it would not be possible to complete the work contracted for by that date and the question was therefore by your direction put to them, whether if the south walls of the lock chamber were permitted to be built of Portland cement concrete in place of masonry such completion could be effected. To this they replied in the affirmative?"—That was all right.

561. And he proceeded to obtain the terms on which that work could be done?—That was right.

562. This is Mr. Trudeau's report?—That was right.

563. Then the agreement goes on to provide for this change being made. You say it was not made?—It was not made.

564. Then the two changes of the contract made, although three were contemplated, were the increase in the depth of four feet, and of the prism of the canal and some other points, I forget which. There is one more question: For facilitating the time for completion to the 1st December, 1893, the additional sum of \$90,000 was paid to them?—It was.

565. As a bonus?—Yes.

By Mr. McMullen:

566. Will you present to the committee on your next examination the several items connected with this work for which there was no schedule prices arranged?—Yes.

By Mr. Haggart:

567. There are none, are there?—Yes, these schedule prices for these extra works

568. Are there any quantities at all that are not regulated on the schedule prices either the schedule prices in the contract or the schedule prices subsequently agreed to?—None that I know of.

The committee then adjourned.

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COMMITTEE ROOM, No. 49,

HOUSE OF COMMONS, 11th June, 1895.

Committee met.

Mr. COLLINGWOOD SCHREIBER, Deputy Minister and Chief Engineer of Railways and Canals, re-called and further examined.

By Mr. Davies :

569. Mr. Schreiber, on this Sault Ste. Marie Canal contract, I understood you to say in your last examination that there were three different changes made, the first one increasing the length from 600 to 650 feet and the breadth from 85 to 100 feet, which cost \$190,000. Will you please follow me and see that I state them correctly. The second one changed the length from 650 to 900 feet and the breadth was reduced to 60 feet, which cost, including the culverts, \$498,000, and the third one, increasing the depth of the prism 4 feet and the masonry and the piers of the bridges which is to be built over the canal cost \$107,000. That I believe is correct, is it not?—Yes, in round figures.

570. I just want to get the general outline. Now, did I understand you to intimate why the change was made in 1892, in October, 1892? Did I understand you to intimate upon whose report that change was made?—Yes, I think upon the report of the chief engineer.

571. You gave the committee to understand that it was upon the report of the chief engineer?—Yes.

572. Do you wish us to understand that the chief engineer advised that change, reported favourably to it, when you say it was made on his report? You mean that he advised it, that it was on his recommendation?—That is the deepening of the prism?

573. That is the change which took place in October, 1892?—November, 1892.

574. It was carried out by an agreement dated the 8th substituting concrete for masonry and undertaking to complete by December, 1893, instead of 1894, and \$90,000 were to be paid for the reduction in time?—Yes.

575. Now I want you to keep to that one change for the present. Do I understand you to intimate that that change was made on the recommendation of the chief engineer?—I could tell if I looked at his report.

576. Did you look at his report?—Yes.

577. Well, was it on his recommendation? I understood you to say that it was?—Yes, I think I said so.

578. Well, I think I must ask you to read that report and see whether your conclusion is correct. You will find that report under the date of the 14th October, 1892?—(After examining Exhibit 1) Have you it marked out here?

579. 14th October, 1892, is the date. Have you got the right volume there? What volume have you got?—I do not think so. These are the early ones. You must have it there, I think.

580. Yes, it should be in volume 2. You have no index to this, Mr. Schreiber?—No.

581. Are they chronologically arranged according to dates do you know?—I think so.

582. Well, we will soon find it if they are.

583. Now, sir, I think you will find that is the report. Will you please read it so that it can be put in evidence?—“Ottawa, 14th October, 1892. Hon. John Haggart, Minister of Railways and Canals :

“SIR,—In accordance with your instructions given in view of the desired construction of the Sault Ste. Marie Canal at a date earlier than that fixed by their contract. I have the honour to report that I have had negotiations with the contractors, Messrs. Hugh Ryan & Company, in order to ascertain the terms on which they would be prepared to undertake the completion of the lock walls by the 1st December, 1893.

“ At the outset they distinctly stated that it would not be possible to complete the work as contracted for by that date, and the question was therefore, by your direction, put to them, whether, if the said walls of the lock chamber were permitted to be built of Portland cement concrete instead of masonry, such completion could be effected. To this they have replied in the affirmative, and I have proceeded to obtain provisionally the terms on which the work can be done by that date, together with certain other works requisite for the completion of the whole canal by the 1st July, 1894. The features so dealt with are as follows :—

“ The construction of the lock walls by the first of December, 1893.

“ The completion of the wooden culverts at the bottom of the lock chamber.

“ The deepening of the prism of the canal to the further depth of four feet required on contract No. 9594.

“ The construction of the substructure for the railway bridge in time to admit of the completion of the whole bridge by the 1st of July, 1894.

“ These negotiations have resulted in the preparation of a draft of an agreement embodying the several works mentioned. This draft I submit.

“ It is but proper that while doing so I should observe that the date fixed by the original contract and the class of work therein called for are, in my opinion, those requisite to produce a result such as, from the engineering point of view, it would be desirable to see attained.

“ The exigencies of the situation, however, and the strong view taken by the Government with regard to the expediency of an early date for completion rendered it essential, if such earlier completion is to be reached, that there should be a modification of the work. Under these circumstances my duty is simply to ascertain how best the wishes of the Government can be carried out with the minimum of depreciation in the quality and character of the work.

“ This, I have done, and now submit the whole matter for your consideration.”

584. Who was that by?—That is signed by Mr. Trudeau.

585. From an engineering standpoint, then, Mr. Trudeau reports it is desirable that the original contract should be carried out as originally framed?—He was in favour of the lock walls being of masonry rather than of concrete.

586. And he observes that not only the date fixed for the contract, but the class of work called for therein are, in his opinion, requisite to produce a result from an engineering standpoint desirable to be attained?—Ah, yes.

587. That is his report?—Yes, quite so.

588. So, when Mr. Trudeau reports that although from an engineering standpoint the original contract should be carried out that the exigency of the situation and the strong view taken by the Government demanded some change, what did he mean? Do you know? Are you able to state what “ the exigencies of the situation ” meant?—I think—

589. Do you know?—No. I don't know other than what I heard.

590. I don't ask you to state if you don't know. Were you in Mr. Trudeau's confidence?—No, I was not—that is to say that I had nothing to do with this canal.

591. “ The exigencies of the situation and the strong view taken by the Government.” Well, then, from this report, it appears that it was from the exigencies of the situation in the Government view, and not Mr. Trudeau's view, that these changes should be made?—Well, he thought that they had better have the walls of masonry rather than concrete.

By Mr. Haggart :

592. And they were made of masonry. What is the use of talking about it?—They were made of masonry.

MR. HAGGART—There was no change made.

MR. DAVIES—The change was provided for against the engineer's advice and to carry out some “ exigencies of the situation ” whatever that may be. (To witness.) Now, sir, that change involved the payment of \$90,000 for the reduction of the time in which the work was to be completed, did it not?—Yes.

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593. What was the pressing necessity for anticipating by eleven months the time when that lock was to be finished?—I don't know. I was not engaged with the canals at that time, therefore I have to say, I don't know. I have heard the reason.

594. If you don't know you are perfectly right in answering my question and saying you don't know?—Well, I say I have heard the reason.

595. Now by that report the engineer says that it was impossible for them to anticipate the time for completing the canal unless they were allowed to substitute concrete for stone?—That is what it said.

596. That is their reason?—That is their reason, yes.

597. And the change was conceded to them, the right to make that change?—It was.

598. And they said that was the only condition on which they could hope to anticipate the time? Did they do that?—They did not do that. They completed it in the time, but they did not use concrete.

599. They stated it was impossible unless they were allowed to use concrete to finish the contract within a specified time, and after getting the necessary authority they did not use concrete?—They did not.

600. Mr. Trudeau reports to the Minister that he has seen the contractors, and that it was impossible for them to complete the work as contracted for by that date. Just read that paragraph again to the Minister?—"At the outset they distinctly stated that it would not be possible to complete the work as contracted for by that date, and the question was, therefore, by your direction, put to them whether if the side walls of the lock chamber were permitted to be built of Portland cement concrete in place of masonry, such completion can be effected. To this they have replied in the affirmative."

601. That is it. It was impossible to finish the work in the time asked for by the Minister, but if a certain change was made from stone masonry to concrete they could do it?—That is the opinion expressed there.

602. After the change was made they got \$90,000 for agreeing to shorten the time. Now, I ask you did they, or did they not, use any portion of concrete?—I think they used—where they first started on that—they used some three or four hundred yards, no more, I think.

603. Three or four hundred yards?—Yes.

604. Did they use Portland cement?—They did.

605. All over, wherever the cement was required?—I think not.

606. What did they use instead?—There was natural cement used in the work.

607. What other cement?—Portland cement, and natural cement—Canadian cement.

608. Canadian cement?—Is there any difference in the price of Canadian cement, as compared with Portland? Did the contract permit them to use Canadian cement?—It did, yes.

609. Read me the paragraph, please. I have read it carefully myself and did not see it. That contract provides for Portland cement, I think you will find. The agreement is dated 8th November, 1892, following that Trudeau report?—Ah, that is the specification for that work to be done.

610. We are speaking about the change, sir, and nothing else. Don't let us notice anything else?—This change that was all lined, I think, with Portland cement.

611. What was lined?—The work as changed.

612. I thought you told me it was not changed, although it was agreed to be changed; they had permission to change it, but they did not change it?—I am speaking now of the cement used. In the original contract they could use native cement.

613. Excuse me, perhaps I misunderstood you. Do I understand you to say they did not take advantage of the permissible change to no extent?—To no extent? They did I say to the extent of three or four hundred yards.

614. Then I ask you if taking advantage of it they used Portland cement or Canadian cement?—Portland cement.

615. All?—I think so, yes.

616. And when you stated just now they used Canadian cement what did you mean?—As I know they have used a quantity of Canadian cement in the work.

617. In the work? The general work?—In the general work, yes.

618. The Minister wants to know if that was prior to that?—Prior to that, I think.

619. They had used some Canadian cement?—I think so.

620. What proportion, do you know? Will Mr. Thompson, the engineer, know?—I had a statement of it.

621. Where did you get your statement, from Mr. Thompson?—The statement I have came from Mr. Crawford, our engineer.

622. Mr. Thompson would be the gentleman who would know all about that?—Mr. Thompson would know.

623. Very well, I won't waste time by asking you about that. Do you know whether Mr. Thompson reported in favour of these successive changes or was he asked to report?—I think he reported on some of them.

624. You think he reported on some of them?—Yes.

625. If he did are his reports amongst those papers?—If he did they are amongst the papers.

626. Will you give me that volume I had just now. I was going to ask you a question on Mr. Trudeau's report, and I find you have lost my place. Have you got the other volume there? (After examining Exhibit 1 and handing it to the witness.) I see there a report from Mr. Thompson on one of the changes. Will you please read it?—(Witness then read the following:)

“Sault Ste. Marie Canal,

“Memorandum for the information of the Honourable the Minister of Railways and Canals.

“Referring to Mr. W. C. VanHorne's telegram from Montreal dated March 30th, 1891, in which the advisability is suggested of making the Canadian lock at Sault Ste. Marie as deep as the American lock now being constructed at the same point, the utility of such a course is not apparent unless the policy of deepening the channels between Lakes Huron and Superior through Canadian waters exclusively, and providing a deep water harbour on each lake, was determined upon. The estimated cost of such an improvement is \$1,923,000. Respectfully submitted,

“OTTAWA, March 30th, 1891.

“W. J. THOMPSON.”

627. That is the report?—Yes.

628. Well, that speaks for itself. Now, then, these are the changes and I think you have given the amounts already. We can gather it afterwards from the report, the cost of each change?—Yes, I have given them all.

629. And you wound up by saying that the whole cost will be about three and a half million dollars?—Three and a half millions, yes.

630. Do you mean that for the work that the Ryans have to do?—That all the contractors have to do, and more than all the contractors have to do, for there is a dwelling for the superintendent, the offices, the shops, and various other things.

631. I wanted to know particularly. When you gave your statement it was not clear whether it was the sum total of the Ryan contract, or the whole cost of the canal?—It was the cost of the canal.

632. What will be the sum total of the Ryan contracts about?—The lift lock, I think, will be \$2,176,000.

By Mr. Ouimet:

633. \$2,176,000?—\$2,176,000, and the second one \$431,600 in round numbers.

634. That is all, is it? Did you give me the sum total of Mr. Ryan's contract?—I did of the two contracts, yes.

635. With all the changes?—That includes all the changes.

636. And what does the total amount to, do you say?—\$2,176,000, and \$431,000.

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637. That is about \$2,500,000, then?—Yes.
638. Will you turn to Mr. Thompson's letter, I have it in my memorandum here on page 53 or 54, was that the letter you read?—No, neither one nor the other. (After looking at the papers.) It was page 100.
639. That is the one you read now. Will you turn to pages 53 or 54, see if there is another report from Mr. Thompson there?—No, it is not on 53. Neither on 53 nor 54.
640. Will you let me see it a moment. (Handing Mr. Davies Exhibit 1.) Perhaps it is 33 and 34.
641. No, it is 53.—Perhaps it is the other volume.
642. It does not matter, I can look them up before Mr. Thompson is examined. I need not keep you upon it. I want to ask you some questions about two or three other matters. There was a change made in the lock valves. I think you said the change would cost about \$20,000?—The change made in the lock valves? No, you mean the culverts.
643. Not the culverts, the lock valves?—I did not say anything about lock valves.
644. Was there a contract given for lock valves?—Yes.
645. Whom was the contract given to?—To Hugh Ryan & Co.
646. For what amount?—\$29,000.
647. \$29,000, are you sure?—\$29,037.
648. Read it again?—It is a schedule contract.
649. Yes, but moneyed out, what does it amount to?—\$29,037.
650. Was that let by tender?—I do not think so.
651. You do not think so. In fact you know it was not?—I do not think it was
652. You are sure it was not?—I do not think it was.
653. When was it let?—I think it was let in 1894.
654. In 1894?—I think so.
655. A contract for \$29,000 not let by tender?—I think so.
656. Is that amount included in the amount you gave me just now as the total amount of their contract?—No.
657. Well, I asked you for the total amount, why did you not put it in?—I told you there were two contracts.
658. I was misled, perhaps not wittingly by you. Then this has to be put in?—Yes.
659. Was there a contract given for the lock gates?—Yes, there was.
660. When?—I think that would be in the end of 1893.
661. What time in 1893? Have you got the papers there?—The contracts?
662. What time in 1893? Are you able to state?—No, I cannot tell. It would be the end of 1893 or the beginning of 1894.
663. What was the amount?—\$67,500.
664. To whom was it given?—To Hugh Ryan & Co.
665. Were tenders called for?—Yes.
666. What length of time were the tenders for?—Well, I cannot say. The tenders are there.
667. Have you got the papers here?—The tenders are there.
668. Turn them up, please, and show me?—(After examining Exhibits 1 and 2.) No, I do not think they are here.
669. Are you sure tenders were called for?—Yes, I am.
670. Advertised?—Yes.
671. Can't you say what time? Why are the tenders not put in there?—Because what was asked was the two contracts where the changes were made. Mr. Lister told me so himself.
672. And the papers relating to the original contract and the three changes made in it and those only?—And the changes connected therewith.
673. And any work given to Hugh Ryan otherwise is not here?—No.
674. Well, will you make a memorandum on a piece of paper to produce the tenders in connection with these lock gates?—Yes.
675. You will do that, please?—Yes.

676. The tenders and all the papers connected with the letting of this contract?—
Yes.

By Mr. Haggart :

677. The recommendations to the Minister and the contract and all the papers?—
Yes.

678. In the third change made in the contract the provision is made for the construction of a pier for the railway bridge?—Yes.

679. Who ordered the construction of that pier?—By order in council.

680. Oh, the order did not emanate from the order in council, somebody must have moved in the matter?—What do you mean by “ordered the pier”? Do you mean this proposition?

681. At whose suggestion was that contract entered into for the construction of the pier? How was it brought about?—It was in the same agreement.

682. That was the third change?—That was the third change; it was in that. Mr. Trudeau, I think, must have recommended it. He reported—he was the chief engineer—he reported on it, I think.

683. Are you sure?—No, I am not; (after a pause) I am pretty well convinced; yes, I am sure.

684. If you have got the papers you can easily ascertain?—I am sure.

685. Do you mean to say Mr. Trudeau recommended or suggested the construction of the pier for the bridge?—No; but I say he recommended the price to be paid for it.

686. But I did not ask the price to be paid for it. I asked who first started the suggestion of the building of a pier for that bridge in the canal?—I think Mr. Page must have done it.

687. Have you got any evidence to justify your thought? Is there anything there to show that he did?—No.

Mr. DAVIES—No, you have got nothing.

By Mr. Haggart :

688. Perhaps I will bring it to your recollection. You remember there was a letter from Mr. Van Horne recommending a pier should be put in the canal, and the plans were changed by Mr. Page or Mr. Trudeau to accommodate his suggestion?—Yes, I remember now. Mr. Van Horne or some one recommended there should be a bridge to span the whole canal.

689. Yes?—Then I think my recollection is that Mr. Van Horne thought it should have a pier in the middle of the canal—a pivotal pier in the middle of the canal—to swing so that the swing was in the centre, and swelling out the prism on each side of it. I think that was it.

690. Do you remember the order in council adopting the suggestion; you have it there, either Mr. Page or Mr. Trudeau's suggestion?—There is an order in council in one of these books with plan attached. There is a plan attached to the order in council (handing it over.)

691. Excuse me, before you go. Is there any other work being done by Hugh Ryan & Co. beyond what you have already spoken of, either by contract or otherwise?—There has been, yes.

692. Please state what it was?—There were pipes, motor houses, and the lock valve.

693. How much was the work for all these?—The lock valve was \$1,250, the motor houses, \$3,700, the power pipes, \$60,500.

694. \$60,500. These are all?—These are all.

695. Were they let by contract or tender?—I think not.

696. It was given privately?—Given privately, I think, yes.

By Mr. Gibson :

697. At the close of the examination, at the last meeting of the committee, you stated that there was no extra amount paid to Hugh Ryan & Co., for the work done

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upon their contract at the Sault Ste. Marie canal, that there were no extra prices paid for anything beyond the schedule prices?—No; I said there was nothing paid for anything that was not—that an order in council had not been made for it.

698. Without an order in council having been made for it? Well, I notice here that in the progress estimates there are three classes of masonry?—Yes.

699. Or rather three prices paid for the same class of masonry?—Yes.

700. Well, now, for the original lock as tendered for, the contract was \$11 a yard?—It was; yes.

701. Then, when it was decided by the government to make it 650 feet, the price was raised to \$16 a yard?—It was not the price of the whole work on the canal; only that extra.

702. That extra 50 feet; exactly. Well, now, I would like you to explain to this committee why this extra 50 feet of the lock chamber should be paid for at the rate of \$5 a yard extra over the other work?—I think—well, I was not connected with the canals at the time.

703. Well, you are an engineer, and you are familiar enough with masonry to know that the longer the article is it is cheaper to build, because the whole of the extensive work of this canal is at the ends, and not in the middle?—Yes.

704. And the extension was made out to the ends?—Yes.

705. The same provision was made for the masonry of the ends if the lock had been 500 or 1,000 feet?—Yes.

706. Now, you cannot give any reason why the government paid \$5 extra for this extra 50 feet?—I don't know what their reason was; unless it was that the wages of the masons had increased since the work was first commenced, which I know was the case. But I am not in a position to say why the prices were made.

707. Who made these prices?—I think the chief engineer.

708. Who was the chief engineer at that time?—Mr. Trudeau.

By Mr. Haggart:

709. Who was the minister then?—Sir John Macdonald, I think; yes, Sir John Macdonald, I think it was.

By Mr. Gibson:

710. Now, Mr. Schreiber, following down the same item of masonry, I find that on the 950 feet lock, Hugh Ryan & Co. were paid \$12.60 a yard?—They were; yes.

711. Now, have you any explanation to give why the reduction was made after the length of the canal was extended?—Well, I think the reason was that it was merely a straight wall. In the other case, where they widened the canal to the 100 feet, the gates were left at the 60 feet wide, and that it was on a curve, and I think that was the reason.

712. Yes; that curve was in the original plans?—It was for 85 feet; yes.

713. Now, I find that in the lock-pit excavation, where it is given here at 25 cents a yard, the additional digging was paid for at the rate of 60 cents per yard?—Yes.

713a. Can you give any reason to the committee why it is increased?—I presume the reason was because the other prices—I am only supposing it—the other prices were low; the original tender and competition, probably, was cut very low. I know no other reason.

714. Well, do you not think that 60 cents a yard, after the contractors had agreed to do the whole work as it was first originated—600 feet at 25 cents a cubic yard—that they were getting a tremendously increased price at 60 cents a yard?—It is a large increase, no doubt; but at the same time the engineer must have considered it worth that or he would not have recommended it.

715. Who recommended it?—I think Mr. Trudeau; I think whoever was chief engineer.

716. That, inasmuch as the contractors were only getting 25 cents a yard, and that would not pay them for the earth excavation, he recommended that the change should be made?—I think you will find it in his report.

By Mr. Haggart :

717. What year was that?—That would be about 1892.

718. In 1892 who was the Minister?—In 1891 it was Sir John Macdonald. I see that the negotiations for the Sault Ste. Marie canal were commenced then, and that it was arranged under order in council which was dated, the first one, the 23rd December, 1891.

By Mr. Gibson :

719. What does that order in council recommend?—That order in council was passed approving of the change, providing reasonable terms and conditions could be made with the contractors. Then negotiations were opened with the contractors and the chief engineer in consultation with Mr. Walter Shanly. Mr. Walter Shanly was called in and they came to an understanding that these were fair prices.

720. So the chief engineer, instead of recommending a favourable increased amount to the contractors, took the contractors into his confidence, with Mr. Shanly, and upon a basis?—I did not say that.

721. Was not Mr. Shanly brought in and the contractors brought before them?—Yes.

722. And they were to receive fifty cents per cubic yard?—Yes.

By Mr. Ouimet :

723. Did it coincide with the other changes, the other changes in the work?—It was not the date for the completion; this was the second change.

By Mr. Gibson :

724. Now, then, I notice also that in the matter of rock excavations, the price paid under the original contract with Hugh Ryan & Co. was ninety-five cents a cubic yard, and the additional excavation is figured out at \$1.40 a yard?—That was arranged in the same way.

725. Well, now, can you tell me was there anything about the total amount of the unwatering in the original contract?—In the original contract?

726. Yes; how much was the original amount for unwatering the prism?—I do not remember just now, but it will appear there. You see, originally, in the original contract, there were to have been puddle trenches sunk alongside each side of the canal into the rock and filled with clay puddle. That they did not do. But they preferred any little addition of pumping, so that they might do it by pumping rather than do this work.

727. They preferred to spend the money in pumping rather than put a dam across the mouth of the channel. I notice here unwatering for the prism of the canal \$15,000, and the unwatering and contingencies \$10,000. Now the lock-pit; it says here, unwatering lock-pit \$20,000. Then additional \$35,000, and then an extra additional again of \$15,000?—That is under these two agreements.

728. So that they were paid in all, or will be if they are settled with, \$70,000 for unwatering?—Yes.

729. As against \$25,000 for the first unwatering?—Yes.

730. \$20,000, as I understand, was the original amount charged by Ryan & Co. for unwatering?—By the tender I could see. I really do not remember. I have no doubt it is \$20,000. That is the certificate, not the final certificate.

731. Where is the tender?—That is not the one; it is the entrance, that is the lift-lock.

By Mr. Davies :

732. Which section are you looking for?—No. 2, the lock.

Mr. DAVIES.—Here it is, the contract itself. There you are.

Sault Ste. Marie Canal Inquiry.

By Mr. Gibson :

733. Here you see in the contract itself : "Construction of dams, providing and working pumps, and doing everything that is required for the unwatering of the lock pit." Now be kind enough to read that clause, please?—The 19th item of the tender is "Construction of dam, providing and working pumps, and doing everything that is required for the unwatering of the lock pit, cuts for filling and emptying culverts and other works in the bottom of the pit and doing whatever is necessary to keep the pits fully unwatered as specified—\$20,000."

734. Now for unwatering the lock pit, or rather the prism, in order to complete a lock 600 feet long, the contractors were willing to keep that place dry during the completion of the work for \$20,000?—Yes.

735. When the Government recommended that the lock should be increased 50 feet, another arrangement was entered into by which the Government were willing to allow the contractors for this additional unwatering of 50 feet, \$35,000?—It was not only the lengthening but the deepening. They deepened it from 16 feet 3 inches to 19 feet, and the deeper it is the greater the risk, as you know of the water flowing in. If you will look at this tender you will see that there were two trenches to be dug along the side of the canal to prevent the leakage of the water through the fissures of the lock.

736. How much deeper was it?—From 16 feet 3 inches to 19 feet.

737. And then?—From 19 feet to 20 feet 3 inches.

738. What is it now?—20 feet 3 inches.

739. In the third change, when the lock was lengthened by 250 feet, from 650 feet to 900 feet, you allowed \$15,000 extra for unwatering?—Yes.

740. Under the new condition of things you are aware that the lock pit was made some 40 feet narrower than it was before?—It was. Yes.

741. Well, would this not be balanced by the fact of a narrower prism, 40 feet wide and 650 feet long?—I think you will admit the deeper you go down the greater the danger is.

742. It is not for me to answer the question?—It is not ; I am answering it.

743. Is it not a fact there is a less area in a prism 900 feet long and 60 feet wide as against one 650 feet long and 100 feet wide?—That is right.

744. The area is 54 to 65?—Yes.

745. Now you said before that this extra depth of digging required greater care. Where was the greater care required?—I say it was a greater risk.

746. I ask why?—The pressure is much greater ; the deeper you get down the pressure is greater.

747. Still the same area was required to be unwatered, in fact a less area, although deeper, had to be unwatered. Do you not think, Mr. Schreiber, that \$15,000 well spent upon the dam would have been sufficient to protect this extra pressure you speak about?—The dam? No, this is not the dam. These that were proposed alongside of the canal—not at the end of the canal. We had the dams at the ends, but this was alongside the canal to prevent water seeking its way in from other channels. The puddle trenches were for—

748. At all events you claim then that on account of this extra work notwithstanding that the area was not increased—that according to this arrangement with the contractors, the Government gave them \$15,000 extra for unwatering?—Yes, that is what they gave them.

By Mr. Haggart :

749. What would be the difference in the contract price now under the tender—what would be the difference between that and if they performed the work as originally tendered for, the puddle trenches and all?—I had not the carrying out of the tender. My impression is the trenches were a very large item, I think a very large item.

750. What is your impression—that the last tender was cheaper than the others, was it not?—The last would be much cheaper, that is, making the trenches. There is no doubt about that.

By Mr. Gibson :

751. Now you spoke in reply to Mr. Davies about Portland cement being used in the bottom of the lock. What was the contract price paid to Ryan & Co. for Portland cement?—No price made for Portland cement. They got a dollar extra for the use of Portland cement in place of the native.

752. Portland cement is marked at \$7 a yard for the bottom of the lock. According to this schedule here, Portland cement concrete was paid at \$7 a yard?—Oh, yes, \$8.30 I think they got, did they not?

753. Oh, no, I want to point out that fact to you, that they were willing to undertake to build Portland cement in the bottom of the lock for \$7 a yard, according to the original tender.—Yes.

754. Then the amount was changed to \$8.30 a yard?—\$8.30 was it?

755. Yes. Now you gave the reason why they should be paid a larger sum for the unwatering. I would like to ask you to give a reason to the committee why they should get \$1.30 a yard for concrete—for the extra concrete required in the work over and above the price arranged for under the terms of the original concrete?—Because after the chief engineer and Mr. Shanly and looking into the matter and learning of the circumstances they considered it a fair price and that is the reason why it was done.

756. Then it is just the same story: the engineer and Mr. Shanly agreed to raise the price of this concrete as they had raised everything else?—They agreed they thought it was a fair price.

757. I notice, Mr. Schreiber, that there is a revetment wall here that is moneyed out at the rate of \$7 a yard, and then I notice that that is changed to \$4.50. What class of work was this that was changed?—It was moneyed out at \$7.50, was it not?

758. Yes. And there is a foot note signed by yourself which says that “the price for the masonry for the revetment walls and cement I have placed at \$4.50 per cubic yard, pending further examination into the question, and before issuing a final estimate?”—It was \$7.50 a yard in Portland cement from stone from a distance, from stone from foreign quarries. The reason it was made \$4.50 was because the sandstone out of the canal was used.

759. Well, would you consider that of sufficient hardness, the stone we have of that kind?—I think so, yes.

760. Would it cover it?—I think so, yes.

761. Is it your intention to leave that revetment wall at the present price you have given—\$4.50 as against \$7.50?—That is my intention.

762. So you don't intend to give them more than \$4.50 a yard for that revetment wall?—Only for that portion of it which is limestone, a small portion of it, which is limestone.

763. How much did you use of that limestone?—I could not tell you without making up the figures now.

764. There are 6,030 yards at \$4.50 a yard, \$27,170?—I think so, yes.

765. I notice also, Mr. Schreiber, in the matter of wrought iron under the original contract they were paid 6 cents a pound for it?—6 cents a pound?

766. 6 cents a pound?—Yes.

767. What induced the government to give them 8 cents a pound?—For the same reason I have stated for those other increases.

768. The government were generous enough to give them \$40 a ton?—No, they acted on the advice of Mr. Shanly and the chief engineer.

769. Exactly. Under the advice of Mr. Shanly and Mr. Trudeau, for fear these contractors would not get enough money out of them they raised the price to \$40 a ton. Now, Mr. Schreiber, I notice that the extra plank in the culverts and mitre sills is \$45 a thousand feet board measure paid for it?—Yes.

770. Well, now, of course, the plank required in culverts would not be of as good a quality as that required for the flooring of a lock, Mr. Schreiber?—Oh, it must be of the very best.

771. For the floor of an ordinary culvert?—Oh, no. Not for the ordinary culvert, but for the discharge and feed culverts.

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772. And was it dressed?—Was it what?

773. Was it dressed? Was the plank dressed?—I really don't remember now.

774. You don't remember, of course not. You don't know. Well, now, it was simply bearing plank, was it not? It was simply bearing plank, for building the pipe of the culvert upon?—Oh, no.

775. What was the plank used for?—The plank is for the lining of the floor of the culvert.

776. It was the lining of the culvert. Well, now, how did it come about that you allowed the contractors \$45 a thousand feet for the culvert as against \$25 a thousand in the lock proper?—The only reason I can give is those two gentlemen recommended it after looking into the matter.

777. The same generosity?—Yes.

By Mr. Davies :

778. Do you state Mr. Shanly in his report advises the increase in the price?—I think you will find it there.

By the Chairman :

779. Is the report in writing?—It is in writing there, I think.

By Mr. Gibson :

780. Perhaps you will be able to tell us the reason why some of the cribs require to be taken down?—Yes, because they move forward.

781. Yes, that is a very good reason. Now tell us how they move forward?—From the pressure of the earth behind. The earth was put in during the winter season, the filling behind, and in the summer season when it thawed and became like pudding it pushed forward.

782. Who is looking after the filling of these cribs?—A man named Scott.

783. Well, he could not certainly have discharged his duties very faithfully to the government?—What is said with regard to that by the engineer in charge there, Mr. Crawford, is that the stone was taken out of the excavation in the winter season and in filling the cribs there was frozen earth on the stones and that when these thawed off that this stone settled in.

784. You were not consulted about the filling of those cribs?—In what way?

785. About them being filled in in the winter?—We were forcing the work in the winter.

786. At the same time if you were aware that there was frozen material that was likely to thaw being dumped in you would have objected?—I would not have liked it being done, no doubt.

787. And so on account of the loose manner in which this work was done, and the loose ice being thrown in with the pressure from behind, they thawed out?—What I understood is that owing to the earth being frozen on the stone, and probably some ice also, that in the spring this stone did settle no doubt, and also with regard to the filling of the earth behind the cribs when that thawed out, the pressure became tremendous and it forced out.

788. Were the plans of these cribs submitted to you?—They were made in the office here.

789. Were they submitted to you?—Yes.

790. And you approved of them?—Yes.

791. And you thought they were strong enough?—I did.

792. What reason had you for taking them down and putting them in 10 feet wider?—I was not aware till recently that it was so.

793. Well, as a matter of fact those cribs required to be taken down from top to bottom and built 10 feet wider, and you knew nothing of it till now?—I do not think those taken down were built ten feet wider.

794. Excuse me, Mr. Schreiber, I saw them.—I saw some wider.

795. The cribs did not move out bodily?—The bottom did not move.
796. And the top did not move?—No.
797. The centre moved?—The centre moved.
798. Like a bow string?—Yes.
799. And you braced them up?—Yes.
800. With what?—With concrete and timber stays.
801. How much did that cost?—Well, I cannot tell you just now what it did cost.
802. It cost a large sum of money?—No.
803. Would the cost of that bracing and the cost of the crib work have been sufficient to have built the whole of that pit with masonry from top to bottom?—No.
804. Can you give us a memorandum of the cost of that cribbing at another sitting?—I cannot get it at the present time, but I can get it from Sault Ste. Marie from our engineer there.
805. Well now, then, about this pier in the channel, how much did it cost? How much did the substructure cost?—I cannot tell.
806. How many yards of masonry were there?—I forget how many yards of masonry there are in it. (After examining the papers.) 2,483.
807. 2,483 cubic yards of masonry in that pier?—No, in the substructure. Not in that one pier.
808. Give us the quantity of masonry in the pier?—I cannot do that because it is given here the land pier, the pivot pier and this, 2,483 in them all.
809. So that in the abutments and in that pier in the centre, or rather towards midway in the channel, there are 2,400 cubic yards?—2,483 cubic yards.
810. Do you know the size of that pier in the centre of the channel?—I think it is about 14 feet at the bottom by 30 feet long.
811. 30 feet long. About how much would that pier and the cribbing around it cost?—I do not know. I could not undertake to say. If I am not correct I am told that it is not right.
812. I am leading up to something I want to ask you and I want you to give the committee some information.—I could figure it out in the office. I could not tell you now.
813. Was it not possible, in the construction of that C.P.R. bridge, to put in a couple of panels on each side of the centre and to have extended the bridge so as to cover the whole area of the channel?—You mean when the bridge was completed to have extended it.
814. Yes.—I submitted that to the Dominion Bridge Company to see what could be done. I thought it could be done at no heavy expense, and they told me it would cost pretty near as much as a new span.
815. Well, Mr. Schreiber, did you believe them when they told you that?—Well, it would not cost as much, but it would cost very much more than I expected it would.
816. Well, four or five panels on each side of the centre would have spanned the whole of that channel complete?—Yes, but you would have to reinforce other parts of the bridge.
817. But, Mr. Schreiber, that bridge was swung from the centre?—It is.
818. And the lightest press was at the extreme ends?—They are.
819. And to have increased the carrying capacity of that bridge was only adding to the centre and putting the ends out, you did not weaken the bridge in any way?—Oh, no, but when you increase the span you have to increase the strength of your bridge.
820. Quite so, and of course the upper chords radiating upwards, there was no difficulty in increasing them?—I submitted that and to see what we could do about it.
821. Could it not have been done?—Yes.
822. And should it not have been done?—That is a matter of opinion. It might have been to span the whole canal.
823. Is it not an eye sore to a beautiful piece of work?—I think it is.
824. Is it not a dangerous eye sore?—Well, those who planned it think not. They think it is much safer.
825. Is there not a likelihood of a vessel missing her way some day, perhaps through a storm or otherwise, coming through that channel, going wrong in her steerage gear

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running into that pier, or into a girder and carrying away that span?—There is a possibility of one running in yet.

826. There is a possibility of one running into that. Now, Mr. Schreiber, you said that on account of a message from Sir William Van Horne that rest pier was put in this locality?—No, I did not say.

827. What did you say?—What I said was this : Mr. Van Horne wanted a pivot pier.

828. In the middle of the canal?—In the middle of the canal and that the prism should be swelled out on each side, widened on each side.

Mr. GIBSON.—That would have been worse than the present rest pier.

By Mr. Haggart :

829. The present rest pier?—Yes.

By Mr. Gibson :

830. Is it not a fact the Government had this canal in contemplation before Mr. Van Horne built that bridge?—Oh, yes, I think so.

831. The Canadian Pacific Railway built that bridge, did they not?—Yes. Built that fixed bridge.

832. Is it not a fact the Government had that waterway laid out before the Canadian Pacific Railway built that portion of the line?—I don't know. They had it laid out. They certainly had it in contemplation.

833. And is it not a fact Mr. Page notified them as soon as the canal was completed they would have to make provision for building a bridge of sufficient length to span the channel?—I don't know that.

834. You never heard that before?—I never saw the report.

835. You never saw anything in your department relating to that?—I have seen a plan spanning the whole channel.

836. And because Mr. Van Horne—the Canadian Pacific Railway Company—would have been put to the additional expense of increasing the length of their bridge the Government thought it incumbent upon them to put up a rest pier in that spot?—I could not tell you.

837. You could not tell us. Well, I wonder if there is anybody that can tell us?

Mr. OUMET.—You have told us.

By Mr. Macdonell :

838. One moment before you go on. I just want to ask you a question that will elucidate a matter that arose out of a question by Mr. Davies. If you recollect he asked you about those power pipes, the contract for the power pipes?—Yes.

839. Now, will you refresh your memory and say whether that was let by contract or by private tender as Mr. Davies spoke of?—Well, I could only refresh my memory by looking it up. I don't remember.

840. Do, if you please, because as a matter of fact it was let by contract. Tenders were asked for?—I don't remember.

By Mr. Haggart :

841. You were mistaken, it was let by tender?—I will look it up.

By Mr. Macdonell :

842. There is another matter I would like to ask you about. Mr. Gibson asked you about the difference in the price of earth excavation between 25 cents and 60 cents. Do you, of your own knowledge, know how much of that earth excavation there was to be done when that change was made, or do you know the position of the earth to be moved when the change was to be made or when the change was made in the contract?—I think I know the amount of it. There was 425 yards of it.

843. 425 yards. Well now, Mr. Schreiber, can you say where the 425 yards were situated?—No, I don't know.

844. Do you know whether it was along the bank of the lock? As a matter of fact it was a very small quantity?—A very small quantity.

Mr. DAVIES.—He says he does not know.

By Mr. Macdonell (Algoma):

845. It was a very small quantity?—It was 425 cubic yards.

846. 425 cubic yards at 60 cents. Well it is of no consequence?—It is only \$255.

The committee then adjourned.

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COMMITTEE ROOM, No. 49,

HOUSE OF COMMONS, 14th June, 1895.

Committee met.

Mr. COLLINGWOOD SCHREIBER, Deputy Minister and Chief Engineer of Railways and Canals, recalled and further examined.

By Mr. Haggart:

847. When were you appointed deputy minister and chief engineer of Railways and Canals?—On the 30th of November, 1892. On the 5th December, 1892, I entered on my duties.

848. Have you any personal knowledge either by correspondence or conversation with the deputy minister of canals, or the minister in charge of the department in reference to the Sault Ste. Marie Canal prior to that date?—No, none whatever.

849. Then all your knowledge about the Sault Ste. Marie Canal consists of and is obtained from documents in your possession or that you find in the department?—Yes.

850. Up to that date?—Yes.

851. Will you look at this, Mr. Schreiber, and read it. It is a letter to the Hon. Mackenzie Bowell, dated December 17th, 1891. Do you find that in the department?—Yes.

852. That is a recital of all the transactions, all the changes of contract and the reasons for the changes up to that date in the department?—Yes, that recites them all I think. It is contained in volume 1 of the exhibits.

853. I would like that memorandum and the report of the engineer to Mr. Mackenzie Bowell, the memorandum to Council and the order in council read. Read them in order, please.

Witness then read the following:

“ OTTAWA, December 17th, 1891.

“ Honourable MACKENZIE BOWELL,

“ Acting Minister of Railways and Canals.

“ SIR,—In accordance with your request, I have the honour to submit further information respecting the Sault Ste. Marie Canal.

“ This request is made in view of observations in parliament by Mr. Gibson, M. P., and Sir Richard Cartwright, upon the expediency of increasing the width of the gate openings to the full width of the proposed lock, namely, 100 feet, and of your promise to the House that the point should receive consideration.

“ Under the original scheme for the construction of this work, as covered by the contract made with Messrs. Hugh Ryan & Co., on the 20th of November, 1888, the principal features were as follows:

“ ORIGINAL SCHEME.

(1) Length of chamber (between lock gates).....	600 feet
Breadth of chamber.....	85 “
Breadth of gate openings.....	60 “
Depth of water on mitre sills.....	16 “
Number of vessels of largest Welland Canal type (255 feet long) to be passed at one lockage.....	2
Estimated cost.....	\$985,000

“ This first scheme was subsequently modified to increase the accommodation at one lockage from two to four vessels, and it at present stands as follows :

(2) Length of chamber (between lock-gates).....	650 feet.
Breadth of chamber.....	100 “
Breadth of gate openings.....	60 “
Depth of water on mitre sills.....	19 “
Number of vessels, 255 feet long (largest Welland canal type), to be passed at one lockage.....	4
Estimated cost.....	\$1,205,000

“ Under this scheme the extra accommodation was to be obtained by increasing the width of the lock chamber, thus allowing four vessels to lie together in pairs ; an arrangement which, while meeting the requirements of additional accommodation at probably the minimum of cost, is open, undoubtedly, to the difficulties that attach to the close proximity of several vessels in a narrow space, and the placing them in the requisite positions,—difficulties that can only be met by extreme care on the part of those in charge of both vessels and works.

“ In order to secure this accommodation with gate openings of the size, 60 feet, considered desirable, it was necessary to narrow the lock at both entrances to that width, leaving a chamber in which two out of four of the vessels it might contain would have to lie out of the straight channel.

“ To avoid this difficulty, and yet accommodate four vessels, two courses are open : either to increase the width of the gate openings to the full width of the chamber (100 feet), or to lengthen the chamber.

“ The following scheme, No. 3, shows the leading features of a lock with the wide gates :—

(3) Length of chamber (between lock-gates).....	600 feet.
Breadth of chamber.....	100 “
Breadth of gate openings.....	100 “
Depth of water on mitre sills.....	19 “
Number of vessels of largest Welland canal type (255 feet long) to be passed at one lockage, (two vessels side by side).....	4
Estimated cost.....	\$1,711,000

“ I do not advise the adoption of lock-gate openings 100 feet wide.

“ Gates of the dimensions requisite to cover an opening of this width would, of necessity, be large, each gate being 56 feet wide and 44 feet in height ; and though, perhaps, (being moved by hydraulic power,) the difficulty of operation would not be greatly increased by reason of their size, yet, in the event of accident, it would be a serious matter, involving considerable delay, to replace them. Further, the cost of five sets of gates of such dimensions would be an item to be taken into account.

“ I fully recognize the advantages of a straight entrance and exit into and out of the chamber, but consider that these advantages would be better attained by increasing the length of the lock and reducing the breadth. In the event of future extension of lock accommodation, two narrow locks, built side by side, would, no doubt, be found to be a convenient arrangement.

“ The question becomes mainly one of cost.

“ To lengthen the lock chamber to such extent as to accommodate four vessels end on end, the scheme would be as follows :—

(4) Length of chamber (between lock gates).....	1,100 feet.
Breadth of chamber.....	60 “
Breadth of gate openings.....	60 “
Depth of water over mitre sills.....	19 “
Number of vessels of largest Welland Canal type (255 feet long) to be passed at one lockage.....	4
Estimated cost.....	\$1,770,000

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“ If, however, the Government should decide, after due consideration of the questions involved, to adopt a lock accommodating three vessels, only, in place of four, the desired provision of straight entrances could be made without the incurrence of so heavy an expenditure. The following scheme would meet these requirements :—

(5) Length of chamber (between lock gates).....	830 feet.
Breadth of chamber.....	60 “
Breadth of gate openings.....	60 “
Depth of water over mitre sills.....	19 “
Number of vessels of largest Welland Canal type (255 feet long) to be passed at one lockage.....	3
Estimated cost.....	\$1,521,000

“ Comparing the cost of these several schemes, the results are as follows :—

(1) Original scheme, depth 16 feet, accommodating 2 vessels..	\$ 985,180
(2) Present or modified scheme, depth 19 feet (accommodating 4 vessels side by side).....	1,205,000
(3) 600 feet x 100 feet, with gates 100 feet wide, depth 19 feet (accommodating 4 vessels side by side).....	1,711,000
(4) 1,100 feet x 60 feet, with gates 60 feet wide, depth 19 feet (accommodating 4 vessels, end on end).....	1,770,000
(5) 830 feet x 60 feet, with gates 60 feet wide, depth 19 feet (accommodating 3 vessels, end on end).....	1,521,000

“ I would recommend the adoption of scheme No. 5, contemplating a lock 830 feet long, 60 feet wide, with gate openings 60 feet wide, and with 19 feet of water over the sills at extreme low stages of lake level, which is equivalent to 20 feet at average level, the limit of the American canal.

“ I may, however, observe that a still further scheme has been suggested by which provision would be made for one lake vessel 320 feet long and two Welland Canal type vessels 255 feet long. There are no engineering objections to such a scheme, which may be indicated as follows :—

(6) Length of chamber (between lock gates).....	900 feet.
Breadth.....	60 “
Breadth of gate openings.....	60 “
Depth of water over mitre sills.....	19 “
Number of vessels to be passed at one lockage.....	3
Estimated cost.....	\$1,600,000

(The increase in cost over the scheme No. 5 would be \$79,000.)

“ In the event of any change being now made in the direction indicated during the discussion in Parliament upon this question, I should be instructed at an early date to obtain from the contractors a price for which they would agree to perform the requisite additional work involved, in order to the submission of the whole matter for further consideration.

“ I have the honour to be, Sir,

“ Your obedient servant,

(Signed) “ T. TRUDEAU,
“ *Chief Engineer of Canals.*”

“ December 23rd, 1891.

“ (Memorandum.)

“ The undersigned has the honour to represent that in pursuance of a promise made to Parliament last session, he has caused further consideration to be given to the question of constructing the entrance and exit to the Sault Ste. Marie canal, now under contract, in a straight line with the walls of the lock chamber, and has obtained from the chief

engineer of canals a report dated the 17th inst., accompanied by an explanatory diagram, indicating the modes by which the desired end can be reached, giving at the same time the main features of several practicable schemes, and their individual and imperative cost.

"The undersigned would observe that two of the schemes so submitted by the chief engineer offered the desired advantages. One (No. 5) contemplating a chamber 830 feet long and 60 feet wide, with gate openings 60 feet wide, and a depth of 19 feet of water over the sills, such chamber to accommodate three vessels of the largest Welland Canal type (255 feet long).

"The estimated cost of such a lock he sets down at \$1,521,000, as against the estimated cost of the work as at present under contract of \$1,205,000.

"This scheme the chief engineer recommends. At the same time, however, he submits a further scheme (No. 6) which, in place of three vessels, each 255 feet in length, there would be accommodated at one lockage one lake vessel 320 feet long and two 255 feet long, the length of the lock chamber being increased to 900 feet, and the cost of the work to \$1,600,000, an increase of \$79,000; the other features of the scheme being the same as those of No. 5. To this scheme the chief engineer states that no engineering objections exist.

"The undersigned submits as part of his present memorandum a copy of the report of the chief engineer, and considering that the additional accommodation to be afforded by scheme No. 6, may be regarded as fully equivalent to the increase in cost, further having in view the possible development of traffic at this point, recommends that the scheme No. 6 above mentioned be adopted, provided that reasonable terms and conditions can be made with the contractor, covering the necessary amendments and alterations to the work as at present being carried out. Such terms, conditions, amendments and alterations to be subject to the approval of the Governor in Council.

"Respectfully submitted,

(Signed) "M. BOWELL.

"Acting Minister of Railways and Canals."

"OTTAWA, 24th December, 1891.

"On a memorandum dated 23rd December, 1891, from the acting Minister of Railways and Canals, representing that in pursuance of a promise made to Parliament last session, he has caused further consideration to be given to the question of constructing the entrance and exit of the Sault Ste. Marie canal, now under contract, in a straight line with the walls of the lock chamber, and has obtained from the chief engineer of canals a report, dated the 17th December, instant, accompanied by an explanatory diagram indicating the modes by which the desired end can be reached, giving at the same time the main features of several practical schemes and their individual and imperative cost.

"The minister observes that two of the schemes so submitted by the chief engineer offer the desired advantages, one, No. 5, contemplating a chamber 830 feet long and 60 feet wide, with gate openings 60 feet wide, and a depth of 19 feet of water over the sills, such chamber to accommodate three vessels of the largest Welland Canal type (255 feet long).

"The estimated cost of such a lock he sets down at \$1,521,000, as against the estimated cost of the work as at present under contract of \$1,205,000. This scheme the chief engineer recommends. At the same time, however, he submits a further scheme, No. 6, by which in place of three vessels, each 255 feet in length, there would be accommodated at one lockage one lake vessel 320 feet long, and two 255 feet long, the length of the lock chamber being increased to 900 feet, and the cost of the work to \$1,600,000, an increase of \$79,000, the other features of the scheme being the same as those of No. 5. To this scheme the chief engineer states that no engineering objections exist.

"The minister submits herewith a copy of a report of the chief engineer, and considering that the additional accommodation to be afforded by scheme No. 6 may be regarded as fully equivalent to the increase in cost, further having in view the possible

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development of traffic at this point, recommends that the scheme No. 6 above mentioned be adopted, provided that reasonable terms and conditions can be made with the contractor, covering the necessary amendments and alterations to the work as at present being carried out ; such terms, conditions, amendments and alterations to be subject to the approval of the Governor in Council.

"The committee recommend the adoption of the above report of the Minister of Railways and Canals.

(Sd.) "JOHN J. MCGEE,
"Clerk, Privy Council."

By Mr. Haggart :

853a. Then after that report to council, what was the next change?—The report to council deals chiefly with the change to 900 feet in length, 60 feet in width and 20 feet 3 inches on the mitre sill.

By Mr. Davies :

854. On the mitre sill?—20 feet 3 inches.

855. I don't think you are right in that?—Yes.

856. I don't think so?—19 feet.

857. I have the document in my hand?—Well, one moment ; 19 feet probably in that, but when that change was made it was made for 20 feet 3 inches.

858. But the document from which you were reading expressed it "length, 900 feet, breadth, 60 feet, breadth of gate opening, 60 feet, depth of water on the mitre sill, 19 feet."—Following that you will find another order in council making it 20 feet 3 inches.

By Mr. Haggart :

859. Which was the depth on the American locks?—Yes, I understand that.

860. Did that entail any additional cost, the change from 19 feet to 20 feet 3 inches?—Oh, yes, necessarily so.

861. Eh?—Necessarily so.

862. You do not know the amount?—I could not tell you the difference between the two.

863. Mr. Thompson the engineer in charge of the work would be more likely to speak accurately as to the effect of the change?—I think so too, decidedly.

864. You would be surprised to learn that the change would cost hardly anything, the dropping down of the mitre sill?—Yes, I would.

865. Very little ; it would not cost anything?—He would know.

866. However, we will be able to get that information from the officer in charge. Then that is the only change from this Order in Council as the lock is constituted at present, the change of the depth on the mitre sill from 19 feet to 20 feet 3 inches?—That is what I learned from the document.

867. Mr. Gibson was asking you the other day, and mentioning a change in the schedule price of earth from 25 cents to 60 cents. You don't know the amount of material that was affected by that change?—That was 415 yards. I think I stated the other day, 400 and some odd yards.

868. Do you know any particulars in reference to that material, do you know what it was that was excavated?—No, I don't remember.

869. Mr. Thompson would know it. Mr. Gibson was asking you too about the change in price on rock material from 95 cents to \$1.40?—Yes.

870. You don't know anything about that?—No, I could not tell.

871. He was asking you about the increased price allowed to the contractor for the unwatering of the canal. You remember that?—Yes.

872. Will you look at the original contract and see what it would have cost to have unwatered that and carried it out, and what is the difference between it and the last change that was made?—From the moneying out of the tenders—

873. First of all give it to me for 16 feet of navigation, what it would cost for the unwatering and the puddled trenches? Give me first the puddled trenches?—The puddled trenches were first: “Earth excavation inside and end trenches, \$4,500.”

874. Yes?—“Rock excavation (the same) \$25,500. Unwatering trenches on sides and ends of canal during the work, \$12,500.”

875. Yes?—“Puddled clay inside and end trenches furnished, delivered, &c., \$29,700. Earth excavation in trenches on all four sides of lock at \$1,800. Rock, ditto, \$35,000. Unwatering trenches on all four sides of lock-pit, \$12,500.”

By Mr. Davies :

875a. That is in twice, you have read that before?—No.

Mr. HAGGART—The end trenches. These are the other trenches.

(Witness resuming) “Puddled clay in trenches furnished and delivered, \$23,400.” That makes \$144,900 in connection with the puddled trenches. Then “forming dam at upper end of section and drainage outlet above lock and unwatering prism of canal during progress of work, &c., \$15,000. Construction of dams, providing and working pumps and doing everything for the unwatering of the lock pit, cuts for filling and other works in the bottom of the pit, &c., \$20,000.

By Mr. Gibson :

876. Would you allow me for a moment. Is this extra amount you are now giving the result of the change from 19 feet?—No, no; this is for 16 feet.

877. This is only an estimate though?—This is the moneying out of the tenders.

By Mr. Haggart :

878. Then for the lock at 16 feet navigation the unwatering and the puddled trenches would have cost \$179,900?—That is according to the moneying out of the tenders.

879. How much of that work was done and what was expended on it, and in what form. Take the first item?—Item 2, \$750.10, that is the earth excavation.

880. Item 3?—\$1,110.

881. Item 4?—\$500.

882. Item 5?—Nothing.

883. Item 6?—Nothing.

884. Item 7?—Nothing.

885. Item 8?—Nothing.

886. Item 9?—Nothing.

887. Item 12?—\$14,250.

888. Item 19?—\$20,000.

889. What is the total?—Making a total of \$35,611.

890. Leaving a balance of?—\$144,289.

891. Add to that the puddle trenches extended to the length of the lock of 20 ft. 3 in. on the mitre sill. What would be the additional cost as compared with the old lock of \$179,900, if we apply these figures to a depth of 20 ft. 3 in. on the mitre sill with the increased length. I want to know what would be the probable extra cost of carrying out the original plan under the new conditions?—Well, that is very difficult to arrive at. These trenches would have to be increased in depth 4 feet, and of course the deeper you go the more expensive it would be.

892. Well, give it to me approximately?—Well, Mr. Thompson could give you that better, but it would be very much more in proportion for the work done.

893. It would be more than a quarter extra price, anyway?—Yes.

894. Then the cost of doing that work according to the original plan and this particular kind of work that Mr. Ryan had to do would cost in the neighbourhood, anyway, of \$215,000?—I should think it would.

Mr. Davies objected to this line of examination.

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By Mr. Haggart :

895. Add 25 per cent to \$179,000?—In round numbers, \$45,000.

896. Add \$45,000 to \$179,000?—Call it \$180,000, that is \$225,000.

897. What did you get all this work done for under the contract as last let to Mr. Ryan?—\$95,611.

898. Yes. What was the saving under the new arrangement?—Well, call it \$95,000 and \$225,000. I said before I think, that would be \$130,000.

By Mr. Davies :

899. What would be \$130,000?—The difference between what it cost and what it would have cost under the original contract with the puddle trenches and that 25 per cent added to it.

By Mr. Mulock :

900. But you left out some of the work?—Yes.

By Mr. Davies :

901. The cost of the work originally you put at \$179,000?—\$180,000 in round numbers.

By Mr. Haggart :

902. The saving upon the plan latterly adopted as compared with the cost if the original plan had been followed would be a difference of how much?—A difference of \$130,000, on the basis I have stated.

By Mr. Davies :

903. What did you say Ryan did it for?—\$60,000 and \$35,611. That is \$95,611.

By Mr. Haggart :

904. I see a statement here in the *Globe*? “It appeared from Mr. Gibbs’s cross examination that the contractors received \$5 per cubic yard under the original contract for masonry in the lock and \$12.60 per cubic yard under the new arrangement.” What were the actual changes?—The actual changes were from \$11. I shall have to look first. It was \$11, something to \$12.60. In one case it would be from \$11 to \$16, in the other from \$11 to \$12.60.

905. What was the reason assigned for the increased price allowed them? Do you know?—I do not know.

906. You do not know anything about the increased price given them for the bolts?—No.

907. You do not know anything about the increased price alleged to have been given them for the timber?—No.

908. You do not know anything about that?—No.

909. Now we can come down to the two points for which you are responsible. The suggestion of the Government for the completion of the work a year sooner than contracted for, for which there is \$90,000. Do you know whether that was sufficient remuneration for the contractor to do it within a year or not? I really do not know. That was before I had anything to do with it.

910. You made a reference to me in respect to the C.P.R. bridge across the canal. Can you tell me the number of yards in that pier?—550.

911. What was the contract price for building the bridge?—\$19,400 for the superstructure.

912. What would be the cost of the superstructure without the pier there?—According to the bridge engineer for the department, \$45,000.

913. You had some correspondence with parties, and you got the engineer of the department to make an estimate, what it would cost to strengthen the present bridge

that had been contracted for, for a span that would reach across. Have you got the correspondence? Have you got the officer's report upon the subject?—I think it is among the papers filed.

914. I do not know whether it is here or not?—Yes, I think it is there.

915. Read the whole of it, but first of all do you know anything of the reasons why the bridge was built with a pier?—No, I do not.

Witness then read the following:—

“Memo. *re* extension of arm of the Sault Ste. Marie swing bridge to shore abutment removal of present plate girder span :

“To effect the object desired would require either a new superstructure, or an addition of about 75 feet in length to the canal span, and counter-weighting the short span or short arm.

“The increased length of canal span with augmented dead and live loading, the counter-weighting of short arm would produce stresses in the truss members, turntable, &c., of more than double those upon which various members of the truss were proportioned, and cause a lower factor of safety than is permitted in bridge designing, also more than doubling the permissible stresses of the Government specification.

“To reinforce the various members effected so that the stresses would not exceed the conditions of specification would not be economical, and I may say impractically the superstructure would require to be removed and entirely rebuilt, the cost of which would be greater than the construction of a new superstructure and the result not so satisfactory a piece of work.

“A new bridge could be constructed with a long and short arm, but it would be preferable, if not too expensive, to make both arms of the same length by moving back the abutment.

“The cost of a new superstructure, including machinery required to operate it by electric power, would be about \$45,000. It would require to be erected in winter, either using the present bridge or diverting the track which ever would be considered most economical by the contractors.

“ROBERT C. DOUGLAS.

“OTTAWA, 31st October, 1894.

“P. S.—Since writing the above I have had, as directed, an interview with Mr. Johnson, the result of which will be found in appended letter.

“5th November, 1894.

R. C. D.”

The WITNESS—Do you wish me to read the letter appended? It is from Mr. Johnson, the engineer of the Dominion Bridge Co.

Mr. HAGGART—It is a letter agreeing with it and giving his reasons. Perhaps Mr. Gibson would like to hear it.

Mr. GIBSON—Yes, I would like to hear it.

Witness then read the following:—

“DOMINION BRIDGE COMPANY (Limited),

“WORKS AT LACHINE LOCKS, P. Q.,

“MONTREAL, 1st November, 1894.

“R. C. DOUGLAS, Esq., C.E.,

“Department of Railways and Canals,

“Ottawa, Ont.

“*Re the Sault Ste. Marie Canal swing.*

“DEAR SIR,—As stated to you verbally, I consider it wholly impracticable to lengthen the bridge as suggested, the proposed addition of 75 feet to one end and counterweighting the other, increasing the strains in most of the members two to three-fold, and it is simply impossible to reinforce the different members to make them safe under the changed conditions. I am well satisfied that the economical thing to do is to replace the present structure by an entirely new one. It is possible that the present floor system and a few of the truss members might be worked into a new swing to fair

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advantage, but the remaining portion of the old bridge would be of little value. The metal could not even be sold for scrap, except after cutting up, and this with the cost of transportation to any rolling mill would use up nearly its whole scrap value. If the whole bridge is kept on hand it can be worked in somewhere else, but perhaps not speedily.

“I should presume that the new structure 400 feet or so over all or with one 200 foot arm and the other counterweighted to suit present masonry would cost somewhere in the neighbourhood of \$45,000 or \$48,000, including electric motors for turning, but not including electric generator. The present structure could only be replaced during the winter months when there is no navigation.

“Yours very truly,

“DOMINION BRIDGE COMPANY (Limited),

“by Phelps Johnson, Manager.”

By Mr. Gibson :

915a. What is the date of that, Mr. Schreiber?—That is November 1st, 1894.

916. Yes. I notice in this report, Mr. Schreiber, that the Dominion Bridge Company's engineer states that the old material of the bridge would only be good for scrap?—Yes.

917. What opinion have you got to give on that?—Well, the bridge could be taken to pieces and rebuilt somewhere else. There is no doubt about that. It would all be available for a bridge of that span anywhere.

918. Now, Mr. Schreiber, you have had a good deal of experience as a railway engineer in bridge building. Is it possible, as I stated the other day, to have put in about 70 feet into the centre of that bridge and still carry the bridge?—That is the idea I had and Mr. Haggart had. We both held that view, and did not think it would cost anything like \$45,000.

919. Do you think an addition of 70 feet would cost \$45,000?—We did not think so.

920. Do you see any necessity of adopting the plan followed by Mr. Douglas of extending the bridge only at one end and bringing unfair strains at the other end?—Taking away the pier in the canal, you would have to counterbalance the short limb. That could be done.

921. But what I want to get at is what is your opinion in regard to a short limb? Is there any necessity for a short limb?—No. You could remove the abutments further back.

922. Remove the abutments of the bridge and extend the bridge from the centre?—Quite so.

923. In doing that you say 70 feet would be required?—At each end.

924. That is 140 feet?—Yes.

925. Would that cost \$45,000?—Well, I don't think so.

By Mr. Haggart :

926. You know nothing of the reasons for the building of the bridge in the form in which it was?—No, I don't know.

927. The engineer in charge of the works would know that?—Mr. Thompson will know that, he knows all about it.

By Mr. Davies :

928. Perhaps I may have misunderstood you, but did you say that it would have cost the difference between \$19,000 and \$45,000 to have a bridge covering the whole width of the canal instead of a bridge resting on the pier?—I did not say that. Let me understand; would it originally have cost \$45,000 to have built the big span?

929. Yes.—I think it would.

930. And the cost of the span as built, the bridge as built was \$19,000 ?—\$19,400.

931. And the change to a bridge across would have been the difference between the \$19,000 and the \$45,000 ?—I don't say that. There would be the cost of the pier in the canal would come out of that, the 550 yards measurement would come out of that. That would be \$6,600.

932. Then no matter who had to pay the cost—deducting the cost of the pier from the cost of a complete bridge from side to side of the canal what would be the difference between the work as constructed and a bridge extending from side to side ?—About \$19,000.

933. And that is deducting the \$26,000 is it ?—The \$26,000, it should be.

934. Is that also deducting the cost of the fixed bridge from the span—there is a fixed bridge ?—Oh, you would have the value of the fixed bridge, you would have that. I have not deducted that, the value of that would be deducted also.

935. What would that be ? Would you not have to take that into consideration ?—Oh, yes. That would have to be taken into consideration, that would be an addition.

By Mr. Gibson :

936. In the price you gave of \$19,400 for spanning the bridge pier in the centre of the canal, does that include crib-work ?—No, it does not.

937. That would go to the credit of the new bridge ?—Yes. I think that is some \$7,000 or \$8,000 ; yes, it would.

938. The crib-work would go to the credit by \$7,000 or \$8,000 ?—Yes.

939. And how many yards of masonry were there ?—There is \$6,600 of masonry—550 at \$12 would be \$6,600. That is 75 feet span.

940. Then there was that greater span at the end of the centre, Mr. Schreiber, how much would that cost ?—I don't remember what that would cost. I think probably there would be about \$37,000 from \$45,000.

941. \$37,000 from \$45,000 ?—Yes.

942. So that if you had really built a new bridge there would only have been a difference of \$8,000 altogether, and removing all that unsightly thing from the centre of the canal ?—Yes, that is if it had been originally done so.

By Mr. Haggart :

943. I was asking you about the lock ?—Yes.

944. What is the character of the work there ?—In what way ?

945. As a workmanlike piece of work ?—I believe it to be first-class in every respect.

946. Did you ever see on the continent of America or anywhere else work of any kind equal to it in character ?—No, I have never seen finer masonry built anywhere, and the timber work in the culverts, I believe that to be thoroughly good.

947. Thoroughly good ?—Yes.

948. Do you know anything of the prices that were paid for a similar lock in the neighbourhood there, within half a mile of it, by the United States Government ?—I think the engineer there told me it was going to cost \$4,000,000.

949. Oh, I mean as to the schedule price a yard ?—No ; well, I don't know.

950. I will be able to show it to you afterwards. The material in our lock I think is better ?—The backing is very far superior to the backing in the lock of the American canal.

951. What kind of cement was used in the construction of our lock and what kind was used in the American lock ?—The cement used in our lock is Portland cement ; that used on the American lock, in the backing, is native cement.

952. You have been over the two locks ?—The American ?

953. Yes, both ?—Oh, yes.

954. I will not ask you for a comparison because it may be invidious ?—Oh, well, the lock over there is a very fine lock also, there is no doubt about it. I say the lock over there is a fine lock, a fine piece of work.

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955. Fine work?—Oh, yes.

956. Unfortunately in their lock for some reason or other the native cement expanded and cracked and our lock as constructed is perfect in every respect?—Perfect in every respect.

957. And it is the best piece of masonry and the best piece of work you ever saw in your life?—I never saw a better piece of work.

By Mr. Gibson :

958. You saw the result of that crack in the American lock?—Well, I don't like talking about their locks ; it is a capital piece of work.

By Mr. Mulock :

959. What are the dimensions of the American canal?—Eight hundred feet, the new one I think—800 feet by 100 feet wide.

Mr. MULOCK—You were commencing to give a comparison of the cost of the whole work, were you ?

Mr. HAGGART—No, no. The schedule price per cubic yard. He did not know ?

WITNESS—No.

By Mr. Macdonell :

960. Mr. Schreiber, if you recollect the other day when you were giving evidence, Mr. Davies asked you a question about the contract for the power pipes. You answered Mr. Davies that no tenders had been asked for—that the contract was not advertised. Have you looked that up since?—Yes. I was under that impression for the moment, but I was wrong.

961. Will you explain to the committee what the facts are in connection with that?—Tenders were invited which tenders are upon the table here now.

962. So that that \$67,000 or \$69,000 worth of work was let to Hugh Ryan & Co. by tender?—Yes.

By Mr. Gibson :

963. I notice that in the two tenders mentioned by Mr. Macdonell—that is the Central Bridge Co. and Mr. Waddell—that they retired from the contract?—Yes.

964. On what ground, do you know?—Yes. They wanted the Government to guarantee the pumping out—guarantee them free from any cost of pumping. They wanted to have it laid dry for them.

965. Well, what then?—Well, I did not mention—I thought it was understood in the specification. I mentioned nothing about it and when—

By Mr. Davies :

966. Which are you speaking of now?—That applies to both parties tendering.

967. That is the unwatering, is it?—Yes.

968. The unwatering was not mentioned in the specification?—I did not mention it in the specification, I thought it would be well understood.

By Mr. Gibson :

969. So that when this was mentioned to these contractors they took alarm and withdrew from the contract?—Yes. They would not undertake to arrange for the unwatering.

970. Now, in the case of the Central Bridge, they say they find “that other work now under contract is to be executed concurrently with the work that we have tendered for. Therefore, we find that it would be impossible to have such possession of the site that would enable us to carry on our work without interfering with the work now in progress, and at the same time incurring a greater cost on work, and a greatly increased cost on our plant.” Do you know the reason why they could not get possession of the

ground to do this work?—No, I don't know the reason why they should not have possession of it, if they did not interfere with the other contractors, but the other contractors had under their contract the use of all that iron.

971. Yes. So that the other contractors were really handicapped, because, notwithstanding they were the lowest tenderers, the other tenderers could object to their going on and interfering with their work?—I think they could.

972. But could not the government have insisted in the specifications that those tendering for this work should have free access to the works?—I don't think they could, when inviting these tenders.

973. Well, then, that practically meant, in other words, that nobody else could do this work except Ryan & Co.?—Unless they arranged with them, I think.

974. Yes. That was not mentioned in your specification at all?—No; it was not.

975. Don't you think it should have been?—Well, it would have been better, no doubt.

976. It would have been better if it had been mentioned in the specification?—Yes; I think it would.

977. It would also have been better if the attention of the parties tendering for this work had been called to the fact that they were responsible for any leakage that took place during the work, and so made an arrangement with the other contractors?—I think so; yes.

978. That was altogether forgotten in the specification?—It was not done. You are not speaking of the original?

979. I am speaking of this specification now. That is the original specification?—Yes.

980. I am not speaking about the general work. So that in this specification no notice was given, or rather, no objectionable features were pointed out that had to be overcome by the other contractors?—No; they were supposed to go and look for themselves.

981. Quite so; but is that the usual practice?—Well, I don't know, I am sure. It is the usual practice people should go and look for themselves.

982. That is not what I am asking here. Is it not the usual practice for an engineer to point out difficulties of this character to parties intending to tender?—Well, I think it would have been better if I had drawn their attention to it.

983. Why, of course; and the result is, these men were scared of the work, and it was left to Ryan & Co. to do the contract?—Well, I don't know.

984. Well, you can see the purport of these letters, that, not being able to get possession of the work, they were obliged to withdraw their tender?—(No answer.)

By Mr. Macdonell:

985. The original specification for this work provides that the contractors should have the ground in the vicinity of where their work was?—That is the 1888 contractors; yes.

986. Well, now, what I want to make plain is this, that had you put a clause in the specification providing for these tenders you would be taking away from the contractors under the 1888 specification something that you would have no right to take from them. In other words you could not by your specification for this contract that we are speaking of now, give the contractors that would come under those tenders any right to the ground upon which the other contractors were working?—No.

987. So that if you had put that clause in the specification it would really be inoperative, or if you attempted to enforce it you would incur a claim for damages from the contractors?—Unless they had arranged with the contractors.

988. It is merely to make the thing plain, that if in drawing that specification you had put such a clause in as suggested by Mr. Gibson you would certainly be running a risk of having a very large claim for damages from either one contractor or the other—

Mr. DAVIES objected to Mr. Macdonell asking leading questions.

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By Mr. Haggart :

989. Let me ask a few questions to elucidate this. It would be impossible for two contractors to occupy the same ground in building the works which would be near one another, and very correctly the man who drew up the original plan laid it out only for one?—You could not have a contractor coming in where another had commenced.

990. Was it not contemplated anyway that there would be none of this work for the purpose of building the gates and the water power until after this contract was completed and through?—Until certain parts of it were completed.

991. Until certain parts of it were completed?—Yes.

992. So that certain parties who came afterwards to build the water power would not interfere at all with the original contractor?—Quite so.

993. That was contemplated in the original specification in the first instance?—Yes.

994. What was the reason that it was changed? Was it on account of the necessity of having the work done in a hurry, in a year before the time contemplated?—I do not think there were any conditions made in connection with the last change.

995. But the pipes had to be put in in a hurry?—Yes.

996. And the original intention was to wait until the contractor had finished his work?—Yes.

997. And then the subsequent works were to be put in?—Yes.

By Mr. Davies :

998. So that as a matter of fact I understand from you that when the changes were made in this work as to which Mr. Gibson has examined you, the original contract was so drawn as to preclude any other man from tendering?—I do not say that.

999. From carrying out the work?—No, I do not think that the contractor could carry out the work of putting in those pipes while these other contractors were at work, without they were completed.

1000. And therefore no other contractor than Messrs. Ryan could tender and carry the work out?—It would be very difficult to do.

1001-02. Have you not told Mr. Macdonell it would be impossible. ?—Yes, it would.

Mr. DAVIES.—Then it was a farce to call for tenders ?

Mr. MACDONELL—I do not think Mr. Schreiber said it was impossible.

By Mr. Cochrane :

1003-04. Did you say it was a farce calling for tenders?—I did not say it was a farce asking for tenders.

By Mr. Davies :

1005. Mr. Schreiber, I want to ask you one or two questions about the tenders for the lock gates?—Yes.

1006. Which you mentioned in connection with the steel pipes?—Yes.

1007. There were tenders called for for the lock gates of the Sault Ste. Marie Canal?—Yes.

1008. There were three tenders put in?—Three, I think, yes.

1009. Hugh Ryan's, Frederick Toms's and the Hamilton Bridge Co.?—Yes, I think so.

1010. Hugh Ryan's \$67,000, Frederick Toms's \$73,000 and the Hamilton Bridge Co. \$54,000?—Yes, I think so.

1011. The specifications on which these tenders were called for did not provide for the unwatering of the canal?—No.

1012. But after the Hamilton Bridge Co. got the tender then you inserted a clause requiring the canal to be unwatered?—The reason—

1013. I do not want the reason but the fact?—No, that is not it. If there was no water to take out of the canal it would have been all right.

1014. I will read the words you inserted?—I remember inserting them perfectly.

1015. The words you added were: "48th section. The lump sum in the tender must embrace the cost of any unwatering of the canal that may be found necessary"?—Yes.

1016. That was not in the specification for the tenders? It was added after the Hamilton Bridge Co.'s tender was accepted?—Oh, yes; it was added on the second tendering, I think.

1017. And as a consequence of your adding on that, the Hamilton Bridge Co. said they would not abide by the tender?—No, not at all.

1018. Well, will you take that letter of theirs and read it and see whether I am right or not?—I will make an explanation after.

1019. Read the letter, you can make the explanation after.

Witness then read the following letter:—

"THE HAMILTON BRIDGE COMPANY, LIMITED,

" HAMILTON, CANADA, September 8th, 1893.

" The Hon. JOHN HAGGART,

" Minister of Railways and Canals,

" Ottawa.

" DEAR SIR,—As the contract for the construction and erection of the lock gate for the Sault Ste. Marie Canal, for which we tendered some time ago, has a clause in it regarding the unwatering of the canal, which was not mentioned in the specifications, and which we did not contemplate in our tender, and that if any unwatering had to be done, it would be at a large expense not provided for in our tender, we would therefore beg leave to withdraw our tender for this work upon the understanding that our security cheque of \$1,500 will be returned unless the government will protect us against the additional expense of unwatering, if flooding should occur

" Yours truly,

" HAMILTON BRIDGE COMPANY (Limited),

" Per J. A. McNicol, Manager."

By Mr. Davies :

1020. Was I not right that they withdrew their tender because of the insertion of this clause in the contract which was not in the specification of the tender?—In the contract. I thought you said in the second specification.

1021. I said you inserted or proposed to insert a clause in the contract which was not in the specification for their tender, and in consequence of that they withdrew their tender. Is that true?—I had that inserted to make sure, because it was mentioned about the unwatering previous to that.

1022. It is a fact that they withdrew their tender because that clause was inserted, and that the letter says so?—They withdrew their tender because I said the government would not guarantee the lock being laid dry.

1023. What does their letter say they withdrew their tender for? What does the letter say?

The CHAIRMAN (to Mr. Davies)—Does not the letter speak for itself?

By Mr. Davies :

1024. I want to ask that you read again to the committee what their reason is as given in that letter?—"As the contract for the construction and erection of the lock gate for the Sault Ste. Marie Canal for which we tendered some time ago has a clause in it for the unwatering of the canal, which was not mentioned in the specifications, and which we did not contemplate in our tender, and that if any unwatering had to be done, it would be at a large expense not provided for in our tender, we would therefore beg leave to withdraw our tender for this work, unless the government will protect us against the additional expense of unwatering if flooding should occur."

1025. So that when they withdrew their tender the contract went to Hugh Ryan—

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By Mr. Haggart :

1026. I beg your pardon, was any contract let on those tenders?—Not on those first tenders. You would not let it.

By Mr. Davies :

1027. New tenders were called for?—They were.

1028. Ryan stuck to his tender. It was the same as before?—Yes.

1029. And Toms, too, and Ryan being lower got it?—Yes.

1030. How much higher was Ryan than the Hamilton Bridge Company?—\$13,500.

By Mr. Mulock :

1031. Was the deposit returned to the Hamilton Bridge Company?—Yes, by order in council.

By Mr. Davies :

1032. As a matter of fact nobody else could do the work with Ryan in possession?—Not without making an arrangement with Ryan.

By Mr. Macdonell :

1033. Was the answer to Mr. Davies that no one else could do that work but Ryan & Co?—No. I said they could not do it without making an arrangement with Ryan or doing the unwatering themselves.

By Mr. Haggart :

1034. If you will look at the original specification you will find it requires that the contractor had to keep that pit dry for the purpose of doing this particular work?—No, he has not.

1035. Has he not?—No, he has not.

1036. Are you sure he has not?—No, he has not.

1037. Have you got the original specification?—Yes. It is so with respect to some other work in connection with the gates, but not with respect to the gates.

By Mr. Macdonell :

1038. The original specification provided that the contractors were to enjoy the benefit of the land in the vicinity of the canal, all that island, as it were?—They were, under the contract they were allowed the use of the island for the carrying on of the contract.

1039. Now who drew that specification, do you know?—I think it is signed by Mr. Page. I am not sure. It must have been in 1888.

1040. So any benefit they get under that specification they got from Mr. Page?—They got it under their contract.

1041. Exactly, they got it by contract. Did you, Mr. Schreiber, put any clause in the specification with regard to the power pipe, or even with regard to the lock gate which Mr. Davies has just been talking about? If you had put any clause in the specification for that, giving contending contractors the right to interfere with the original contractors whereby—

By Mr. Haggart :

1042. Let us get the original specification. I want to be certain on that point. Show me the original specification on contract No. 2. You will find it is in there (pointing to Exhibits 1 and 2)?—No.

Mr. HAGGART—I know it is.

The committee adjourned.

COMMITTEE ROOM No. 49,

HOUSE OF COMMONS, 19th June, 1895.

The Select Standing Committee on Public Accounts met.

Mr. W. G. THOMPSON called, sworn and examined.

By Mr. Lister :

1043. Mr. Thompson, were you at any time resident engineer on the Sault Ste. Marie Canal?—I was.

1044. Between what periods, that is to say, what was the time of your appointment, and when did you cease to be engineer?—I went up there as resident engineer in the spring of 1889, and I remained in that capacity until October, I think it was, 1891.

1045. You went up in what year?—In 1889.

1046. In the spring of 1889, and you remained there until October, 1891?—Yes; October, 1891.

1047. Were you the first resident engineer on the canal, that is to say, were you there from the commencement of the actual work?—No; there was another engineer there before me, Mr. William Crawford.

1048. Where is he now?—He is up there, I believe.

1049. Still on the works?—I believe so.

1050. Still in the employ of the government?—So I understand.

1051. Was he there during the time that you were on the work?—He was.

1052. All the time?—Yes.

1053. What is his name again?—William Crawford.

1054. What position did he occupy?—When I was there as resident, he was there as assistant engineer.

1055. He was there as assistant, and when you left as resident engineer, he took your position?—As resident engineer, yes.

1056. What was the cause of your leaving?—I had charge, as superintendent engineer, of the Welland Canal also.

1057. During all this time?—During that time. I changed my headquarters from Sault Ste. Marie to St. Catharines, and continued to have supervision of matters on the Sault Ste. Marie Canal and on the Welland also.

1058. When did you become superintendent engineer?—Shortly before I left Sault Ste. Marie to go to St. Catharines. I think it would be about the middle of 1891.

1059. And you ceased, you say, to be resident engineer in October, 1891?—Well, I ceased to reside there. My headquarters had been at Sault Ste. Marie. I had been living there, and in October I moved from there to St. Catharines.

1060. And you then held the position of superintendent engineer?—Yes, on both the Sault Ste. Marie and Welland Canals.

1061. Of course the contract had been let to Ryan and Company at the time you were appointed resident engineer?—Yes, when I went upon the ground the contract had been let.

1062. You were resident engineer or superintendent engineer at the time the proposed changes in the canal were contemplated. Which office did you hold?—I think I was superintendent engineer.

1063. Was your advice asked by the department as to the contemplated changes?—I was asked to report upon certain of those changes.

1064. And did you report?—I did.

1065. And your reports are to be found, I believe, in this book of papers (Exhibit 1 was here handed to the witness)?—Yes, I see one here, one of my reports dated September 19th.

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By Mr. Davies :

1065. What date is that?—September 19th, 1890.

1066. What page is that on?—It is on page 81. It is rather a long-winded affair, shall I read it?

1067. Yes, it is a reply to Sir William VanHorne's letter. You will have to read that first.—Well, I will read this report and it will speak for itself.

Witness then read the following :

“ OTTAWA, September 19th, 1890.

“ SIR,—I beg to acknowledge the receipt of No. 130419, being a suggestion from Mr. W. C. VanHorne to the effect that the lock now under construction at Sault Ste. Marie should have the same depth of water over the mitre sills as the lock at present being built by the United States Government on their side of the river, and calling attention to the ‘vital importance it might at some time in the future to have every inch as much water as in the American canal.’

“It will be necessary before coming to a conclusion to examine the condition of the navigable channel of the St. Mary's River between Lakes Superior and Huron, as well as the condition of the harbours of Port Arthur or Fort William on Lake Superior, and Owen Sound or Collingwood on the lower lake. From Lake Superior to Sault Ste. Marie, the navigable channel is so clearly defined by nature that no question can arise as to its location.

“It furnishes a fine channel with a depth of water beyond all present or prospective requirements, and being the international boundary is free to all vessels alike.

“At Sault Ste Marie a lock constructed by the United States on American territory, and opened for traffic in 1881, provides a channel past the Falls of St. Mary by a descent of 18 feet.

“This lock, 515 feet long, 80 feet wide, and with 14 feet 11 inches of water upon the mitre sills, at the lowest recorded stages of river, is used by American and Canadian merchant vessels alike, free of toll, subject to the will of the United States Government as exemplified in the year 1870.

“From Sault Ste. Marie to Lime Island (which is near the lower end of St. Joseph's Island) the international boundary, which is also the navigable channel, except through the shallows of Lake George, where the channel is on the American side of the line, is again used by all vessels on the main line of traffic, but at Lime Island the international boundary passes between that island and the Island of St. Joseph, over shoal rocky ground, and sweeping to the south of St. Joseph Island, in an easterly direction, through intricate and unfrequented channels, enters Lake Huron between Drummond Island (American) and Cockburn Island (Canadian), leaving the deep water, direct, and desirable channel from Lime Island to Lake Huron entirely in American water.

“To provide a channel, therefore, accessible to Canadian vessels under suggested contingencies would necessitate improving the line of navigation to the north of St. Joseph Island, and so out to Lake Huron by either side of Cockburn Island, preferably to the east of it.

“But the necessary river improvements would not end there.

“At present and for some time past the United States Government has been deepening the Hay Lake Channel to a depth corresponding with that of the new lock now under construction by them at Sault Ste. Marie.

“This channel is entirely in American water, and will make the distance from the head of Hay Lake to where it again joins the common channel at the head of St. Joseph Island eight miles less than by the common channel or boundary line, so that to ensure a similar depth of water for Canadian vessels between the same points would necessitate the improvement of the long and common channel by the Canadian Government at its sole expense.

“The same reasoning that suggests an independent channel would make Port Arthur the Lake Superior harbour for deep draught vessels, necessitating a large outlay for dredging and breakwater construction, the present depth of water being 15 feet.

“It would also necessitate a heavy expenditure for dredging and pier work at Owen Sound, where the available depth of water at present is about 15 feet.

“Before undertaking to deepen the Sault Ste. Marie canal, therefore, it would be necessary that the Government should determine whether the policy of a 16 feet scale of navigation now being worked to from Port Colborne upwards should be changed or not, for if not, the suggested change at Sault Ste. Marie would be unprofitable.

“With friendly relations between Canada and our neighbours, the 19 feet draught lock on the American side of the river would be available for Canadian vessels of that draught, the other locks accommodating the lighter draught vessels, and by the time a second lock becomes necessary on the Canadian side, the question now under consideration by the most intelligent vessel men, as to whether the limit for size and draught of vessels upon the lakes has not been reached, will have been solved, and a second lock will, no doubt, be built accordingly. Should less happy relations exist, circumstances would probably transfer the trade of the Sault Ste. Marie canal to the railways, the draught of water becoming, for the time, a secondary consideration.

“To return to the suggestion of lowering the lock now under contract to Messrs. Hugh Ryan & Co. Were the lock to be lowered now, it would also be necessary to lower the prism of the canal at the same time, as the side walls would be destroyed by blasting, if done after they were built.

“Such alterations would mean the breaking of Messrs. Hugh Ryan & Co.’s contract, so that the cost of making such alterations can hardly be arrived at in the usual way, the door being open for damages.

“In estimating the probable cost, I have therefore made no allowance for damages, but the item must not be overlooked.

“If asked to express an opinion in the matter, I would say that the circumstances do not warrant the adoption of a course that would establish such a dangerous precedent as the breaking of an important Government contract.

“I have the honour to be, sir, your obedient servant,

“W. G. THOMPSON.

“A. P. BRADLEY, Esq., Secretary,
“Department of Railways and Canals,
“Ottawa.”

Mr. DAVIES—Attached to that report is a statement. You had better read that, too.

Witness then read the following :—

“Addenda to report upon lowering the Sault Ste. Marie Canal, dated September 19th, 1890.

“Dimensions of Canadian Locks.

Length of chamber.....		600 ft.
Width of entrance.....		60 ft.
Width of chamber.....		85 ft.
Depth on sill at lowest known water.....		16 ft. 3 in.
Increased cost to be added to Hugh Ryan & Co.’s contract for canal and lock if deepened to 19 feet.....	\$ 18,000	
Amount of original contract.....		\$1,282,567
Increased cost to be added to Hugh Ryan & Co.’s contract for lower entrance if deepened to 19 feet.....	\$ 192,000	
Amount of original contract.....		\$ 299,313
Increased cost to be added to Allan & Fleming’s contract if deepened to 19 feet.....	\$ 276,000	
Amount of original contract.....		\$ 325,926
Estimated cost of river improvements not under contract, from Sault Ste. Marie to Lake Huron for 19 feet draught of water.....	\$ 775,000	

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Estimated cost of improving Port Arthur Harbour to 19 feet draught, not under contract	\$ 300,000
Estimated cost of improving Owen Sound Harbour to 19 feet draught (at present under contract to Reed & Pater from Public Works Department for deepening to 15 feet or more	\$ 200,000

“ W. G. THOMPSON.

OTTAWA, September 22nd, 1890.”

By Mr. Haggart :

1068. Just one moment. You say there is a letter from Mr. Van Horne?—A. Yes, sir.

Mr. HAGGART.—You had better put it in.

Mr. DAVIES.—It is in already.

Mr. HAGGART.—It has not been read.

Mr. DAVIES.—A letter from Mr. Van Horne appears in the evidence given the other day and you can refer to it again. Mr. Van Horne's letter was read by Mr. Schreiber.

WITNESS.—The letter is here if you wish it to be read.

Mr. DAVIES.—It is in evidence already.

Mr. HAGGART.—Then let it be considered as put in.

WITNESS.—It is at page 79.

Mr. BOYLE.—In order to make the evidence complete I suggest that the letter be read again.

The CHAIRMAN.—Read Mr. Van Horne's letter, Mr. Thompson.

WITNESS.—It is dated Aug. 17th, 1890, from the Canadian Pacific Ry. office, Montreal, and reads as follows :—

“ DEAR SIR JOHN,—I asked Mr. Drinkwater to get the relative depth of the Canadian and American canals at the “Soo” and I inclose the result. You will see that the new American lock will have 2 feet 8 inches more water on the mitre sill than the Canadian lock, as it is now being built. In my opinion 16 feet 3 inches will be inadequate very soon, and it seems to me that it would be a great mistake from a commercial standpoint, not to provide for at least as great a draught as in the new American lock.

“ I do not know much about naval warfare, but unless the little information I have on that subject is all wrong it might be of vital importance in the near future to have every inch as much water as in the American canal. It might be a matter of a great deal of consequence if the Americans could get iron-clads through their lock and canal drawing 18 feet or more of water while we could only send up boats drawing 2 or 2½ feet less.

“ The difference in cost ought not to be very great if the additional depth is provided for now, but to correct it after the locks and canal were once completed would be enormously expensive if not impracticable.

“ Faithfully yours,

“ W. C. VAN HORNE.

“ Right Hon. Sir JOHN A. MACDONALD, G.C.B.,

“Ottawa.”

By Mr. Lister :

1069. Is there any other letter, Mr. Thompson? I think there is one from Sir Frank Smith?—There is a letter following this from Mr. Drinkwater, secretary of the C.P.R. to Mr. Van Horne. It is merely giving him information upon which Mr. Van Horne's letter that I have just read, is based.

1070. Now, Mr. Thompson, were these changes made?—Yes, the changes were made.

1071. The changes were made. To 19 feet or greater?—A contract was entered into with Messrs. Hugh Ryan and C., to deepen to 19 feet and before that was altogether

completed it appeared that the American engineers had, by a very slight modification in the bottom of their lock, got 20 feet of water, and I called the attention of Mr. Trudeau, the then chief engineer, to the fact, and that change was also made to 20 feet by ourselves, but the change was a very insignificant matter as regards cost; it was simply the result of lowering the excavation at the end for a short distance, where the nature of the rock had required an excavation to be taken out nearly to the required depth which had to be taken for this 20 feet.

1072. Then the contracts were changed whereby the enlargement suggested by Mr. Van Horne was carried out?—Largely so.

1073. And afterwards changed again so as to make the canal equal in depth to the canal on the American side?—It was.

1074. Can you tell me what the cost of the last changes was?—I cannot, speaking from memory, but it is all in those papers there.

By Mr. Haggart :

1075. Let us understand what the last change was, from 19 to 20 feet?—The last change was from 19 to 20 feet 3 inches.

1076. What was the cost?—Well, I am inclined to say the cost may really be put down as nil.

Mr. HAGGART.—Nothing, it comes to nothing.

By Mr. Lister :

1077. You say that, do you?—I do. It is very easily explained how it comes to be so.

1078. It is a matter of very little consequence, none at all. Then you have stated that the changes suggested by Sir William Van Horne were made?—Yes.

1079. And the canal was deepened to a depth equal to the "Soo" canal on the American shore?—It was.

By Mr. Davies :

1080. Before quitting that point I have a question to ask you. Will you state to the committee what the actual sum paid to Ryan & Company was fixed at for the change to the 19 feet in the first place?—It was a schedule contract.

1081. Amounting to?—Well, I think the figures are here also.

1082. Read them, please—the sum totals. I don't want the mode by which they are arrived at?—I am not quite sure that they are here, but I fancy they are. I think I have got a private memorandum in my pocket that perhaps I can speak from (after consulting memorandum). The second change, if I am right in these figures, amounted to \$376,000.

1083. That is what you specify as practically nil?—Oh no, not so by any means.

Mr. Haggart objected to the question on the ground that it was putting statements into the witness's mouth.

By Mr. Davies :

1084. When you made use of the phrase "second change," what did you mean just now?—I referred to the change by which the length of the lock was extended from 650 feet to 950 feet in the chamber, and the depth was increased from 16½ feet to 19 feet on the sill.

1085. Exactly, that is Mr. Van Horne's suggested change?—Yes.

1086. That is the first change?—That is the second change.

1087. Well, then you spoke just now of the second change as increasing it from 19 to 20 feet?—No, that was what might be called a small supplementary matter. That came in with the second change. It was part and parcel of the second change.

1088. So that we need not dispute about it. The change Mr. Van Horne suggested practically amounted to what?—\$376,000.

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1089. \$376,000? Now, one more question on that point and I will leave you in Mr. Lister's hands. You spoke in your report of certain other improvements which were essential to make this other improvement of any advantage. I want the sum total of your estimate of the cost of those improvements?—Those items that I read over in the addenda to that report which I read a few moments ago?

1090. Totted up, what do you make it?—\$1,923,000.

By Mr. Haggart :

1091. If you are passing from this subject I want to ask a few questions in reference to it. Who was the minister at the time the change was made?—Sir Mackenzie Bowell was acting minister.

1092. Were you in Ottawa at the time he was acting minister, when the House was in session?—I was.

1093. Did you hear him explain all these changes to the House before the vote was made?—I did.

1094. And he made a statement of the changes proposed to be carried out before the vote was taken?—When the estimates were before the House Sir Mackenzie Bowell had the papers referring to these matters in his hand. I know what those papers contained because I had been a party to collating them, and, to the best of my recollection, different questions were asked, and these questions were answered by Sir Mackenzie Bowell. He said at the time that he had the whole information there, and was willing to give any information that was required about it. His words were that he took the House into his confidence. If I am wrong Hansard will put me right.

1095. Now, in reference to the Hay Channel: If that channel can be utilized by Canadian vessels, and if our lock is constructed down to Lake Huron, we have over 20 feet of navigation from the Sault Ste. Marie Canal?—Well, not the whole way. At the present time the United States Government are improving the channel at a place called Mud Lake.

1096. When that is completed?—When that is completed there will be what is called 20 feet of navigation from the "Soo" Canal to Lake Huron.

1097. In your letter you state part of that channel is in American territory. That is the diversion from the river through Hay Lake?—Yes, it is.

1098. You cannot speak, I suppose, as to whether we are entitled to use that by treaty or not?—I cannot speak of my own knowledge, but I can say what I heard the late Sir John A. Macdonald say in the matter.

Mr. HAGGART.—Never mind. That is all on that point.

By Mr. Lister :

1099. Of course, Mr. Thompson, you know that the object of this canal was to have a waterway upon our own side that could be used in case of difficulties with the United States?—Yes.

1100. That was the avowed object of building this canal?—Yes.

1101. And you know also that if we have to trust to the Hay Lake Channel and the Mud Lake Channel now being constructed by the United States Government—that if we had to trust to these channels, our canal would be of very little use in case of the difficulties which were anticipated when this was constructed or contemplated?—If we are shut out from the Hay Lake Channel.

1102. And the Mud Lake?—Well, the Mud Lake, I am not quite sure about the location of that channel, I think it is partly on our territory and partly——

1103. Which? Mud Lake?—I think it is partly on our side and partly on American territory.

1104. I think you are mistaken. However, that is your opinion?—I am speaking from memory in this matter.

1105. However, all of the Hay Lake Channel is in American water?—Clearly.

1106. And unless we make a channel through the "Soo" River of a depth and equal to the Hay Lake Channel we would be obliged to use the Hay Lake Channel for

the larger class of vessels—for vessels that can use our canal?—Yes. We could not get down through our own waters from Lake George. We have not got that depth.

1107. Without deepening?—Without deepening. But is it proper for me to say a word?

1108. Certainly, Sir.—When this matter was being taken up I remember being present in the present Minister's room when Sir John Macdonald was Minister of Railways and Canals, and he said that this enlargement at Lake George through what is known as the shoals—that is partly on Canadian territory and partly on American territory—that that was a work that was taken up by the Governments co-jointly, and that we had the right of navigating that channel.

1109. Is that so?—I don't know, I am sure.

1110. You don't know anything about that. That is not the Hay Lake Channel?—It is not the Hay Lake Channel.

1111. But the Hay Lake Channel would be necessary to take vessels down drawing 19 feet of water?—At the present time, certainly.

1112. Now, then, you have told us you reported to the Government that it would be necessary?—To the chief engineer, let me correct you; to the chief engineer.

1113. To the chief engineer, that it would be necessary to deepen Port Arthur Harbour, it would be necessary to deepen the harbour at Owen Sound, and would it not be necessary to deepen all the harbours along the Lake Huron shore?—Well, when I was called upon to report upon this matter it appeared to me that it was the proper thing to point out to my superior officer, the chief engineer, what the possibilities might be, and it occurred to me at once that to have a deep channel and no place of refuge in case of difficulty with our neighbours for vessels to go to—it would be an absurdity altogether, so I called attention to these two points. Perhaps I was—what shall I say—anxious or nervous in the matter, but that was my motive.

1114. That was your motive?—Yes.

1115. That was your object?—Yes.

1116. That unless the waterway was deepened throughout that the construction of the canal, with the increased depth recommended by Sir William VanHorne, would be of very little utility?—That was my idea.

1117. Now then, Mr. Thompson, I asked you a moment ago, whether it would not be necessary to deepen all the harbours along the shores of Lake Huron, between the River St. Clair and Georgian Bay?—No, I should say not by any means.

1118. Do you know the depth of Kincardine, Goderich, and Southampton?—I think I remember them.

1119. It would be necessary to deepen those?—I was thinking it was necessary to provide a thorough line of traffic.

1120. You did not think it would be necessary, that vessels would think it worth while to call at ports along Lake Huron?—I do not think the department would undertake to deepen those harbours, because it would fall rather to the local corporation.

1121. But the department has been doing it?—I think the department has been doing it for the local traffic, but not for through traffic.

1122. But so far as the harbours along Lake Huron are concerned, they would derive no advantage at all from the increased depth, inasmuch as the largest classes of vessels would not be able to get into those harbours?—They would not and they do not at the present time.

1123. Do they not?—No.

1124. Do not the Beatty Line?—The Beatty Line get into Sarnia.

1125. That is on Lake St. Clair?—Yes.

1126. They go into Goderich and Southampton?—But the Beatty Line are comparatively light draught boats. They are capable of loading down, but they only go into those harbours drawing 13 feet.

1127. At all events, no matter what they draw, it would not, in your opinion, be necessary to deepen the harbours along Lake Huron?—No, it would not.

1128. It was only to have a waterway for through traffic?—It was to have a means of communication from the Atlantic coast right through to the Pacific by rail and by our own line of boats.

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1129. You also indicate there, in that report, that if there were difficulties between the United States and Canada, that freight would possibly find its way by rail?—Yes.

1130. It would have to?—Yes, we would destroy their lock and they would destroy ours.

1131. So that in case of difficulties, in case of hostilities between the United States and Canada or Great Britain, these locks would be of no value at all?

Mr. HAGGART objected to Mr. Lister discussing the policy of the Government.

Mr. LISTER—I want to get at the reasons which animated the engineer in making this report, and I have a right to do so.

THE CHAIRMAN—The object of this inquiry is to elicit the facts, and I should be very much disinclined to limit the inquiry in regard to anything connected with the contracts or the prosecution of the works, but it occurred to me before the question was raised, that Mr. Lister was going very far afield, and I was on the point of calling his attention to the fact that he was digressing, but I hesitated because I thought it would be limited to one or two questions, and for that reason I did not interfere. But I think that Mr. Lister will see it is important we would confine ourselves to the matter under investigation.

Mr. LISTER—Undoubtedly, I concur with you on that, Mr. Chairman, and at the same time I claim that I am entirely within my rights, because the engineer has read a report here to his chief, reporting against the enlargement of this canal and giving certain reasons. That is a part of the evidence and I have a right to probe those reasons to a certain extent, and that is all I am doing.

THE CHAIRMAN—To a certain reasonable extent.

By Mr. Lister :

1132. Then I ask you again, if the Chairman permits me to ask the question, whether this canal would be of any benefit to the shipping of Canada in case of difficulties between the United States and Canada?

THE CHAIRMAN—That is a question of opinion rather than a question of fact.

By Mr. Lister :

1133. In case of difficulty between the United States and Canada would the canal at Sault Ste. Marie be of any advantage to us?—It would simply be a question of the strongest. If we are able to take care of our canal we would do so.

1134. You told us a few moments ago that the Americans would blow ours up and we would blow up theirs?—I think that would likely be the result.

1135. Now, what do you estimate the cost would be of deepening the waterway from Sault Ste. Marie to Lake Huron?—From Sault Ste. Marie to Lake Huron I estimated it at \$775,000.

1136. That, of course, would be a mere approximation?—Merely approximate.

1137. A mere guess?—Not a mere guess. These figures were arrived at by taking the soundings on Bayfield's charts and taking the quantities from this.

1138. Then it was not altogether a guess?—No, it was an approximated estimate.

1139. As you said a moment ago, this was merely contemplated for through traffic?—Yes.

1140. You did not take into consideration at all the local trade?—No, I did not.

1141. Do you know whether it would be necessary to deepen the Lime Kiln crossing?—I believe it would.

1142. Well, you have not estimated that?—No, because I did not propose to go that way. I proposed to run to the Georgian Bay and then take the train from there.

1143. Oh, then, your calculation was that all the traffic—your calculation was based upon the assumption that all the traffic would go by way of Collingwood to Port Arthur—all the heavy traffic, all the vessels drawing a great depth of water?—Well, let me explain, please, for one instant.

1144. Yes, certainly?—Mr. Van Horne in his letter refers to the question of gunboats—

1145. Gun-boats?—And he brings in the military aspect, as it were, of that question—the difficulty between the two countries.

1146. Oh, yes?—And my report follows in that line.

1147. Just so?—My idea was what we would want to do would be to have communication by our own territory, and as a matter of course that would be by rail to the Georgian Bay, then by water to Port Arthur, and then by the Canadian Pacific Railway crossing the country.

1148. It was to go through Owen Sound?—To Owen Sound or Collingwood.

1149. And from there to Sault Ste. Marie?—Yes.

1150. From there to Port Arthur?—Port Arthur.

1151. No other ports were considered?—I did not consider it was necessary to take any more. Of course the idea was to arrive at that desirable state of affairs with as small a sum as possible.

1152. Of course. You were looking at it with an economical eye in the interests of the Government?—Yes.

1153. So that the effect of it would have been—If these necessary adjuncts to the canal were carried out—the effect will be that large vessels must ply between Port Arthur and Owen Sound or Collingwood, is that it?—Not necessarily.

1154. Will you tell us why?—Because, as I said a moment ago, it was with reference to through trade, and to take the shortest route for that through trade, or the most convenient trip, as the case might be. For those who wanted to go to other ports, it would be merely for them to take light draught vessels, and they could get in there as they are doing at the present moment.

1155. Just exactly; how many feet; 15?—15 feet is too much. I think it will be nearer 12 feet for the general run of ports.

1156. So that all the vessels drawing more than 12 feet of water would, of necessity, ply between Owen Sound and Port Arthur?—Well, not so, Mr. Lister, exactly. I did not mean to convey that idea. There are some of the harbours—for instance, we have vessels at the present time going through the Welland Canal and drawing 14 feet, and there are certain harbours on Lake Erie they are built to go into, but there are others they are not; so that if you ask me to say vessels that were drawing more than 12 feet, would have to go this way I would be saying what would not be the case.

1157. Some might get through?—Yes.

1158. Have you had anything to do with the St. Clair Flats Canal? Did you estimate that?—No; I did not. I was taking the most direct route.

1159. What is the depth of water in the St. Clair Flats Canal?—I think at the present time, speaking from general information, they are short by 16 feet.

1160. They are short by 16 feet?—I think so.

1161. Do you know what depth of water leading to the St. Clair Flats Canal, at its upper entrance and lower entrance?—I think they are pinched for 16 feet.

1162. They are pinched for 16 feet?—The American Government are improving, at the present time, those two places.

1163. And that canal belongs to the Americans?—That canal is on the boundary line, and we have as much right to it as they have.

1164. Have you?—I think so.

1165. They built it with their own money?—On Canadian territory; on the boundary line. I think the documents show it.

1166. Can you tell me what is the depth of water at the Lime Kiln Crossing?—They claim to have 20 feet, but vessels drawing 16 feet often get aground.

1167. So that in order to make this lock a benefit to all the shipping between Port Arthur and below Lake Huron, the River St. Clair and Lake Erie, it would be necessary to expend an enormous sum of money, would it not?—To make it available for all interests it would.

1168. It would. And to deepen the waterway between Port Arthur and Owen Sound would mean that all vessels drawing over 16 feet of water or perhaps 13 feet of water would necessarily have to ply between those two points?—They could not go where there was not water enough for them.

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1169. To be sure, that follows. Do you know, Mr. Thompson, what the Canadian tonnage on the Upper Lakes is?—The Canadian tonnage?

1170. Yes.—I read in the paper the day before yesterday that during the month of May, the Canadian tonnage passing through the "Soo" canal was $3\frac{1}{2}$ per cent, as you said a few moments ago, and the gross total was close upon 12,000,000 tons.

1171. $3\frac{1}{2}$ per cent of the gross tonnage is Canadian and the balance American?—I read that in a newspaper.

1172. That was the report?—I don't know whether it was a report or not.

1173. Of the canal office at the Sault Ste. Marie Canal?—I think it is quite likely it originated there.

1174. So that for $3\frac{1}{2}$ per cent of the tonnage we built this canal?—And for peace and quietness.

1175. And for peace and quietness, which that canal won't give us. Now, do the Canadian Pacific boats coal on our side of the river?—No, they do not.

1176. Where do they coal?—They coal on the American side, because that is their route. It would be a loss of time and money to come to our side.

1177. It would be a loss of time and money. It would be a loss of money, by having to pay duty on their coal?—Yes, there is a duty on the coal.

1178. So that the Canadian Pacific Railway boats coal on the other side and do you know whether they pass through the locks on the other side?—Oh, yes.

1179. What about the Beatty line, the North-west Transportation Company?—They are doing the same at present.

1180. They are doing the same?—At present.

1181. Now, you told me a few moments ago that you were the resident engineer on that canal for a certain time?—Yes.

1182. I have forgotten the date.—From the spring of 1889 until the fall of 1891.

By Mr. Haggart :

1183. If you are passing from that particular branch I would like to ask a few questions in reference to it. What is the depth of water on the American lock, the same as in ours is it not?—20 feet 3 inches?—That is the contemplated new lock.

1184. Yes. Any American vessels using their lock and going down to Buffalo have to pass the Lime Kiln?—They have.

1185. So the same reasoning as to the depth of the American lock would apply as to ours?—Precisely.

1186. Do you know of any place where they have to utilize Canadian territory in passing down from Lake Huron into Lake Erie?—Yes. At Bois Blanc. The channel used by all these boats is entirely in Canadian territory.

1187. So the same principle would apply to American boats passing through and utilizing those waters, as would apply to ours at Hay Lake?—Exactly.

By Mr. Lister :

1188. You told me that you were the resident engineer from 1889 to October, 1891?—Yes.

1189. October, 1891?—Yes.

1190. Then you were made the superintending engineer?—Yes, I had been doing the duties of superintending engineer for some time prior to that.

1191. You are a resident now of the "Soo"?—I was a resident at the "Soo," resident there at the time.

1192. And you told me moreover who was your assistant.—Mr. William Crawford.

1193. Crawford was your assistant at the "Soo"?—Yes.

1194. Then you were made the superintending engineer, still remaining at the "Soo"?—Yes.

1195. And Crawford was made resident engineer still remaining at the "Soo"?—Well, I think if you will refer to what I said a few moments ago you will see that I stated somewhere about the middle of 1891, I think it was, that my duties were those of the superintending engineer, though still residing at Sault Ste. Marie.

1196. Was that a new office created?—No, it came about in consequence of Mr. Page's death. I was called upon to perform certain duties on the Welland Canal that Mr. Page had performed, and while I was resident engineer, living at Sault Ste. Marie, I was also frequently taken from there to the Welland Canal, and it was about the middle of 1891, speaking from recollection, that I was superintendent engineer of those two canals, but up to then I still resided at Sault Ste. Marie.

1197. And when did you remove from Sault Ste. Marie?—In October I removed from Sault Ste. Marie to St. Catharines, where my headquarters have been ever since.

1198. From that time on you were superintendent engineer?—Yes.

1199. And you had been for a few months before?—Yes.

1200. Did you visit the canal works frequently?—I used to visit them as often as I could.

1201. Up to what time?—Up to last summer when the work was practically completed.

1202. As often as you could. Will you tell me what that means?—I used to endeavour to be there about once a month, if not oftener, but there were longer intervals than that.

1203. Well now, Mr. Thompson, was there any friction between you and the contractors?—Oh, I do not think there was any more than the usual amount of friction between engineers and contractors. I do not think there was any more than the usual amount of friction.

1204. Were there any complaints that you were not treating them properly?—Oh, I dare say there were lots of them. It is a very common thing, especially about estimate time. I think it was likely, though I did not hear of them.

1205. To whom were the complaints made?—To the chief engineer.

1206. Who was that?—Mr. Trudeau.

1207. Do you or do you not know that complaints were made to Mr. Trudeau about you by the contractors Ryan & Co.?—Yes, I think there were.

1208. These complaints would be made to Mr. Trudeau, and did M. Trudeau communicate them to you?—That would be the usual form.

1209. Is that what was done?—I think so.

1210. When were the first of those complaints communicated to you?—Well, the first that I remember was before Mr. Trudeau's time. It was during the late Mr. Page's time.

1211. That would be when?—In 1890.

1212. 1890?—1889 or 1890, I am not sure which.

1213. And what were those complaints? Do you remember?—I do distinctly.

1214. What were they?—The first one was about them not being sufficiently measured in the matter of boulders and loose stone, which covered the surface of the island.

1215. That was the difficulty?—Yes.

1216. The only difficulty?—The only one that I am aware of. That I remember. I remember that quite distinctly.

1217. But you told me that during Mr. Trudeau's time complaints were made?—Well, I am not so clear about that, but I think I am pretty sure they were.

1218. You are pretty sure they were?—I think there were some complaints made and that Mr. Trudeau spoke to me about them, that I had not estimated sufficiently for some work the contractors had been doing.

1219. What time would that be?—I really could not say. I am speaking from recollection. I have nothing to fix it in my mind.

1220. You went on in 1889?—Yes.

1221. You left in 1891?—Yes.

1222. Now would it be in 1891?—It might have been in 1891.

1223. But the culmination of the whole thing was that you were made superintendent engineer with your residence at St. Catharines, and Mr. Crawford was made resident engineer at Sault Ste. Marie?—I am not aware of there being any connection whatever between the friction we have just been speaking about and my being made superintendent engineer.

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1224. It is not likely you would be informed of it, Mr. Thompson. These things are not told to the engineers?—If you will allow me, I will tell you something there. It is only fair for me to say this. I think that my change from the Sault Ste. Marie to St. Catharines was made clearly and distinctly at my request to Mr. Trudeau that it should be so. I remember now that it was, and I will tell you the reasons. I had to be in Ottawa a good deal, and when I lived at Sault Ste. Marie it made it particularly inconvenient and caused a deal of lost time for me to go from Sault Ste. Marie to Ottawa and then possibly have to get round to the Welland canal, whereas if I was living at St. Catharines and I was required in Ottawa I could leave there at 5.30 in the evening and be in Ottawa next morning, and it saved me a good deal of time and gave me more time to devote to the work. I have no hesitation in saying it was at my own request the change was made.

1225. Things were not very comfortable for you at Sault Ste. Marie?—They were as comfortable as I expect ever to have them on public works.

1226. That is not saying very much?—There is always a lot of friction. Of course, we have to take these things as they come. We have to take the bitter with the sweet.

1227. But the fact is, whatever the reasons might have been, you were made superintendent engineer and your headquarters were removed to St. Catharines and Mr. Crawford was made the engineer in charge, the resident engineer?—Yes. I had a good deal more work to do at the same pay.

1228. Well, that was not fair. Who made the progress estimates after you became superintendent engineer?—They were made by Mr. Crawford and his assistants, and passed through my hands.

1229. So far as the actual work was concerned, the estimates were made by Mr. Crawford?—Yes, naturally, and his officers.

1230. And his officers?—Yes.

1231. And passed through your hands?—Yes.

1232. There was no more trouble, I suppose, no more complaints from the contractors after Mr. Crawford took charge?—Well, that I do not know.

1233. You never heard of any trouble between the contractors and Mr. Crawford? His estimates were satisfactory so far as you know?—Well, I do not know about that. I could not say about that.

1234. You know nothing to the contrary?—I do not.

1235. Now, Mr. Thompson, will you look at a report of yours on page 96 of that volume (handing witness Exhibit 1)?—I have it.

1236. Read it, please.

Witness then read the following :

“SAULT STE. MARIE CANAL.

“OTTAWA, March 28th, 1891.

“SIR,—Referring to the resolution of the marine section of the Toronto Board of Trade, under cover of No. 133692, in which approval is expressed of the width (85 feet), designed for the Sault Ste. Marie canal lock now under contract to Messrs. Hugh Ryan & Co., but suggesting an increase of depth to correspond to that of the lock now under contract at Sault Ste. Marie, Michigan, I beg to say that to deepen the lock only at the present time with a view to deepening throughout ultimately would be a serious mistake.

“To deepen the prism of the canal, after the provision for securing a water tight canal had been completed to the depth provided in the contract, would be to make that water tight provision of no effect.

“An estimate of the cost of deepening as above suggested must, therefore, embrace the full length of Messrs. Hugh Ryan & Co.'s contract for the canal and lift lock, and would be approximately \$180,000, apart from any claims for extras that might result from a departure from the contract now in force.

“I have the honour to be, sir,

“Your obedient servant,

“A. P. BRADLEY, Esq.,

“W. G. THOMPSON.

“Secretary Dept. of Railways and Canals, Ottawa.”

1237. Page 79. Who was the chief in the office, Bradley? What position did he hold?—Mr. Bradley was the secretary of the department and the letters went to him in the ordinary course of business.

By Mr. Davies :

1238. Did that letter go into page 96 or did it run over?—It concluded on page 96. The letter page 97 is as follows :—

“SAULT STE. MARIE CANAL.

“OTTAWA, March 28th, 1891.

“SIR,—I beg to acknowledge the receipt of file No. 133070, under cover of which the Hon. Frank Smith suggests that the plan of the lock on Messrs. Hugh Ryan & Co.'s contract for the Sault Ste. Marie Canal should be changed to the extent of making the lock the same width throughout and deepening it to 20 feet.

“I cannot advise the adoption of the course suggested, for the reason that such departure from the plan would be breaking the contract, in view of which it would seem unprofitable to discuss the matter at greater length.

“I have the honour to be, sir,

“Your obedient servant,

“W. G. THOMPSON.

“A. P. BRADLEY, Esq.,

“Secretary Department Railways and Canals.”

By Mr. Lister :

1239. That is page 97, is it not?—Page 97.

1240. Now take page 99?—At page 99 is a telegram, signed by Mr. Van Horne :

“MONTREAL, March 30th, 1891.

“To Right Hon. Sir JOHN A. MACDONALD,

“OTTAWA.

“It is rumoured here that Government is being urged to reduce depth of “Soo” lock to 18 feet. Think would be very grave mistake to make it one inch less than American lock, which is 18 feet 11 inches on mitre still. Think would be wise to go a few inches more rather than one inch less.

(Signed) “W. C. VAN HORNE.”

1241. Did you read page 79?—At page 79 is a letter which I read here. It is that letter from Mr. Van Horne to Sir John A. Macdonald.

1242. Look at page 100, Mr. Thompson?—Yes.

1243. Read that, please.—“Sault Ste. Marie Canal, Memorandum for the information of the Hon. the Minister of Railways and Canals.

“Referring to Mr. W. C. Van Horne's telegram from Montreal, dated March 30th, 1891, in which the advisability is suggested of making the Canadian lock at Sault Ste. Marie as deep as the American lock now being constructed at the same point, the utility of such a course is not apparent unless the policy of deepening the channels between Lakes Huron and Superior, through Canadian waters exclusively, and providing a deep water harbour on each lake, was determined upon.

“The estimated cost of such an improvement is \$1,923,000, respectfully submitted.

“W. G. THOMPSON.

“OTTAWA, March 30th, 1891.”

1244. You read that before, Mr. Thompson, did you not?—No. Mr. Schreiber read it.

1245. Well you had better have it in your evidence, please read it?—I have just read it.

By Mr. Davies :

1246. I understood you to say, Mr. Thompson, that the cost of that change, increasing the depth to 19 feet, was about \$376,000?—Yes.

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1247. But there was also in connection with that the increased cost of the culverts, was there not? They are not included in that \$376,000?—No, I think not. That was another.

1248. I just wanted to put it straight so there would be no clashing between your evidence and the other statement. The cost of these culverts was \$121,913?—Yes.

1249. So that the actual cost of making that change was within a trifle of \$500,000?—The addition of those sums.

1250. Would make \$498,000?—Yes.

1251. Now, I just want to ask you: Mr. Schreiber spoke of the third change that was made increasing the depth of the prism and masonry and piers of the bridge 4 feet?—Yes.

1252. Will you kindly explain to the committee—shortly, I don't want any length about it—what the nature of that change was, and why it was made?—It was made to make the depth of 20 feet 3 inches available through the portion of the canal that had to be done under water.

1253. Exactly so. This was a necessary consequence of what we call the second change—the main change to 20 feet?—It followed on that, but it was not a necessary consequence, but a wise provision.

1254. A wise provision, almost a necessary consequence? The other would not have been so beneficial without it? And that was the cost of that? Was that done on your recommendation?—I don't remember about that exactly. There was correspondence about it, I think, but I don't remember what it was. The cost of that was estimated at \$107,842.

1255. Yes. So added to the \$498,000 the actual cost of this change amounted to a trifle over \$600,000?—Yes.

By Mr. Gibson:

1256. Mr. Thompson, what was your estimate of the original lock at 600 feet?—I don't know if I have that here. Do you mean just the lock alone?

1257. When I refer to the lock, I refer to the whole work, at 600 feet?—I don't remember what it was. It was only part of the estimate of what was calculated.

1258. When the lock was changed to 650 feet long did you make an estimate of the additional cost for that 50 feet?—Yes.

1259. What was your estimate of that extra 50 feet?—The first change was to make the lock 650 feet long and 100 feet wide in the chamber with the openings and—let me see,—I think that was what was estimated, \$190,000.

1260. \$190,000. And then after it was changed from 650 feet to 900 feet long?—That was the \$376,000.

1261. What did you say regarding the additional length?—650 feet I have estimated the cost of that was \$190,000.

1262. And then when it was increased from 650 to 900 feet?—\$376,000.

1263. In addition to the \$190,000?—Yes. That was another change that came on afterwards.

1264. Now, did this \$376,000 include the deepening of the upper entrance?—No, it did not.

1265. It did not include it. How much did you include in the deepening of the upper entrance?—The deepening through the canal, including the prism of the canal under Messrs. Hugh Ryan & Company's contract was \$121,000.

1266. That is the lower end, is it not?—That is the whole length of section No. 2, 3,500 feet.

1267. How much was it?—\$121,000.

1268. \$121,000. So that is the whole of Ryan's contract on the channel?—They had several other contracts, but that is what we called section No. 2.

1269. This \$121,000 of increase for deepening the entrance was confined entirely to that section which embraced the lock?—It did.

1270. Now then for the other section, how much would you allow for that?—There was no extra. There was no change there.

1271. No change there?—No.

1272. So that it was contemplated from the first that these locks should be 19 feet?
—From the first. (After a pause.) Oh, no, our first scheme was for 15 feet 3 inches.

1273. What is that?—Our first scheme was for 16 feet 3 inches depth of water upon the sill.

1274. And the second?—For 19 feet, but by a change without affecting prices or quantities we got 20 feet 3 inches.

1275. In the 900 feet lock?—Yes.

1276. When you made the estimates for 20 feet 3 inches on the 900 feet lock, you said that your estimate was \$376,000?—Yes.

1277. What difference did you allow in the price of masonry from the original contract?—I did not put the prices upon those. The price that was allowed for the additional masonry on the change you refer to was \$12.60 a yard.

1278. Did you see any reason why this \$12.60 a yard should be allowed, or rather why \$1.60 should be added to the original price for the masonry?—Well, that matter was brought about by Mr. Walter Shanly.

1279. Yes, I know?—The prices were submitted to Mr. Walter Shanly and amongst these papers you will find a report from him in which he gives his reasons for believing that \$12.60 was not an unfair price for the work the contractors were asked to do.

1280. Well, now, if \$11 a yard previously, in the original contract, was enough, do you, of your own knowledge, tell the committee that there was any good reason why that price should be increased \$1.60 a yard?—\$11 in the first instance was not enough.

1281. So that \$12.60 a yard was plenty?—Well, you had better ask the contractor about that. He can tell you better than I can.

1282. You say \$11 was not enough in the first place?—No, I do not think it was.

1283. Well, when the lock was changed to 650 feet, surely \$16 was enough?—Well, there is a good reason for that which you, Mr. Gibson, as a contractor, will readily understand. The original design was that the openings were to be 60 feet wide at each end, and the lock then swelled out by a reverse curve until we got 85 feet width of chamber. The first change that was called for made the width of the lock 100 feet, and widened the width of 60 feet at the entrance, and the consequence was that we get back 100 feet instead of 85, which changed these curves, and a good deal of the new work that had to be done was work that was cut with a circular face, and that was the reason for asking for the increased price.

1284. If this \$5 a yard had been applied to the gate and made the entrance of the lock the whole 100 feet wide, would it not have gone a long way towards paying for that?—You mean by making it 100 feet wide?

1285. Yes.—I think it would have been a very bad lock with 100 feet width.

1286. What is the size of the American lock?—100 feet.

1287. What is the size of their gates?—100 feet.

1288. What objection is there about their lock?—The objection is this: that with 100 feet gates, especially when they are made of iron, that the first vessel to strike them—and this can only be a question of time—then they simply collapse and are knocked out of shape, and it takes an indefinite time to get them made right again.

1289. How often does that occur?—It occurs too often.

1290. How often has the American canal at Sault Ste. Marie been stopped during the time that you resided up there from the cause you gave?—You mean from a gate being knocked out? They have had one or two stoppages of a few hours, and they have been singularly fortunate. I do not know whether they have had stoppages owing to the gates being knocked out, but they have had a stoppage of a few hours owing to the machinery for opening the gates going wrong.

1291. Is it not rather a matter of the speed of the vessel than of the size of the gate?—You cannot make a vessel go always where you want her to go. She may take a sheer, or if a gale of wind springs up a high cabin will act like a sail and spring her round in spite of fate.

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1292. That is a question of navigation, not of engineering?—We are supposed to make locks that vessels can go through.

1293. Surely a vessel can get through a gate of 100 feet easier than one of 65?—She would if she went all right.

1294. Can the same care be exercised on the new lock at Sault Ste. Marie on our own lock, or on the American lock that is now in operation as on the old American lock?—Well, I say these accidents will occur in spite of fate.

1295. You simply objected to the 100 feet gate because it was dangerous in case of accidents. Could not the same provision be made with 100 feet gates? After all, there is 20 feet on each wing of the gates to be added to it, a little more, perhaps; call it 30. How much greater trouble would it be to ship iron gates than wooden one?—The difficulty is this, that the stoppage of a trade of 12,000,000 tons a year would be serious, and in case of emergency you could make shift with timber, whereas with iron it is a difficult matter. You can patch up a wooden gate, but an iron gate is another matter. If a ship strikes it it is like knocking up a tin pan.

1296. Could they not be sheathed with wood like an iron vessel?—They could, but I do not think it would have that effect. If a vessel of 200,000 tons, moving at the rate of four or five miles an hour, gets beyond control you cannot stop her.

1297. What more probability is there of a vessel running into an iron gate and destroying it than with a wooden one?—I do not know that there is any greater liability as to it happening. It is a question of making the repairs afterwards.

1298. Iron gates are a new feature?—Not altogether. They have been using them in the old country and on the continent for many years.

1299. How many years have they been in use?—I do not know exactly. For several years.

1300. How many have been destroyed to your knowledge?—I cannot tell you that, but I will tell you this, that the Canada dock at Liverpool has 100 feet width and iron gates and they find it a nuisance, and a dock gate is not used anything like as frequently as a lock gate.

1301. Do you not think if these lock gates were so inefficient in their working and of such a dangerous character in their operation that the Americans would remove them at Sault Ste. Marie and put wooden ones in their place?—There are questions of cost which come in there.

1302. Getting away from the iron lock gate altogether, could not a wooden lock gate have been built for 100 feet opening?—Assuredly it could.

1303. Would not that have got over the difficulty of damages?—I do not think so. There would be the same difficulty there, when you get a large gate, and there does not appear to be any necessity for it moreover. I think if you were to ask the American engineers they would tell you that they regret exceedingly that they have 100 feet gates in their lock.

1304. Is there any report from them to that effect?—I do not think so, but I have gathered it in conversation.

1305. Is not this the third lock that has been built by the American government?—Yes.

1306. And it is a larger lock than the old one?—It is.

1307. What is the length of it?—The length of it is 800 feet.

1308. And the width of it?—100 feet.

1309. Well, do you think that with the experience they have had with two locks during the last 30 years, that the American engineers would not have stuck to the old plan if it was the best?—Well, there are two or three words of explanation about that. The lock that the Americans are now building—800 feet long and 100 feet wide—was built on the supposition that the trade of the lakes was going to be carried in a very different way from that into which it is drifting at the present time. The idea was there would be a propeller and that she would have three vessels in tow, that would be about her own carrying capacity, and that these 4 vessels, with the three towing behind, would go along, and outside the lock, would be formed into a sort of rigid figure—a phalanx as it were, fastened together—and move into the lock in a solid mass, that would fill

the lock and would be locked through and pass out through the other side. When the question of our enlargement came up, for my own personal information, I wrote to the owners and the presidents of many of the forwarding companies in the States and I asked them what their ideas were as regards the most desirable means and the cheapest way of carrying freight. And they said that this question of having tows was a thing that was passing out and they gave me the reason. They said: "You have a vessel that costs perhaps somewhere from a quarter to half a million dollars and three vessels behind her that might cost a quarter of a million dollars each, and they get along very nicely in the open lake, but when they get out to the end, where they are to discharge, the whole flotilla has got to wait until they are all discharged, and the consequence is that a large capital of a million dollars perhaps, or very near it, is standing idle. Their opinion is, and you will see it if you watch the vessels building to-day, that each vessel ought to be an independent one, to have her own engine, take her own load, be discharged, and get back again. The idea on which the American lock is built is exploded, and their lock is a back number.

1310. Well now, Mr. Thompson, you approve, of course, you say, of the \$12.60 a yard for the 900 feet lock. Now, was it not a fact that according to the original contract, according to the original specifications—the Government reserves a right to itself to make any changes in the specifications?—There is a limit, there is a clause to that effect, I think, in all contracts.

1311. There is a clause to that effect in all contracts?—Within certain limits.

1312. Within certain limits. And in this case, Mr. Shanly, Mr. Trudeau and the contractors consulted together, and they arrived at this conclusion, of allowing \$11 a yard for the old lock?—That was the original contract price.

1313. Was \$11 a yard paid for any portion of the present lock?—I think so.

1314. You think so. Have you no knowledge of how many yards?—I cannot tell you from memory, but I saw the estimate here the other day. That gives all the information.

Mr. GIBSON.—Where is that estimate?

By Mr. Haggart:

1315. We want that very particularly answered, Mr. Thompson? With respect to the original quantities in the lock that Mr. Ryan contracted for, has he been receiving any extra pay other than the amount he contracted to furnish it for?—I think not.

Mr. GIBSON.—Wait until he gets the answer.

WITNESS (after consulting documents).—There is 44,107 yards at \$11.

1316. Yes?—That is the original contract price.

1317. Yes; and how many yards at \$16?—There is 5,581 at \$16.

1318. And how many yards at \$12.60?—18,155 at \$12.60.

1319. Now, the lock was not built at 650 feet. What reason was there to pay \$16 a yard for that portion of the lock that was not built?—Because, as I said a moment ago, if you will remember, when the change was made of the width of the lock from 85 to 100 feet, carrying out this curve to get back 100 feet, the additional work—the greater part of it—was in curved face work, and there is where the extra cost comes in.

1320. Well, that was not built? The lock is built at 60 feet wide?—That is merely the entrance.

1321. Yes, and how wide is the present lock within the chamber?—The present lock is 60 feet wide.

1322. The other lock was 85 feet wide?—A commencement was made on that to carry it out. Each one of these changes was partly in progress before the subsequent change followed.

1323. This stone was destroyed; it was of no use whatever?—Not destroyed, but cut over again.

1324. So you paid how many thousand dollars?—The quantity that is returned at \$16 is 5,581 yards.

1325. And what use was made of that stone?—Well, that stone would go into the work.

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1326. And be paid for over again?—Not paid for over again, but it would be cut over again.

1327. Do you mean to say there was 8,000 yards of stone re-cut or 5,000 yards?—No; I won't say the whole of that amount was re-cut. There would be value in the best part of it.

1328. These estimates show it?—It shows it was paid for, but it does not say anything about re-cutting.

1329. But if it was not required to be all re-cut; why should it be paid for?—I don't know exactly how that is.

By Mr. Lister :

1330. Was that paid for a second time?—Oh, no; there was nothing paid for a second time.

1331. Or any part of it?—No; I am quite sure there was nothing paid for a second time.

By Mr. Gibson :

1332. What was done with the stone?—The stone went into the work.

1333. And how was it paid for after it went into the work?—It was paid for at \$12.60.

1334. It was paid for at \$12.60, and what was paid for it before?—It was not paid for before at all.

1335. But you show it there?—Oh, no; that was other yards.

By Mr. Haggart :

1336. These are the actual cubic yards of masonry built?—These are the actual cubic yards of masonry built.

By Mr. Gibson :

1337. Excuse me, I want to follow up this question. You say there are 5,000 yards of stone paid for at \$16 a yard?—Yes.

1338. And then you say that stone was out in consequence of a contemplated change to a 650 feet lock?—Not exactly. What I said was this: That the reason that was given for increasing the price was because the work that would have to be done under that change necessitated curved work being done.

1339. Well, now, Mr. Thompson, it was only the reverse curve that was changed. The original curve was the same in the original lock, when it was first contemplated 650 feet wide?—No. To get back one hundred where the amount had been 85 before.

1340. Yes?—It would have affected that curve. I remember that distinctly.

1341. 7 feet and a half?—I don't remember what the quantities are, but I remember distinctly at the time looking it up.

1342. But you say that was not carried out?—I think some of it was.

1343. But you say 5,000 yards of it were paid for?—That was when the whole of the quantities were reached.

1344. And what means of reaching the whole quantities had you, seeing they were not built?—They were taken, I presume, from the approximate quantities that were given to the contractors upon which to make their bids, when these changes were made.

1345. Who would give them those quantities?—They were given to the contractors by the department, to enable them to make a bid.

1346. You would be able to bring that down, would you not?—I think you have it amongst these papers.

1347. Well, can you find it?—I will look for it. (After an examination of Exhibit 1) I think it is in the other book—Here they are. On page 57 it is here. It says; "Additional lock masonry, 7,000 yards at \$16." These quantities were given the contractors to enable them to make a bid, because of course the price would vary with the quantity.

1348. So this masonry was paid for at \$16 a yard?—Yes.

1349. And there were how many yards of it?—5,581 at \$16.

1350. 5,581 at \$16?—Yes.

1351. And that moneyed out?—\$89,296.

1352. \$89,000?—\$89,296.

1353. \$89,296. Now, Mr. Thompson this 5581 yards was paid for at the rate of \$16 a yard?—It was.

1354. And it was not required afterwards for that particular part of the work?—That is not exactly the way to get at it Mr. Gibson.

1355. Very well, let us have your own explanations?—The way of it was this. An arrangement was made with the contractors to pay that price for a certain quantity of masonry in a certain part of the lock, and these payments were made from time to time, and what we have here, the quantities that are here, and the gross sums opposite to them are moneyed out according to those agreements, at those rates. There is no masonry I am sure that has been paid for twice. There has been no cut stone paid for twice I am quite sure.

1356. Let us be clear about that. You say that these stones were re-cut? I feel quite sure some of them were re-cut, but I will not say how many, for the reason that the third change followed pretty closely upon the second.

1357. It was on the second change that the \$16,000 was paid?—Well, I should say that the second change followed very closely on the first.

1358. There were not many yards cut, then, that required recutting?—They had got along well with their cutting in the first instance according to their original design.

1359. So that there were not many stones cut for that curved work?—I cannot speak positively as to what the quantities are.

1360. Could you give us any idea?—No.

1361. Perhaps a couple of hundred yards?—I would not like to mention quantities at all.

1362. 1,000 yards?—I would not like to say. I know at the time this matter was gone into very carefully to see that the thing was done in a proper way.

1363. But still you state to the committee you do not think there were very many stones cut on account of the second change closely following the first one?—Well, I am speaking altogether from recollection. I do not remember exactly how that was.

1364. So that you do not think there were very many. Of course there could not be very many changes made to the stone? I could not speak positively about that. It is a matter of recollection, and my recollection is not clear.

1365. Still the engineers allowed the contractor \$5 extra on 5,581 yards?—That was according to the agreement.

1366. Was it not a very liberal agreement?—Well I am not prepared to say that. I think if you take the average rate of this masonry all through you will find that it is not a high figure. The average cost of that masonry all through in the Sault Ste. Marie lock is under \$12. I remember calculating it some years ago.

1367. I beg your pardon?—I say the average price of the masonry in the Sault Ste. Marie lock on our side is, if my memory serves me right, \$11.92, I remember very clearly, because I went into that closely to compare it with the cost of the American lock, and the average of our masonry is \$11.92, if my memory is correct, and I think it is.

1368. Well it is very easy to arrive at. Take the money and divide it by the total number of yards?—The object of getting that out was to compare it with the cost of the American lock. Their price is \$14 and upwards.

By Mr. Haggart :

1369. Our lock masonry averages \$11.92 and the American \$14?—Something over \$14, I think.

1370. Over \$14?—It is some years ago that I got out these matters with the object of obtaining information for myself.

1371. What was the original estimate?—The original estimate was \$44,000.

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By Mr. Gibson :

1372. When Mr. Schreiber was under examination I asked him if he could give any good reason to the committee why the wrought iron was changed from 6 cents to 8?—Well there was a very good reason for the increased price. The reason of it was this. The iron as contracted for, under the original contract, at 6 cents a pound, was very simple iron work. There was nothing difficult about it. But the iron work that came in afterwards for these culverts—they were large heavy rods to begin with. They were screwed on both ends for a good length. There were heavy nuts and washers, hexagonal nuts to begin with. The manner of placing them in the bottom absorbed a good deal of the price. They had to be put along in the first instance, and then a sill was placed, and holes were bored through this sill at intervals of about 18 or 20 inches apart, and these rods were put down through these and the culvert and hexagonal nuts on the bottom, and they were retained in that position for the whole length of the bottom of the lock. They were held in this vertical position by props to keep them there until the timbers forming the side of the culvert were let down on the top of those again. Then there was a strap that went over the top of the covers after they were put on, and washers were necessary and these hexagonal nuts on the top, so that it was quite an intricate bit of work getting them in position while this work was going on. They were liable to be knocked over, bent and damaged. There was a good bit of extra work and I do not think the price was excessive.

1373. Were the ends or the threads upset?—Yes, they were.

1374. Well, what length were they, did you say?—The culvert is 8 feet high ; they are somewhere about 12 feet in length.

1375. An ordinary rod about 12 feet in length and upset nuts worth 8 cents a pound?—You should take into consideration the work that has been done in connection with it.

1376. They supply bridges at 4 cents a pound?—To-day, but the iron market, as you know, is fluctuating and in those days the iron market was higher than it is now. There is another thing that it is fair to mention. The work was done under a great deal of difficulty. It is just on the frontier. I do not want to offend the Sault Ste. Marie people, but still it is a long way from the base. Everything has to be brought up from 500 miles off. The men did not want to work there. They were troublesome to handle and the cost of doing the work up there was far in excess of doing work in the central part of Ontario. There is no question about that at all.

By Mr. Haggart :

1377. On that particular point I want an answer from you. The contractor received 6 cents per pound for the bolts that were in before?—The original contractor?

1378. The original contractor. For the bolts that he was required to furnish under the altered specification, do you think that 2 cents which was allowed him was too much?—I do not.

By Mr. Gibson :

1379. Was it only for this class of work he was allowed 2 cents?—Yes.

1380. How many pounds was he paid for?—448,659.

1381. And how many of the other at 6 cents was he paid for?—There are 10,634 in one place and 2,981 in another.

1382. Well, was there no other iron used in the job except that?—Yes, there was pressed spike in the culverts, but that was at another figure.

1383. That is not bolts. So evidently there were more bolts paid for at 8 cents a pound than 6 cents?—Yes, largely because in the original contract the culverts were not included. These culverts were an additional matter.

1384. Can you explain to the committee why the planking was raised from \$25 a thousand to \$45?—It was on account, I presume, of this being more costly work.

1385. Was the planking for the culverts more costly than the planking in the lock?—About the same. The specification for the culverts—for the timber that was required for sheathing these culverts—provided that they were to be of two and three inch plank and that they were to be joined perfectly true at their respective sides, so that there might be a perfectly water tight bottom when they were jointed.

1386. Were they tongued and grooved?—Not tongued and grooved, but cross jointed.

1387. How would you explain the reason why the \$20 a thousand more was allowed for this than for the same class of work that was allowed in the lock pit?—Well, I can tell you one reason for it. And that is, that about the time that contract was made the timber market had stiffened very materially, and shortly before that time I remember hearing it said that the price of timber had gone up \$2 a thousand. Well then, another reason for it was that these lengths were longer than the ordinary stock lengths.

1388. What length were they?—I don't remember what the lengths were. The plans would show.

1389. You remember they were longer, but you don't remember the lengths?—I remember they were longer, but not the lengths.

1390. What did the bracing up the cribs cost, Mr. Thompson?—I cannot tell you anything about that.

1391. You had nothing to do with that?—That is about the lock, I don't know.

1392. You were away from the work then?—I was.

1393. And you were in the habit of going up once a month?—Sometimes not as often as that.

1394. Sometimes not as often as that?—What was the reason the bracing was put in?—Well, the difficulty was this: The contractors had a crib to build from the upper end of the lock to the upper end of the section, above the surface of the lock, and according to the plans and specifications that crib was to be carefully filled with stone so as to make it a good, solid crib, to give it weight and stability, to take care of the bank behind it, and support a wall upon the top of it. This crib, there is no use attempting to disguise the matter, was not filled as it should have been.

1395. It was not properly filled?—And the result was it showed signs of failure, and this support in front was put there in the hope of keeping it in its place.

1396. Whose fault was it that the cribs were not properly filled?—It was the fault of the contractors, and the men on the government side, who were there to see that they did what was right.

1397. It was the fault of the contractors and the men whom the government employed, who did not look after the work properly?—That is it.

1398. That is it. So that, in consequence of that, the pressure from behind shoved the cribs out of place?—It did.

1399. And some of them had to be taken down?—Yes.

1400. And those that were taken down had to be made wider?—Not that I know of.

1401. I happened to be there, Mr. Thompson, the day that they were rebuilding one of the cribs, and it was about ten feet wider than the other?—Whereabouts was that, Mr. Gibson?

1402. On the left-hand side of the lock looking towards Lake Superior?—And about how far up?

1403. Well, perhaps a quarter of the way up?—Well, I will tell you what I know about it. There was a piece of the crib—discussion had arisen about this matter, and how the filling had been done in the cribs—taken down to ascertain what the style of filling was, and it was found to be imperfect.

1404. This piece was taken down to show the class of filling?—It was determined to take down a piece from station 73 for 120 feet to see what the result was.

1405. Station 73 would be how many feet up?—1,000 feet.

1406. Well I was not far wrong?—No, you were not. That was taken down and I remained there and saw it taken down, with a view of seeing beyond the possibility of doubt just what the filling was.

By Mr. Lister:

1407. What was it?—The filling was as it should not have been.

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1408. What was it?—There was some stone, there was a good deal of clay, and the stone was not packed in between the ties as it should have been, and the consequence was that the weight above bent the ties down and demoralized the crib work.

1409. What was the weight above?—The weight above was stone filling that had been put in, and a dry wall that had been built by the contractors to hold up the material on the back of it for their derricks to travel upon, when they were doing other parts of the work, a space being reserved in front of this temporary dry wall to build a permanent wall that was to go on the crib and face up from the top of the crib to the top of the tow path.

1410. How should the work have been done?—It should have been done in this way: As the courses of timber were laid the stone should have been filled in between them, course by course, as they went on.

By Mr. Haggart:

1411. Hand filled?—Hand filled. There was no doubt in my mind of their being required to do it, and it was the neglect to do it that caused the trouble.

By Mr. Lister:

1412. Whose neglect?—Neglect on the part of the contractor, and on the part of our people to see that the work was done.

1413. The contractors and the engineers?—Yes, they were all to blame.

By Mr. Gibson:

1414. Through the neglect of the contractor and the Government engineers who were there, the inspectors, the Government was put to an unnecessary expense in bracing up these cribs and filling them with concrete?—In filling between the braces with concrete, that was what was done.

1415. And if the cribs had been properly filled this would not have required to have been done?—No.

1416. So that in consequence of the inferior manner in which the work was conducted, this extra expense was put upon the country?—An extra expense was incurred, but who has got to foot the bill, I don't know.

By Mr. Lister:

1417. You know what was done to rectify this?—Yes, I do.

1418. What was done?—Braces were put in—stout struts were put in—from the bottom of the canal up the side of the crib-work. Then there was planking secured behind these braces and the space between that and the crib-work was filled in with concrete made in Portland cement.

1419. Then that was filled up with concrete?—That was filled up with concrete. The timbers were put out so as to give them support—take the place of a strut, as it were—and the concrete was filled in between, so as to make solid concrete.

By Mr. Gibson:

1420. Some of them were out 6 feet from the tow path?—Some were out as far as 7 feet.

1421. Well, judged from my eye, I should say there were several feet. In consequence of this a large amount of timber had to be bought and a large quantity of concrete had to be put in to get this work in its proper place?—Yes.

1422. You say that it was built with Portland cement. Was there any other kind of cement used?—Oh, yes, there was a good deal of native cement used.

1423. From where?—From Thorold.

1424. Why was it used, Mr. Thompson?—Native cement was used in the first instance in some of the backing of the lock.

1425. So they really put in native cement in the backing of the lock?—In some cases at the commencement. That was according to the terms of the contract.

1426. But it was afterwards changed to Portland cement?—Yes.

1427. And after that change no more native cement was used?—I imagine not.

1428. You do not know?—I cannot say what occurred during my absence.

By Mr. Lister :

1429. Whose duty was it to have looked after that work that you found improperly done? The resident engineer?—The resident engineer and his inspectors.

1430. Was it his duty to visit the works daily?—Yes.

1431. And his inspectors were there all the time?—They are supposed to be there all the time that the contractors men are there.

1432. So that if the contractors were permitted to do the work in the way you have described it must have been done with the knowledge of the inspectors?—It could not fail to be so.

1433. Who are these inspectors?—One of their names was McAuley, another man's name was Scott, another man's name was Couvrette.

1434. This was done under the resident engineer Mr. Crawford?—Mr. Crawford.

1435. Was any investigation held into the conduct of these men in allowing the work to be done in this way?—Well, yes, I think so.

1436. Who held that investigation?—The chief engineer.

1437. Mr. Schreiber?—Mr. Schreiber.

1438. Mr. Schreiber?—Yes.

1439. Now, Mr. Thompson, how much of the work was done in this way did you say?—I did not say how much.

1440. Well, I ask you then how much?—I must just wait for an instant to consider. On the left hand side of the canal as you went up there was a distance there of, I should think, speaking altogether from memory, 500, 600 or perhaps 700 feet where the work appeared to have been properly done, and there it stood without any trouble.

1441. Did you test that?—It was there to be seen. It speaks for itself. If the water was out you would see it there to-day. When that point was passed the faulty work appears to have commenced on that side, and from that the greater part of the way on that section.

1442. How many feet?—About 1,500 feet.

1443. About 1,500 feet was done in this faulty way, as you call it?—Yes.

1444. Perfectly useless way, I should call it?—I would not say perfectly useless. It was decidedly faulty. Then on the other side of the canal the difficulty of that sort was more or less the whole way along.

1445. On the other side it was the whole way along more or less?—Yes.

1446. How many feet?—I am just trying to remember the stations (after a pause) about 2,300 feet.

1447. It appeared all around the canal except one piece of 700 feet?—Somewhere about that, generally speaking. The conditions were different here and there and elsewhere.

1448. Some was a little worse than the other?—Exactly.

1449. Now, Mr. Thompson, have you—I suppose it was you who discovered it?—No, the intimation I got was a letter from Mr. Crawford.

1450. A letter from Mr. Crawford. Have you got that letter?—No, I have not.

1451. You destroyed it?—No, I did not destroy it. It is in the department. The chief engineer will have it.

1452. Mr. Schreiber will have it?—Yes.

1453. Will you tell me about what time that letter was received?—I think that letter—

1454. Oh, somewhere near the time?—Possibly somewhere in May, I think.

1455. In May last?—Perhaps about that time.

1456. In May last that letter was received and that letter is in the hands of the department here?—I think so.

1457. Was it forwarded by you to the department?—Yes, it was.

1458. To Mr. Schreiber?—Yes.

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1459. And that letter intimated that this work had not been properly done?—It intimated that the crib-work was not standing in good shape.

1460. Did it surprise you that it did not stand?—Well, I was rather surprised to hear of things being in such a state as that, and I went up immediately to learn the state of affairs.

1461. You were surprised to learn the crib work was not standing and you went up there immediately?—Yes.

1462. And what did you do?—I found it about in the state I have described.

1463. Now that state was a very bad state?—Yes.

1464. A disgraceful state?—I think so.

The committee then adjourned.

COMMITTEE ROOM No. 49,

HOUSE OF COMMONS, 25th June, 1895.

The committee met.

W. G. THOMPSON re-called and further examined.

By Mr. Lister :

1465. When you were last here, Mr. Thompson, we were talking about the crib-work?—Yes.

1466. I want to know definitely the total number of feet of crib-work at the north side of the lock?—About 2,600 feet.

1467. About 2,600 feet?—That is speaking from recollection.

1468. When you were last here you informed us that about 700 feet were properly done?—That was on the south side.

1469. That would be the south entrance?—That was on the south side that the portion was in good shape.

1470. On the south side the portion was in good shape. All of it?—No, the 700 feet you refer to.

1471. Then there was 2,700 feet on the north side?—2,600.

1472. How many feet on the other side?—The same length.

1473. 2,600 feet. Was the construction of the crib-work on the north side all faulty?—There were some spots, I think, where it was not faulty.

1474. Well, I understood you to say that with the exception of about 700 feet it was all faulty?—There may have been some small isolated spots here and there, but generally speaking it was faulty on the north side.

1475. Then on the north side generally speaking it was faulty?—Yes.

1476. How about the south side?—On the south side about six or seven hundred feet, to the best of my recollection, was in good shape, and the greater part of the remaining distance was more or less faulty.

1477. Six or seven hundred feet on the south side were properly built?—Yes.

1478. And the remainder was more or less faulty?—What I said was, that it stood all right.

1479. Eh?—What I said was, it stood all right, that it gave evidence of doing what it was required to do for six or seven hundred feet.

1480. I am asking you about its construction, whether it was properly done or not?—Well, it would appear from the result of its standing, that it was properly done.

1481. As an engineer, do you say the work was properly done?—Well, the six or seven hundred feet that I spoke of. I did not see that built, but the result speaks for itself, and as it did what it was required to do I am of the opinion that it was properly built.

1482. Then all on the south side was properly done?—No, six or seven hundred feet.

1483. Oh yes, six or seven hundred feet. But there were 2,600 feet were there not?—Yes.

1484. How about the 2,000 feet?—That, I say, was more or less faulty.

1485. Under whose supervision was the six or seven hundred feet built?—It was all constructed under the same supervision, so far as I am aware.

1486. Crawford?—Yes.

1487. When did you examine the work?—I saw the work in progress in January of 1893.

1488. Did you make any complaint at all as to the manner in which it was being done?—Yes, I remember speaking about it.

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1489. Who to?—I called Mr. Crawford's attention to the fact that there was a good deal of snow in the crib. At the time that I refer to there was, I should think, about 3 feet of snow upon the ground. They were not, the day that I was there, putting anything into the crib, but I saw that there was a lot of snow in the crib—that there was on the surrounding ground—and I told him it would be proper to take that snow out otherwise it would make difficulty.

1490. Otherwise it would create difficulty?—Yes.

1491. Was that the last time you saw them until they were finished?—That was the last time I saw it until the time that I refer to, when I went up there having heard it was not standing as it should stand.

1492. Now, how much had been constructed at that time?—It was pretty much all done at that time.

1493. Pretty much all done at that time. So that the whole of the crib-work had been done under the inspection or superintendence of Mr. Crawford?—Yes, and his inspectors.

1494. Did you make any such examination as satisfied you that the work—as regards the crib-work—was not being done properly?—Well, as far as I could tell, from the snow that was on the ground it appeared to be pretty well done, but as I say, there was a covering of snow over the whole affair, and I could not see into the details of the work.

1495. Did you take any trouble to examine the details of the work?—I looked about as well as I could under the existing conditions.

1496. If there were three feet of snow, Mr. Thompson, it would be somewhat difficult to tell what was underneath?—To be sure it would. I stated I looked about as well as I could do, under the existing conditions.

1497. And what does that mean?—Why, there were parts of the crib that stood up above the snow, where the face of the cribwork could be seen, and where the ties could be seen and where no stone had been put in. The cribwork had been carried far in advance of the stone filling and that portion of it was to be seen as well as any other portion.

1498. There was no stone in that portion of the crib-work?—There was stone in the bottom, there was filling in the bottom, but up to a certain height the snow covered it, and from that up to the timber work was to be seen.

1499. Did you take the trouble to find out whether it was filled with frozen clay?—That would have necessitated removing all the snow, and digging down into this affair, and would not have been a satisfactory mode of examining.

1500. Now, as an engineer, taking the results, can you give us an opinion at all as to whether the probabilities are that a good deal of the crib-work was filled in with frozen clay?—Judging from the results I think it is quite likely there was a good deal of frozen clay in it.

1501. There should have been no frozen clay?—Certainly not.

1502. It should have been stone work and wood work?—It should.

1503. How deep was the crib-work?—It varied in depth according to the undulations of the rock surface. In some places it was only three or four feet in depth.

1504. Yes, and in other places?—In other places it was 10 or 12 feet in depth.

1505. And on top of that crib-work the stone superstructure was built?—Yes.

1506. How deep would that be? What would be the height of that?—Ten feet.

1507. And how wide?—Two and a half feet wide at the top, and a batter of two and a half inches to the foot, I think it was, on the face. There was a corresponding batter about five feet down in the rear, and from that down, the back of the wall was plumb.

1508. And the crib-work, of course, was intended to support the stone work?—To carry the wall.

1509. You must have had some idea, Mr. Thompson, at that time that the work was not being properly done!—The crib-work?

1510. Yes?—No; I cannot say that I had any grave misgivings on that point.

1511. You spoke to Crawford?—Yes; I told him when there was snow there that that snow must assuredly come out.

1512. Did you ask him whether he was putting in clay?—I did not.

1513. Or allowing it to be put in?—I don't think so.

1514. Did you ask him anything about clay?—I don't know that I made use of the word "clay." I remember—

1515. Earth?—I will tell you something that I remember. They were excavating at that time in the neighbourhood of the railway swing bridge, and I saw where the material was coming out, and it was a mixture of stone and frozen clay.

1516. Yes?—And I said, "Surely that is not going into the crib?" He said, "No; that certainly is not; that is being taken to spoil—being waste."

1517. Do you know whether any of that went in or not?—Not while I was there.

1518. Have you any information at all that would lead you to believe that that material went into the crib instead of to spoil?—I know some of it went in, because I saw it there at a later stage of the work.

1519. That should not have gone in?—It should not.

1520. What did you say when you saw it at a later stage of the work?—I said that accounted, in a large degree, for the failure of the work.

1521. That accounted, in a large degree, for the failure of the work?—Yes.

1522. And that is your opinion as an engineer?—It is.

1523. Then, what you say to the committee is this: That the assistant engineer, in defiance of your orders, put that in—allowed it to be put in?—Well, that would be making a direct charge of something very wrong.

1524. Well, it was very wrong?—I would not like to make that charge that that material was put in. I would be more inclined to say, it was a matter of neglect, rather than a matter of wilful misdoing.

1525. Neglect on whose part?—Neglect on the part of the resident engineer and his assistants, and on the part of the contractor also. They knew what they had to do as well as he did.

1526. So it would be neglect all around? The contractors, the engineer and his assistants?—I think so.

1527. And your opinion is, that the putting in of that stone and earth largely contributed to the faulty construction of the crib-work?—I feel quite sure of it.

1528. You feel quite sure of it. Did you tell the Minister anything about it?—The Minister was upon the work and I mentioned these matters. This was after the fact, as it were.

1529. Yes?—The crib-work was done and was to be seen by everybody.

1530. You were there with the Minister on the works after the crib-work had been completed and you mentioned the fact? What fact did you mention?—The Minister, the chief engineer, and some others were there, and I called attention to the fact that the filling was not properly done. The spaces between the timbers should have been thoroughly packed in with stone. Instead of that it was to be seen that large stones had been thrown in which had fallen in all sorts of shapes, and there were large interstices; that there was a good deal of clay that had been adhering to the stone when it was frozen that had melted and left large voids, and in making the excavation to ascertain how it was filled in we came upon ice in several places.

1531. You came upon ice?—Yes.

1532. Thrown in?—Some of it appeared to have been ice that was thrown in and some of it might have been ice that was formed on it, that had made its way under the crib and formed there.

1533. You pointed all this out to the Minister, you say, when you were there?—Not all of it. The party were moving about generally and this thing was being looked at.

1534. Yes. Were there any other difficulties that you pointed out to him?—I don't recollect at this particular moment. There may have been but they do not strike me at this moment.

1535. You don't remember ordering any of the men to take up some boards or plank?—In connection with the crib-work?

1536. No, no, but with any other portion of the work?—Yes, I do.

1537. What was that?—I remember in the lock bottom I noticed that some straps that went over the covers of the culverts had not been as truly drilled to receive the

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bolts as they should have been, and I saw—I had some planking taken up to see whether this was just an isolated case or whether there was some more of that sort of work.

1538. What did you discover?—I discovered that there were some other straps that had not been as truly drilled as they might have been.

1539. And was there anything else, Mr. Thompson?—In connection with the lock?

1540. Yes?—Well yes, there was another matter.

1541. What was that?—I remember at the upper end of the culverts I discovered that where there was a space between the two walls which should have been filled in with concrete and for a short distance at the extreme upper end near the breast wall it had not been filled in with concrete.

1542. Was it only for a short distance?—Yes, it was only for a short distance.

1543. Did you follow it up to see how long?—I did. I stood there beside a man who had an augur, and he bored holes through the timber where I asked him to do it and I then probed with a bar, and ascertained with my own hands.

1544. How many feet would that be in length?—About seven, or eight, or nine feet.

1545. What position?—Immediately adjoining the breast wall.

1546. What was the width? How much should have been filled?—The width was about 18 inches or two feet at the widest part, and then narrowed down to nothing.

1547. That should have been filled in with?—That should have been filled in with concrete.

1548. Anything else?—Yes, there was another matter that came to my notice at that time, and that was the manner in which the frames for the discharge valves were placed against the upright walls of the culverts.

1549. Explain?—They did not appear to have been as well bedded as I thought they should have been.

1550. Yes?—Those were some of the things that I noticed at that time.

1551. Those were some of the things you noticed?—Yes. I think those were the leading things.

1552. Now the engineer was there, I suppose, the assistant engineer, at this time?—At that particular moment?

1553. Mr. Crawford?—He might have been. I don't know. He was beside me as it were.

1554. Was he on the works?—Oh yes, he was on the works.

1555. What explanation did he give of the crib-work and the other matters you have spoken of?—As regards the crib-work, everyone—when I say everyone, the contractors and Mr. Crawford—found fault with the design. They said that they thought that the difficulty arose in a great measure from not having longitudinal ties in this crib-work.

1556. Yes?—As regards the space that was vacant where there should have been concrete in the bottom, in the side walls of the culvert, the contractor explained that that was a matter of oversight; that when they were using concrete there a staging had been put across the walls at this particular point, and that prevented the men putting in the concrete at the time when they were working. The intention was to go back and do it afterwards, and as is often the case in these matters it was overlooked.

1557. Yes. Well now, going back, for a moment, to the crib-work, the effect of the faulty construction was what?—The effect of the faulty execution of the work, as I have stated, was that the crib became largely a failure.

1558. Became largely a failure in what respect?—In not holding its shape.

1559. It bulged out?—It did.

1560. What had to be done then?—As I stated at the last meeting of the Committee, shores were put in front of it to support it.

1561. Yes, and what was done at the back of it?—At the back of the crib-work?

1562. Yes.—Nothing that I am aware of.

1563. Nothing was done there?—Not at the back of the crib-work.

1564. The bulging out of the crib-work meant the displacement to some extent of the stone work?—Yes, it did.

1565. And it meant the weakening of the whole structure?—Yes, it did.

1566. So that the faulty execution of the work means a permanent injury to the work?—I am not quite prepared to say that, for this reason: The shores that were put in in front of the crib-work were boarded over and the space between them and the crib-work was filled in with concrete, made of Portland cement, and it may be that that has had the effect of giving it the stability that it should have had, had it been promptly executed. That is what time will tell.

1567. Time alone can tell that, but if this crib-work is not properly filled with stone, in other words, if a portion of it is empty with a great weight on top of it, will the tendency not be constantly for the weight to bear upon the shoring of the concrete? Will there not always be pressure against the concrete?—If there were large cavities in the crib-work of course there would be that tendency.

1568. Have you any reason to know that there are not large cavities in the crib-work?—I am not inclined to think so because of the rain that has been there since then and the gravelly nature of the material on top—I am inclined to think that that has silted down between the stone, and I fancy by this time the space is pretty well filled up.

1569. Have you any reason to know that?—I have no reason to know, but I am inclined to think that has taken place.

1570. That is an opinion?—Yes.

1571. Suppose a portion of that crib-work had been filled with ice and frozen earth and large stones such as you speak of, not properly filled up, would not the effect of the warm weather in the spring and summer be to melt the snow and ice and melt the clay and leave a vacancy in the upper part, while it would fill the lower portion of the crib?—That is exactly what did occur last year.

1572. And your judgment is that there may be an end to that now?—It is possible.

1573. But you are not able to speak with positiveness upon that?—Certainly not, The only means to find that out would be to open up the whole affair, every part of it.

1574. Tell me what the cost of the crib-work was on the upper entrance and the lower?—The crib-work that we have just been speaking of was paid by the cubic yard, and the price was, I think, \$4.50 per cubic yard.

1575. It was paid for by the yard?—Yes, at either \$4.00 or \$4.50 a yard, I do not remember which.

1576. Now can you tell me how many cubic yards there are in the upper entrance and the lower?—There was none of this style of crib-work that you spoke of in the lower entrance at all. That was of a different nature altogether.

1577. That was defective too?—On the lower entrance there was no fault to be found.

1578. No fault?—No.

1579. Then the crib-work that fault was to be found with covered how many feet?—It was the distance from the upper end of the lock to the upper end of section number two, about 2,600 feet.

1580. Altogether?—On each side.

1581. 2,600 feet?—Double that distance.

1582. Tell me how many cubic yards there are on both sides of the upper entrance where this work was done?—I cannot tell you.

1583. Approximately?—I cannot tell you approximately. I do not remember what the quantities were at all.

1584. Is there any way of ascertaining it at all?—Yes, I think they are likely to be in some of those papers there you have on the table, (pointing to volumes "1" and "2" of letters filed.)

1585. You are not familiar with those papers?—I am familiar with them, but I am not sufficiently familiar with them to say what is there. If I saw the papers I could tell you in a moment whether they are there or not.

1586. I was asking you a moment ago about the crib-work. You told us when you were under examination before that your duty was to visit the works occasionally?—Yes.

1587. Was the work progressing to your satisfaction? Was it being done in a manner satisfactory to you?—Sometimes there were little matters that had to be corrected; sometimes matters appeared to be going in good shape. I did not see much to find fault with.

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1588. How long did it take to construct this crib-work?—The crib was commenced in the fall of 1893.

1589. And when was it completed?—It was completed in the early summer of 1894.

1590. Well, during that time had you occasion to go up there?—No, I had not been upon the work from January, 1894, until July, I think.

1591. So that, as a matter of fact, you did not see any portion, or very little of this crib-work while it was being done?—I did not see much of it.

1592. Not until it was finished?—Exactly.

1593. And until the stone work was built on it?—Some of the stone work had been built on it, and some of it was in progress, and some of it was built after I went up there.

1594. Who did the measuring of the work?—It was done by the resident engineer and his assistants.

1595. Do you know who his assistants were?—Yes.

1596. Who?—Mr. Curran was one, Mr. Spence was another, Mr. Morrow was another.

1597. Spence, Curran and Morrow were his assistants?—Yes.

1598. And among them the work would be measured?—Yes.

1599. Who was likely to do it, the engineer or his assistants?—The measurements out in the field were generally taken by Spence and Morrow and partly by Crawford. The quantities would be worked out and extended by Spence and Morrow and would be examined by Crawford and checked by him.

1600. Now, when you found the crib-work in this condition did you speak to Morrow on the occasion when you and the Minister were there?—No.

1601. Not to Morrow, but to Crawford?—Yes, there was a good deal said about it.

1602. There was a good deal said about it?—Yes.

1603. Did Crawford attempt to explain?—Yes, as I said a moment ago, he found fault with the design. He said there should have been longitudinal timbers in the crib.

1604. He was charged with not having had these cribs properly filled, was he not?—Yes.

1605. Did you tell him that he had taken the excavation from the pier and put it in there instead of taking it to the spoil?—No.

1606. Did you say that to him?—No.

1607. Nothing of that kind at all?—No.

1608. What was done? Was any action taken by the Minister?—I cannot say.

1609. Was Crawford dismissed there and then?—No.

1610. Crawford was not dismissed?—No.

1611. He was kept on the work?—Yes.

1612. He is there still?—I believe so.

1613. You know, Mr. Thompson, something, I suppose, about a bonus being given to the contractors as an inducement to them to have the work completed in 1894?—Yes.

1614. What time in 1894 was the canal to be opened or completed?—The object that was being worked for was to have the entire canal completed on the 1st of July.

1615. How much was the bonus?—The bonus was \$90,000 to be paid in proportion, pro rata, as the masonry of the lock was completed.

1616. And it was to be finished completely on the 1st of July 1894?—The masonry was to be completed at the end of 1893 and other works that had to be done were to be completed in time to admit of the opening of the canal on the 1st of July 1894.

1617. The canal was not opened, as a matter of fact, on the 1st of July?—No, it was not.

1618. And it is not open yet?—I do not know.

1619. Do you know anything about the condition of the approaches to the canal, that is whether vessels of any draft can go in there now or not, drawing, say, over 9 feet of water?—I read in a Sault Ste. Marie newspaper that they were engaged at the present time in taking out boulders which were in the channels, but I am aware of my own knowledge that the required depth has been reached.

1620. What is that?—I am aware of my own knowledge that the required depth generally has been reached, and that the obstructions which are there are boulders and pieces of rock on the bottom.

1621. Do you know whether it has ever been swept out?—They were sweeping it last fall and they are sweeping it at the present time.

1622. Do you know of your own knowledge, or do you not that the tug "Jessie" drawing 8 feet of water grounded there within the last few days?—No I do not.

1623. You do not know of your own knowledge that the canal has been opened?—No I do not.

1624. In the construction or preparation for the construction were plans and specifications prepared for each stone that went into it?—That is for the lock?

1625. Yes.—There were certain dimension stones the sizes of which were specified.

1626. Yes.—But not generally for the whole work.

1627. Is the stone in the lock of uniform size?—No.

1628. Why?—Because it makes a better job to be otherwise.

1629. Eh?—It makes a better job to be otherwise.

1630. In your opinion it make a better job to be otherwise?—I am certain of it.

1631. You are certain of it?—Yes.

1632. You and other engineers disagree as to that?—Yes, I dare say there are differences of opinion on that point.

1633. There are differences of opinion. Now, taking the approaches to the lock, are the stones laid evenly? Is the stone work even, or does it protude? When we speak of the approaches to the locks we refer to contracts No. 1 and No. 3. I fancy that is not what you refer to.

1634. I don't know.—No, I fancy not. I don't know exactly what you do refer to.

1635. Well, there is stone work, is there not, in the approaches to the lock?—In the wall.

THE CHAIRMAN—He says you misunderstand each other as to what the approaches consist of.

By Mr. Lister :

1636. How do you understand it, Mr. Thompson?—For instance, the lock proper has a boucharded face. At the lower end there is a short piece of masonry outside this boucharded face work.

1637. At the entrance to the lock?—At the lower entrance, quite a short piece, which is a different class of masonry—which is not boucharded, and then the cribwork which is in the approaches proper in another contract comes up to that point. At the upper end of the lock there is the crib-work that we have been speaking about a few minutes ago, and then upon the surface of that—upon the top of that rather—there is this stone wall, which was to be random-coursed masonry wall.

1638. What do you call it?—Random-coursed.

1639. Are there projecting rocks, projecting stones?—The faces are not dressed smooth, but there is not supposed to be any projection there that would injure a vessel.

1640. Can a vessel use her tenders going through there, so as to protect herself? Would the tenders of a vessel be a protection to her from injury by this stone work?—The fenders.

1641. I mean the fenders, yes.—I presume there is a boom that way and the fenders would glance along this boom.

1642. There is a boom there?—I think there is a boom.

1643. You think there is a boom, and the fenders would glance along on the boom?—Yes.

1644. Of course you know very little about the actual construction—you left there two or three years ago—except what you have seen, as other people have seen?—I am not prepared to say that. To say that I know very little about it would hardly be the case.

1645. You only visited the works occasionally?—My visits were occasional visits Up to the end of 1893 I endeavored to be there once a month; sometimes my visits

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were a little longer. After 1893, as I stated a few moments ago, I was there from the first of January until sometime in July.

1646. Were you consulted about the pier?—The railway bridge pier?

1647. Yes.—I think I had largely to say as to the position of that pier.

1648. Did you advise the putting in of that pier?—I did.

1649. You advised the pier to be put in?—I did.

1650. Does not that interfere with the safety of navigation?—I do not think so.

1651. That is your opinion?—Yes.

1652. Now, is not the pier there looked upon by engineers as an engineering atrocity?—I do not think so.

1653. You do not think so?—No.

1654. What is the length of the draw there?—The length of the draw from end to end is 225 feet.

1655. Clear draw?—The swing portion of the bridge.

1656. What is the distance between the pier and the side of the canal?—On the channel side it is 90 feet.

1657. And on the other side?—It is less than 70.

1658. How is it on the American canal—the new canal?—On the American canal the bridge spans 108 feet.

1659. Clear across?—It does.

1660. There is no pier there?—No. There is a reason for having that pier where it is and a good one.

1661. What is the reason?—It is this: When Mr. Page conceived the idea what should be there, he proposed to have the pivot on one side of the canal, and for a bridge to swing over the whole opening. When the time approached for putting this work into execution, that is as regards the bridge, Mr. Van Horne represented that a community travelling by rail had interests as well as the marine interest, and that a bridge of the length to span across there—it would be 420 feet to swing right across from side to side—would be very difficult to operate and maintain; that in case of high wind it would be very difficult to open, and there might be times when it would be impossible to open; that trains might be delayed, and that the same difficulty, the same high wind that would prevent the bridge from being swung might drive vessels down upon it and carry the bridge away, and that a very serious state of affairs might be brought about.

1662. Will not all those reasons hold good as regards the canal on the other side?—Not to the same extent, because on our canal the width across there is about 147—about 150 feet—whereas their span, as I said a moment ago, is 108, and the difficulty that I have spoken about as regards the swinging of the bridge in windy weather does not exist there.

1663. So it was on your advice that the pier was placed there?—Well, the matter was brought up and gradually reached the stage where it has. As I stated, the original proposal, and as I understood it, was to have a bridge that would span from side to side. Well, these reasons of Mr. Van Horne were brought forward and they were considered, and they were believed to have a good deal of weight, and instead of having the bridge at one side it was determined to have a pivot pier in the centre, and a channel on each side, which channel would be 72 feet 6 inches in width.

1664. That was at the request of Mr. Van Horne?—It was. He pointed out—I won't say requested, but he called attention to this matter and the reasons he gave were supposed to have sufficient weight to be acted upon. It was determined to put it in that shape, and the span of the bridge was to be 225 feet with a channel on either side.

1665. Well, you have a channel on one side of the pier?—Well yes, what I was going to say was this. It occurred to me that to have a bridge in the centre it would be very liable to be struck by vessels passing. It would be exceedingly difficult to prevent it being struck in the narrow channel by vessels passing through these two narrow channels—and I suggested to Mr. Trudeau we should take the same length of bridge and put it on one side, and that would give us one channel of 90 feet, and that is what was carried out.

1666. That gives a channel of 90 feet?—90. feet.
 1667. On one side?—On one side.
 1668. How many feet on the other side?—The channel on the other side is something less than 70 but is not open. There is a fixed span upon it.
 1669. It is not intended to use it at all?—Merely for tugs and small boats.
 1670. Who did you say were the assistant engineers whose duty it was to inspect the canal? What names did you give?—Spence and Morrow and Curran.
 1671. Spence, Morrow and Curran?—Yes.
 1672. Is there a man named Couverette on the work?—Yes. He was an inspector.
 1673. He was an inspector?—Yes.
 1674. Did you ever take any trouble to verify the measurements returned?—Yes.
 1675. When?—That was my object in endeavouring to be there every month about estimate time. I used to see the quantities, and I would go upon the work and used to take measurements myself.
 1676. I think you told me you were not there between January and July?—No.
 1677. During the time the crib-work was going on?—No.
 1678. Well, of course, there would be estimates for all the work each month?—What I have said did not refer to that crib-work.
 1679. Does not refer to that crib-work at all? Did you take any trouble to verify the measurements in the crib-work?—Well, in a general sort of way, but I had not the means of ascertaining that as closely as I had other parts of the work.
 1680. I want you to say what sort of stone the crib-work should be filled with?—The intention was that the crib-work should be filled with the stone from the excavation, packed in dexterously so as to make a solid mass.
 1681. Not round stone, field stone?—I would not have objected to round stone, field stone. They would have made very good filling.

By Mr. Gibson:

1682. Mr. Thompson, I notice in the progress estimates an amount of 2,831 yards masonry paid for at the rate of \$11 a yard for a removable dam. Will you explain to the committee where that dam was placed?—That was placed about 1,500 feet above the lock.
 1683. 1,500 feet above the lock?—Yes.
 1684. How long was it kept there?—It is there as a permanency.
 1685. It is there as a permanent structure?—Yes.
 1686. Was this work contracted for in the original estimate?—It was.
 1687. And that was the price that it was estimated for, \$11?—Yes.
 1688. There was no increase upon that?—Not that I am aware of. I do not think there was.
 1689. Are you aware whether \$2,750 for placing anchors was included in the original tender of Ryan & Co.?—It was not included in the original tender.
 1690. It was included in the original tender?—No.
 1691. Well, who awarded this contract to Hugh Ryan & Co.?—The original contract?
 1692. No. this \$2,750?—I cannot tell you.
 1693. You do not know. Well, do you know the cost of the girder span, Mr. Thompson, that was put upon this 65 foot span from the centre span to the other side?—Yes, the whole superstructure is included in the sum of \$19,420.
 1694. The superstructure cost \$19,000?—Yes, that is the swing bridge, the whole superstructure, the swing and the fixed portion.
 1695. You had nothing to do with the swing bridge?—The superstructure was built by the Hamilton Bridge Company.
 1696. I think the Canadian Pacific Railway Company built that at their own expense?—No.
 1697. Did not the Pacific Railway Company build that at their own expense?—No, the Hamilton Bridge Company built it.
 1698. And the Government paid for it?—I presume so.
 1699. Mr. Schreiber, in his examination, stated that on account of that swing bridge not being sufficiently large, and in order to make it of sufficient length to cover the

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whole channel, that it would cost about \$48,000 ?—I think there is something a little astray there.

1700. There is something astray ?—I think there is a little misunderstanding in the matter. The Hamilton Bridge Company had a contract. Tenders were asked for. It was awarded to the Hamilton Bridge Company for the sum of \$19,420.

1701. \$19,420. What reason was it that the Government had to build this bridge for the Canadian Pacific Railway Company ?—I cannot tell you.

1702. Was not the canal projected and some work done before the Sault Ste. Marie line was built ?—No, there was a trestle across there, built by the Sault Ste. Marie Bridge Company as far back as 1884, 1885 or 1886.

1703. 1884, 1885 or 1886 ?—I think so.

1704. So that the Canadian Pacific Railway bridge was built in consequence of a trestle bridge being built there—the Government were obliged to provide a superstructure for the opening of the canal ?—I cannot tell you about that part of it.

1705. Well, what was the reason of the bridge ?—The Sault Ste. Marie Bridge Company, as it is termed, constructed an international bridge across the river and a trestle across the Island of St. Mary and two fixed spans across two small channels of the St. Mary, and their trains were running when the contract was let for the canal.

1706. Was that railway charter granted before the canal was contemplated ?—I do not know about that.

1707. Are you aware that Mr. Page notified the company that they would have to provide a span sufficiently long to span the whole opening of the canal ?—I have some recollection of something of that sort, but I do not know the details of it.

1708. Still you are aware that Mr. Page had that matter in view ?—Yes, I know that Mr. Page designed a bridge and proposed that the canal should be spanned by a clear opener, but as regards the payment I am not acquainted with the details.

1709. So that we find now from you that instead of the Canadian Pacific Railway Company building their own bridge, the Dominion Government built it for them ?—As a matter of fact the bridge was built by the Hamilton Bridge Company.

1710. Who paid for it ?—It was paid for by the Department of Railways and Canals for all that I know to the contrary.

1711. In addition to that, Mr. Thompson, there was a girder span 65 feet in length from the central pier that you spoke about ?—That is included in the same sum.

1712. So that in the cost of excavation for the swing bridge you had \$570.60, and for the masonry of the abutments, the pivot pier, and the central pier \$29,796 ?—I do not follow the figures, they are in the estimates there.

1713. In addition to that there was a large sum of money paid for crib work ?—Yes, that was done by Hugh Ryan & Co.

1714. Do you remember how much the crib-work came to ?—I think it was \$6,000 or \$7,000.

1715. \$6,000 or \$7,000 ?—I am speaking altogether from memory and may be quite astray there.

1716. So that, altogether, the Dominion Government spent \$56,000 on this piece of work ; that is, on the superstructure, the girder span, the substructure and the crib work ?—I do not know the amount, but those items, whatever they were, were paid for by the Department of Railways and Canals, as I understand.

1717. They were paid for by the department ?—There might be a contra account for all I know.

1718. Do not you think that a span covering the whole opening might have been built for \$50,000 or \$60,000 ?—That would include the masonry and the rest piers and the superstructure ?

1719. You would not require rest piers for a swing covering the whole opening ?—You would require rest piers at the ends.

1720. At the ends ?—Yes.

1721. You would require a rest pier and ballast walls ?—Two abutments, a pivot pier and two rest piers.

1722. They are required in the present pier ?—Yes.

1723. And there would be no more masonry required than now?—No.

1724. You said to Mr. Lister just now that it would be very difficult to operate on account of its great length?—I stated that that was the argument advanced and I think a very sound one.

1725. Are you aware that there are larger bridges than 150 feet opening?—There is one at Rariton.

1726. What is the length down at the Burlington piers?—I do not remember.

1727. They have no difficulty there and the channel is wider than at the Soo?—I expect there are times when they have difficulty.

1728. Do not you think that that pier and girder span is more dangerous than the opening of the large swing bridge would be?—No, not by any means. With a 90 feet channel for vessels to go through they are no more likely to strike that pier than the entrance pier.

1729. But that pier stands out 65 feet from its centre to the channel?—But there is a channel of 90 feet.

1730. There is a channel of 90 feet?—I consider one channel of 90 feet infinitely preferable to two channels of 72 feet, to enter which a vessel would have to change her course.

1731. That is a swing from the centre, but there is no necessity for that. It could be swung from the side?—They might swing from the side, but there is a difficulty Mr. Van Horne objected to.

1732. Mr. Van Horne's opinion was taken and the Government made the rest pier in the centre of the channel to suit Mr. Van Horne's idea?—I do not know that. He wrote about it, and possibly others may have done so, and supported Mr. Van Horne, and the Government came to this conclusion.

1733. You said the community had some interest as well as the Government?—The railway community have an interest there.

1734. That is not a community?—I think so, a railway community. Its success depends upon catering well for the public at large.

1735. I understand a community is the people residing in the neighbourhood. The bridge is not a foot bridge?—I take the whole travelling public from one end of the country to the other.

1736. Yes. The general public does not travel over the bridge except by rail?—That is just it, and if a train is stopped, there is a great outcry, and if the bridge could not be swung properly and if a vessel came down and carried it away, and a train with a number of passengers went in, there would be a very serious state of affairs.

1737. But there are signals to prevent that?—True, but they do not always work and it was to guard against that.

1738. Has the canal the right of way over the railway people?—I presume it has. I don't know how that is.

1739. Supposing the canal had the right of way, would not trains approaching the bridge from another direction approach under a reduced rate of speed?—Yes, the law provides they shall come to a stand.

1740. There would be very little danger of running under these circumstances.—If all went well.

1741. Now, Mr Thompson, you spoke at the last meeting of the committee about there being in the neighbourhood of 1,500 feet on one side of the channel that the crib-work was bad and upon the other about 2,300 feet?—Yes, I forgot the distances. I think those are the same distances that I gave a few minutes ago, but it was from the upper end of the section.

1742. I understood you to say the other day that these struts in some instances stood out about seven feet from the base of the crib-work?—I should say so.

1743. Now, they were filled with what, between?—They were boarded over so as to make strong boarding, and the space between that boarding and the crib-work was filled with concrete.

1744. Now, taking the struts at sixteen feet long for 3,800 feet, you would find 7,000 cubic yards of concrete?—Yes.

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1745. Who paid for that?—I do not know that it is paid for up to this moment.

1746. Do you think the Government is entitled to pay for that work?—Well, is it for me to express an opinion about these matters, because it is only an opinion?

By Mr. Gibson :

1747. It is an opinion I am asking you for.

The CHAIRMAN—Is it the opinion of an expert?

WITNESS—My opinion is they should not pay for it.

By Mr. Gibson :

1748. Your opinion is they should not pay for it? How much is that class of work worth a yard?—I should have to make some figures about that before I could say what it would be worth.

1749. Well, is it worth the ordinary price of concrete?—The concrete would be worth more than the ordinary price of concrete on account of the difficulties of putting it in.

1750. On account of the difficulties of putting it in. I suppose it would require to be rammed together?—It would require to be rammed together.

1751. And it would be worth more than the ordinary price paid for the ordinary concrete?—I would think so.

1752. What is the price of other concrete? \$8.50, is it not?—The contract shows it.

The CHAIRMAN—The contract shows.

Mr. GIBSON—The contract was altered this time.

WITNESS—It is there.

By Mr. Gibson :

1752a. It is \$8.30. So you believe this material to be worth more than \$8.30 a yard? Now, according to your own figures Mr. Thompson the struts were 16 feet long, and stood out 7 feet. According to this measurement there were 7,881 cubic yards of concrete?—Yes.

1753. So Mr. Thompson, according to the prices paid at the rate of \$8.30 a yard for this concrete which you believe is worth more money on account of the difficulty of doing the work and having it rammed in between the struts, there were some \$66,000 spent in order to prevent this cribbing from bulging?—I do not know that has been spent. A lot of that protection has been done along there, and what the actual amount is I am not prepared to say.

1754. Well you gave us to understand the other day that there were 1,500 feet on one side and 2300 feet on the other?—Yes, somewhere about that.

1755. The figures worked out will give, you will find, 7,881 cubic yards at \$8.30. How much more than \$8.30 is it worth?—I dare say it would be worth a quarter of a dollar more perhaps.

1756. Say \$8.50?—Assuming \$8.30 was the legitimate price, I think it would be that increased value.

1757. Well, in addition to these sixty-six thousand odd dollars there was a great deal of timber used?—There was.

1758. How much timber would there be?—I cannot tell you. The struts were about 4 or 5 feet apart.

1759. Four or five feet apart? Dividing 3,800 feet by 4 you would have about 900 pieces or a thousand struts of 16 feet long. What size were they?—Round timbers, chiefly. I dare say they would average 12 or 15 inches through.

1760. Would they square about 12 inches?—No.

1761. Square ten?—Perhaps they might square about 10 inches.

1762. So that in addition to these 7,881 yards of concrete there would be about 1,000 pieces of timber 16 feet, and how many would square 10 by 10?—I would not say. I do not like to give certain figures and dimensions in an off-hand way. Assuming your figures there are correct, that is about what they would be.

1763. I am taking your own statement, and dividing it. You say there were about 3,800 lineal feet of cribbing that were improperly done and required a strut about every 4 feet.—I think so. I am speaking in this way; I just imagine I see the whole thing before my mind's eye, more or less.

1764. 900 pieces of timber 16 feet long and squared ten by ten inches. Who paid for this?—I don't know that it is paid for yet.

1765. You don't?—What would that timber be worth a thousand?—I don't know what the contractor would pay for that. I think a good deal of it was got in the neighbourhood there. Some of it was timber that had been used for other purposes. There was a good deal of timber required for their surface works, and I think a good deal of it was available.

1766. You would not allow inferior timber to be used for straining the braces, would you?—It might not necessarily be new timber or first class timber, but quite good enough for that purpose. As long as it was a good thrifty stick it would be strong enough.

1767. Worth \$25 a thousand?—I should think so.

1768. Is there no way of finding out whether this material has been paid for by the Government or not?—I dare say those papers will tell you that.

1769. I cannot find it in any of these papers?—Well, I would be inclined to suppose, then, that it had not been paid for.

1770. There is no estimate for section 1 here? What section was this?—That was on section 2.

1771. On section 2?—Yes.

1772. There is nothing in section 2. Well, you say if the cribs had been properly filled this strut work would not have required to be done?—I do.

1773. You do say that. What alteration was required on the random coursed masonry above the crib-work?—It was understood that the wall above the crib-work was to be random coursed masonry.

1774. Yes?—And as I saw that wall in July, 1894, it was not random coursed masonry.

1775. What was it?—It was rubble.

1776. So that it was an inferior class of work than that called for by the specification?—It was.

1777. Did you object to this?—I did.

1778. To whom, Mr. Thompson?—I remember calling the contractor's attention to it and the Resident Engineer's and the Inspector's attention to it.

1779. What had they to say for themselves?—They said they thought it was what was called for.

1780. Did they not know the difference between random coursed masonry and rubble?—I did not say so.

1781. Do you think a man in charge of a public work should know the difference?—He should.

1782. And he did know?—There is another little point to think about there. There has been a good deal of discussion as to what the term "random coursed" conveyed. I have no doubt in my mind as to what it is. But the people up there claimed that under a certain reading they had filled the bill. The inspector was of that opinion.

1783. Who was the inspector who thought that rubble filled the bill of random coursed masonry?—Scott.

1784. Where did he come from?—I do not know—Robert Scott was his name.

1785. Was he a practical mason?—I think so.

1786. What is your understanding of random-coursed masonry?—My understanding is that the vertical joints should be plumb, that the horizontal joints should be level and parallel but not necessarily continuous.

1787. Quite so, so that instead of that being built of rubble it should have been made with joints running vertically and beds running horizontally?—Yes.

1788. Then it was an inferior class of work. There were no tools required for the class of work as now built?—I think in places that where the stones were pretty rough

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they pointed off the beds, and in some places where large stones came close together they cut checks to get them together.

1789. That was only in the case of large stones. Most of them were small, were they not?—It was not what I call random coursed masonry.

1790. Was the coping work lifted?—Some of it was.

1791. Did it require any building to bring it up to the level?—Yes, in places.

1792. How much?—It varied.

1793. Give us the greatest depression?—I cannot tell you what the greatest depression was. I daresay the greatest depression might have amounted to three or four inches.

1794. Three or four inches?—There was more difference in the alignment than in the depression.

1795. It was more out and in than up and down?—I think so.

1796. You stated the other day that if the crib had been properly filled there would have been no need for anything of this kind of work being constructed or supported in the way in which it has been done?—I did.

1797. And you consider, as an engineer, if your plans had been closely followed and the specifications observed and adhered to, and the cribs properly filled, that the crib according to your plans and specification would have been sufficient to carry that stone wall on the top?—It was not my plan.

1798. Did you approve of it?—I thought it would do what was required of it. I am quite sure it would, if it was properly carried out.

By Mr. Haggart :

1799. Whose plans were they?—The plans came from the office of the Department.

By Mr. Gibson :

1800. Were they by Mr. Spence?—I think Mr. Spence's, most likely.

1801. In any case if the plans had been properly carried out it would have done the work?—I am sure of it.

By Mr. Haggart :

1802. Is the plan for the crib-work the same on the American side?—No it is not.

1803. What is the difference?—In the American crib-work their ties are put one above the other so as to make a succession of pockets that extend from the top to the bottom of the crib. In the crib-work on our side of the river the ties were ten feet apart alternately one above the other.

1804. In the American crib-work how far were they apart?—I think they were not very far from the same distance, but it made a succession of pockets from top to bottom. In our case the size of the pockets was reduced in consequence of the ties being put alternately in the different courses.

1805. Otherwise the plans were the same?—They were.

1806. Except that the struts or ties were perpendicular on the American side from top to bottom, and they were not in our own?—They were alternate in our own.

1807. Do you remember how the American cribs were filled?—The American cribs were filled by putting in the earth that came from the excavation.

1808. What was it?—I think it was earth and stone just as they found it.

1809. Was it not all earth?—Chiefly. I should say, it was earth.

By Mr. Gibson :

1810. When were these American cribs filled, in the summer or in the winter?—I cannot tell you. On the original canal I do not know when it was filled.

1811. In the summer time with the material from the excavation—loose material?—Yes.

1812. Did their cribs bulge out?—I have not been there since.

By Mr. Haggart :

1813. Do you know the height of their cribs?—I should think the height of their cribs would be 24, 25 or 26 feet.

1814. About double the height of ours?—Yes.

1815. Can you tell me the quantities of stone work—masonry work, that was in the original contract, as let to Mr. Ryan?—I think the approximate quantity in the original lock was about 45,000 yards.

1816. About 45,000 yards?—I think so.

1817. What was the price paid for that?—\$11 per cubic yard.

1818. That price has not been changed in all the changes made subsequently on the lock?—No; not for the original quantities.

1819. Not for the original quantities?—No.

1820. The first change added how much to it?—The first change added \$5 per yard.

1821. How much was the quantity increased by the change?—Speaking from recollection I think it was 5,500 odd yards.

1822. That is right. The second change added how much?—The second change added \$1.60.

1823. That made it \$12.60. How many yards?—I think it was in the neighbourhood of 17,000 yards.

1824. 17,000 yards at \$12.60?—Yes.

1825. I think you gave the average price for the lock when it was built?—The average price for the lock, as I remember, speaking from recollection, taking the quantities out some time before the lock was completed, amounted to \$11.92.

1826. We made it \$11.84. It is very near it—\$11.92. Will you tell me what the cost was on the American side?—Upwards of \$14.

Mr. Haggart—\$14.50.

By Mr. Lister :

1827. You say on the Canadian lock it was \$11.92?—That is merely approximately.

1828. And on the United States?—\$14.50.

By Mr. Haggart :

1829. There is \$90,000 allowed to Messrs. Ryan for the purpose of finishing the masonry work on the lock a year before their contract required them to do it?—There was.

1830. Was that too much?—I do not think it was.

1831. Have you any idea what it cost them extra?—No, I have not. I know there was a very large outlay for plant to begin with. I know that the news had got abroad among the men that there was a desire to expedite the work, and they looked for difficulties with the men, the cost of which it would be difficult for anybody except the contractors to figure out.

1832. Were you consulted as to fixing the prices for this extra masonry at all?—I was spoken to about it.

1833. Who was it fixed the prices?—I think they were determined by Mr. Walter Shanly.

1834. Mr. Walter Shanly and any one else?—Mr. Trudeau.

1835. Who was the minister at the time?—Sir Mackenzie Bowell.

1836. Some questions were asked you the other day. Mr. Gibson asked you about a quantity of earth, I think it was 450 or 600 feet, where the price was increased from 25 to 60 cents. Can you explain the reason for the increase?—That was in connection with the first change.

1837. The first change, yes.—The lock pit excavating was very nearly completed, and when it was proposed to extend the width of the lock from 85 to 100 feet there was some earth to be taken off in detached places here and there, where it was difficult to get at, and where the derricks and appliances for removing it had to be brought back, and the increased cost was in view of the increased difficulty of removing this small quantity.

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1838. Do you think the increased price compensated the contractor for the labour he bestowed upon it?—I do not think it would more than do so.

1839. It would not more than do so. There was an increased price given for some rock work. I forget the quantity, but Mr. Gibson asked you about it the other day.—The conditions were about the same.

1840. The price given to the contractor for doing that work was not more than the actual expenditure he incurred in carrying it out.—I do not think it was.

1841. There were some questions asked you the other day in reference to power pipes and the contracts made for supplying them?—Yes.

1842. Do you know anything about the reasons assigned—I suppose they are in writing—for the purpose of not going on with the contract?—I remember hearing it stated in the examination of the chief engineer that the parties objected to it because they believed they would not have the right to enter upon the ground.

1843. Have you got the specifications?—They are on the table.

1844. What is your interpretation of them?—That the original specifications and that the clauses in the subsequent agreement clearly and distinctly provide that parties tendering for that work had the right to do so.

1845. Had the right to do so?—There are clauses in the supplementary—

1846. Did the contractor ever refuse to allow parties to go on and do the work?—I am not aware of anything of that sort.

1847. You are not aware of anything of that kind? What would be the total value of the changes you have spoken about in reply to two or three questions asked by Mr. Lister? There was something about a few bolts astray and some concrete left out?—That would not be a matter of more than a few hundred dollars at the outside.

1848. A few hundred dollars altogether. Two hundred dollars would cover the whole of it?—I should think two or three hundred dollars would cover the whole of it.

1849. You have seen a good deal of masonry and a good deal of lock work in your life time, and you have inspected the whole of the work on the American side, which, I suppose, is the finest of the kind in the United States. What is your opinion, comparing our work with their's?—I think our work is quite as good as their's.

1850. Quite as good?—I do. There is one very strong point in connection with our work and it is this; that we have the very best of sand. We have excellent cement, we had perfectly clean water which gave the very best of mortar, and the mortar was not stinted, and that is the life and soul of any piece of work.

1851. On the whole what do you think of the work on the lock?—I think it will do what it is required to do beyond a doubt.

1852. First class work?

Mr. Davies objected to the form of question.

By Mr. Haggart :

1853. What class of work is it? The work there speaks for itself?—Well, there are certain terms that are sometimes used in masonry and they are very misleading. You will see in the specifications of railway engineers they speak about bridge masonry and culvert masonry, and first class work and second class work, and these terms are misleading. My idea is to put the thing beyond a doubt; that exactly what is required should be indicated in terms and then there is no mistake as to whether it fills the bill or not. In answer to this question, whether that is first class work or not, I do not say it was first class work, because when this evidence goes abroad, as it probably will, some railway engineers will take that up and compare the work done there with certain work they might do, and it would not agree with their specifications, and they would say, I had stated what was not the case. But I guard myself by saying, I have no hesitation in saying from what I have seen of the work, and at the present time I have not seen it for 7 or 8 months, I believe that that work is perfectly equal to do everything that is required of it, that that work will give no difficulty in the future—that masonry.

By Mr. Gibson :

1854. You refer more particularly to the lock?—I am speaking of the lock exclusively.

By Mr. Haggart :

1855. Now in regard to the bridge we have heard so much about. When was that bridge decided upon?—I think it was in 1893.

1856. In 1893. It was upon your plan and report it was adopted, I suppose. In reference to the building of the bridge. By whom was the plan prepared?—A plan showing the pier in the centre and channel on each side I remember seeing it—I don't know where it was got up, I presume in the departmental office—and when it came to making the change there was a sketch attached to the order in council showing the pier, the pivot pier, on one side and the swing to a rest pier 90 feet from the north side, and that plan I suggested to Mr. Trudeau, and it no doubt was approved or it would not have been so built.

1857. There is one reason you forgot, perhaps that will be a right question. Was not the principal reason for adopting that at the time that the bridge required to swing from the centre of the pier?—Yes, that was one of the reasons.

1858. One of the principal reasons. And the other reason was the force of the wind against the long bridge on the other side?—Yes that was stated.

1859. However, it does not amount to much. You can take out the pier any time you want to and increase the beauty of the canal. How does this bridge compare with the American bridge? You say it is 90 feet between the pier and the shore?—Yes.

1860. What is the breadth of our locks?—The breadth of our lock is 60 feet.

1861. What is the breadth of the American bridge, over there?—108 feet.

1862. What is the breadth of their lock?—100 feet.

1863. Then comparing our lock with their's there is comparatively more room on our side than there is on their's?—There is.

1864. Even with that pier?—There is.

1865. Even with that pier?—There is moreover an economy to the extent of several thousand dollars.

1866. Now there is one question Mr. Schreiber was not able to answer, perhaps you will be able to answer it. If you built the puddle trenches for a lock 20 feet 3 inches deep on the mitre sill and did unwatering, what would be the increased amount that the contractor would be entitled to at the price that he received for the 16 foot lock? What would be the proportionate increase taking the 16 foot lock as a basis, for the increased depth of 4 feet with the puddle trenches and the unwatering?—I do not think it would be fair to take it as a matter of proportion, but I think it fair to say that the amount asked for unwatering was not accepted, for the reason that we were working on an island in the Potsdam sand stone which was full of crevices and fissures and an inflow of water might be looked for at any time.

1867. Then the contractor took that responsibility?—Yes.

1868. I would like the exact amount moneyed out?—I have not the data, but I could arrive at it.

1869. The deeper down you go I suppose the increased cost would be proportionately larger?—Yes, owing to the greater liability to damage by water.

1870. Owing to the greater liability of water pressure. Mr. Schreiber estimated that it would increase the price one-third. Was he well within the mark?—I think so.

Mr. HAGGART—I would like to put in the report of the engineer. There was a complaint made to the department as to the work and I sent up three engineers for the purpose of examining and making enquiry. I would like to put in the report of those parties who made the examination.

(Reports put in and marked exhibits 3 and 4.)

The CHAIRMAN—You wish these to be printed with the evidence?

Mr. HAGGART—Yes.

By Mr. Gibson :

1871. Mr. Thompson, what did you say was the cost of the American stone work?—The masonry, I have understood, cost upwards of \$14 per cubic yard, nearly \$14.50.

1872. How did you get this information?—It was taken from the press. I think I got that from the *Engineering News*.

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1873. Did this include cement?—Yes, it would include the whole cost of the work as I understood it.

1874. Did the contractor supply the cement?—No; the government.

1875. Did the government supply the cement and pay \$14.50 for the masonry?—No, I did not say that. I said that, as I understood it, the cost of the work, all charges against it, would be \$14.50.

1876. But you are not quite sure. It is only a report from the engineer?—I read it in the *Engineering News* and it purported to be a report from the engineer of the Sault Ste. Marie Canal.

1877. Are you aware that the cement on the American lock was tried every day?—They had a large force on there and were testing it.

1878. They tested the cement every day before it was used?—They tested it in advance.

1879. The government tested the cement in advance and supplied the contractors with it?—Yes, and charged them for it.

1880. Was the cement upon the Canadian lock tried every day?—No, it was not.

1881. Was it ever tried?—Yes.

1882. How often?—I have often made tests of it myself at different times, and I have watched it in the work. The time was so short for building that we were not in a position to do as the Americans did. We did not start out on the principle of testing the cement as the Americans were doing.

1883. You had not the same privileges because you had not the power to handle the cement the same as the American engineers?—We got the best brands of cement. I never had any fault to find with it.

1884. How much of our lock was built with native cement?—I could not tell you how much. The original intention was that the face stone should be laid in Portland cement and the backing in native cement.

1885. That was the original intention?—Yes.

1886. How much of that was carried out?—I cannot tell.

1887. Can you give us any idea?—No; it would only be a guess.

1888. Would not that reduce the price of the work on our side because of the use of Canadian cement?—That was the contract.

1889. Quite so, but you say that you averaged up the whole of the Canadian lock at \$11.95?—Yes, according to the price paid for certain quantities.

1890. But there was a portion of the work paid for of which you cannot give the price?—The quantities, you mean.

1891. Yes.—No.

By Mr. Haggart :

1892. Would not the fact be the very opposite of what Mr. Gibson said, that if we used native cement the price would be less than what we paid for Portland cement?—If native cement had been used the price assuredly would have been less.

1893. Less than \$11.84?—Yes.

1894. And the price of the American lock would have remained the same, \$14.50?—Yes.

1895. Then we had a better cement for the masonry that cost \$11.84 than they had for masonry using native cement which cost them \$14.50. In that estimate of our prices, \$11.92, what did you reckon on using?—The specification provided that the face stone should be laid in Portland and the backing in native cement.

1896. But what does it amount to, what was the actual cost?—The actual cost as I said before, is \$11.92 for the entire masonry in the lock, some of which was at \$11, some at \$16, and some at \$12.60.

1897. Does that include English cement?—It includes all the expenses in connection with the masonry.

1898. And the other, \$14.50, that the Americans paid for theirs is a price including native cement?—They used native cement in the whole of their backing and Portland in the face.

By Mr. Gibson :

1899. What I wanted to get at was this, that if the whole of the work on the Canadian lock had been done with Portland cement the price would have been more than \$11.92 a yard?—If the contractors had known that they would be called on to put in Portland cement, as a matter of course they would have asked a higher figure.

By Mr. Lister :

1900. You said that the work on the canal would answer the purpose for which it was constructed, you thought that there would be no difficulty about the lock?—The lock was what we were speaking about.

1901. You want the committee to understand that the class of work, so far as workmanship is concerned, is equal to that on the American lock?—I think it is.

1902. Do not you know that on the American lock there is a plan and specification for every stone?—As I said before, I think it is putting unnecessary work in and making it no better, and not as good.

1903. Do not you know that on the American lock if it is one-twelfth of an inch out it is rejected?—I think that is an absurdity.

1904. If the stone is at all out it is rejected?—I have heard it said so.

1905. Did you observe the same strictness on the Canadian side?—No, it is not at all necessary.

By Mr. Hughes :

1906. Why, Mr. Thompson?—For this reason. If you go into a quarry the common sense thing to do is to utilize the stone according to how the bed of the quarry turns out. On the American lock they had certain fixed dimensions, and the consequence was they had to throw away a lot of good stone in order to bring all the stones to that standard size. I think it was a great waste of money and material.

1907. Does it accomplish any good, Mr. Thompson?—I don't think it does. I don't think the bond is as good.

By Mr. Lister :

1908. Was Crawford suspended when you were up there?—Not that I am aware of

By Mr. Davies :

1909. At any time?—Not that I am aware of.

Mr. HUGH RYAN called, sworn, examined.

By the Chairman :

1910. Your name is?—Hugh Ryan.

1911. Your residence, the city of Toronto, and your occupation?—Contractor.

By Mr. Haggart :

1912. Who built the Sault Ste. Marie lock?—The firm of Hugh Ryan and Company.

1913. Hugh Ryan and Company. Yes. And the approaches below?—One of them, the lower end.

1914. The crib-work above?—The crib-work through the prism of the canal.

1915. When was the first contract entered into by you in building this work?—November, 1888.

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1916. What did that contemplate the original scheme?—The original contract contemplated the building of the lock as originally designed and the construction of the canal above.

Mr. DAVIES—Does not the contract speak for itself.

Mr. HAGGART—I want to show the change from the first to the second and I want then to get the quantities. I want to lead up to the changes on the lock, in order to learn the change in prices and the reasons for it.

1917. What was the quantity of masonry work in your first contract for building that lock?—About 45,000 yards.

1918. What was the price you got for it?—\$11 per yard.

1919. What was the first change that was made?—The first change?

1920. How did it increase the price?—In the increased quantity.

1921. In the increased quantity and the increased price?—Well the increased quantity as I heard it stated, had been paid for 5,500 yards.

1922. 5,500 yards? And what was the price you got?—\$16 a yard for it, for that quantity.

1923. What was the reason assigned for the difference between \$11 and \$16 for the 5,500 yards?—Well at the time that change was made the prices for labour and especially for mechanics had gone up—between the time we took the contract and then—for mechanics to between 40, 50 and 60 per cent, and the labourers from 25 to 40 per cent. That was one of the reasons.

1924. Yes.—And another reason was, that increasing the width of that lock from 85 feet to 100 it increased that radius round there, which was under that plan and would increase the cost of the cutting of the stone very materially. Another reason still was,—

By Mr. Lister :

1925. Radius of what?—The approach to the gates and we had a great deal of trouble and doubt about where we were going to find the backing stone up to that time. These were the principal reasons for that first increase.

By Mr. Haggart :

1926. Yes, with whom did you make the arrangements for that increase?—I sent a tender to the department which was handed to Mr. Trudeau.

1927. Who was the minister?—Mr. Bowell, I think was the minister then, the acting minister.

1928. How was the price arranged?—Well we were asked for prices for the work necessitated by the change.

1929. Yes?—We made out our figures and handed them, as I have said, to the chief engineer. Then the chief engineer, and I am not certain whether Mr. Shanly was consulted at that first meeting or not, but our arrangements were all with Mr. Trudeau, and the prices, as finally settled on, fixed with him.

1930. Those were the reasons, I suppose, that result in your getting the increased price, and I suppose influenced the department in granting the increased price on that 5,500 yards?—Yes. I think Mr. Trudeau and the others connected thought the prices were only reasonable and fair.

1931. And were they reasonable and fair?—They were.

1932. The next increase was how much?—The next increase increased the lock. The first increase included 50 feet extra of length as well; increased the quantity.

1933. Increased the quantity?—Sixteen or seventeen thousand yards

1934. 16,000 yards? Give the price you got in full, for those 16,000 yards?—We got \$12.60 a yard for that quantity.

1935. What was the reason of your getting \$1.60 more than was provided for in your original contract where the figure was \$11? How did you arrive at that?—We arrived at it in this way. When we took the original contract, as I have stated before, the prices for labourers and mechanics were what I then stated.

1936. Yes?—I will give you the figures.

1937. I would like the figures.—Common labour down here then at the outside was \$1.25 a day.

1938. Yes?—We were paying from \$1.50 to \$1.75 for common labour.

1939. Yes?—Quarrymen, skilled labour, down here would be from \$1.40 to \$1.50 at the outside. We were paying them \$1.75 and in some cases \$2.00.

1940. Yes?—Masons were paid down here \$2.50 a day to perhaps \$2.75 for extra men. We paid them \$4.00.

1941. \$4.00?—Stonecutters would be at the same rates.

1942. Yes?—Carpenters were paid here, say for good men, \$1.50. We paid them from \$2.50 to \$2.75 and \$3.00. Blacksmiths in the same proportion and everybody else that we had to employ about the place.

1943. Yes?—Here you can hire teamsters for \$18 a month and board. There we paid them \$30 and everything else was in the same proportion or thereabouts.

1944. Well, that would hardly justify the increase up there. What were the increased prices you had to pay up there from what you had to when you were paid \$11 a yard—that is the comparison between the price here and there? Did the prices up there increase?—Well, those were the prices. The prices up there increased as I have told you.

1945. You said down here. You made the comparison between here and there. These are the rates of increase on the work itself?—These are the rates of increase on the work itself.

Mr. HAGGART—Now I understand you.

By Mr. Hughes :

1946. The prices increased up there from the time the work commenced?—There were no prices paid there at the time we took that first contract; there was nobody working there then. Our first contract was based upon such prices as I have stated.

By Mr. Sproule :

1947. Upon the prices of labour here?—Upon the prices of labour here, mechanics and all that. When we got up there we had to pay more, probably on account of the work on the other side of the river.

By Mr. Haggart :

1948. Now, Mr. Ryan, I want to make this clear. Was the price of your original contract, that is the quantities in your original contract, in any of these changes increased at all?—Not one cent.

1949. Then the prices allowed, the increased prices, were only allowed for the extra work you were required to do?—Only for that.

1950. Now, Mr. Ryan, there was a change in your work by which you were obliged to build it one year earlier than you were obliged to do under contract, for which you received \$90,000?—Yes.

1951. Can you tell me what it cost you to do that work one year earlier than you had contracted for?—Well, I cannot give you the exact figures, but I can give you the exact figures of what the extra plant cost us in order to get the work done in that time.

1952. Well, give us that, and give us the estimate of the other as near as you can?—That arrangement was entered into in the autumn, the late summer of 1892, and between October, 1892, and the close of the wall work in 1893 we had paid out for plant \$64,643.45.

1953. That is extra plant?—Yes. At that time we had the plant for the work to be done in the original time all provided and on the ground.

By Mr. Bergeron :

1954. When was this work to be finished?—In 1894, and we had expended in addition to that \$64,000 odd on the plant on the ground during the winter of 1892–93 \$21,173.97.

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By Mr. Haggart :

1955. Is there anything else?—No.

1956. Then for plant alone the increased expenditure you were put to was how much?—\$85,000 or \$86,000.

1957. Did \$90,000 at all compensate you for doing the work a year earlier?—We could not keep any correct account on the day work which had to be done. When you take into account the extra day work we had to pay for in addition to that plant—I have a memorandum here.

1958. Let us see the memorandum?—At the time I made the arrangement with you I made a memorandum, an estimate of what the increased cost would be, and for that I put down the extra cost of doing the extra work by night instead of by day as \$16,000, which was a very moderate estimate. We had then the increased cost of our labour. The wages of our masons and stoncutters went from \$4 to \$4.30 a day, and there was a good deal less work done per day than when we were paying the lower rate of wages.

By Mr. Bergeron :

1959. The days were shorter?—No, the men were more saucy and independent. They knew we had to get that work done. We had several strikes during the summer. We put \$16,000 down for that. When I agreed to take the work at \$90,000 I made at that time an estimate that it would cost every dollar of that sum.

By Mr. Gibson :

1960. Read the different items that you estimated?—Well, we changed some of them as marked. For stone crushers for concrete work we put down \$10,000. We did not spend quite that for stone crushers. We only got one which delivered there cost us less than \$5,000. For steam power and engines I put down \$4,500. That should be at least nearer \$20,000.

1961. What was that?—For steam power hoisters and everything of that description.

1962. Extra hoisters?—Yes.

By Mr. Hughes :

1963. \$20,000?—Yes, at least \$20,000. Now for additional derricks for building in the stone yard we put down \$8,000, and these items turned out to be too small. For other plant such as rails, cars and other things only \$6,000. Extra coal \$4,500. Now here is an item that we did not need to get, but I put down a small sum for it, and that was for electric plant. I thought we would have to get that, but we did not have to. We got along without it, and made light in other ways.

By Mr. Davies :

1964. How much was that?—\$4,000. For the cost of operating it during construction \$2,000.

By Mr. Bergeron :

1965. As a matter of fact how much did your lighting amount to?—We used other means.

1966. Was there a great deal of difference in the cost?—There was some difference.

By Mr. Gibson :

1967. They used the moon a good deal?—No, we did not use the moon, we got good light. Extra storage buildings for cement are down at only \$1,000. Extra cost of doing work by night instead of by day \$16,000. Additional cost of work increased wages, \$16,000. For steam shovels for excavating \$8,000. We used other means than that steam shovel. Then we added for contingencies \$10,000. Now you have the whole sum of \$90,000.

1968. That was your estimate?—That was a very rough estimate made within one hour's time.

By Mr. Hughes :

1969. Before the tender?—Before the tender was put in.

By Mr. Haggart :

1970. But the actual amount that it cost you was in excess of that?—Yes, there is no doubt of it whatsoever.

By Mr. Gibson :

1971. Could you give us the excess?—I will give you the extra cost.

By Mr. Lister :

1971. You must have lost a lot of money on that job?—I think we did lose some on that particular job.

1972. I mean on the whole job?—Well, I do not know about that.

The committee then adjourned.

Sault Ste. Marie Canal Inquiry.

COMMITTEE ROOM, No. 49,
HOUSE OF COMMONS, 27th June, 1895.

The Committee met.

Mr. HUGH RYAN recalled and further examined.

By Mr. Haggart :

1973. You were there, Mr. Ryan, when that fault in the concrete that Mr. Thompson spoke about was discovered—where it was left out? Will you please explain that?—There was a little piece of concrete left out at the end of the partition wall where it went up against the breast wall, and that piece of concrete, I suppose, would measure the whole of it, about eight yards. I may say I measured it in every way with a rod, lengthwise, crosswise and the depth of it.

1974. Then there is another little matter. What was the reason of the increased price of the iron?—It was a very different class of iron work.

1975. You mean in the change from the old contract prices to the new?—The iron in the old contract was simply drift bolts, that was in the first contract. For the new work it was all double work, and it had a nut of a thread cut on both ends and had to be put in in a very difficult position and place.

1976. What is the difference in price between native cement and the cement that you used, that is Portland?—They are not sold in the same weight of barrel, but if you would ask by the hundred pounds.

1977. Yes, by the hundred pounds?—I suppose the difference is over 50 per cent.

1978. Over 50 per cent?—Yes, I should think it would be 80 per cent.

By Mr. McMullen :

1979. The Portland cement cost over 50 per cent more than the native?—More than that. They vary somewhat in price. I should think 80 per cent would be nearer than fifty.

By Mr. Haggart :

1980. Were you ever asked for permission to put in the gates by any of the contractors or tenderers for the gates on the lock?—No.

1981. So there was no interference on your part with any one, nor any conversation?—None whatever.

1982. Now in regard to the lock, Mr. Ryan, what was the character of the work, and what were your instructions to the men on the work, and how was it carried out? Just give a little statement?—We got the best material we could buy for money of every kind. We got the best stone, and we hired the best mechanics we could get, and paid them the highest wages. I believe it is as good as could be built.

1983. Both in timber, stone-work, and every other respect?—We bought the best timber also.

1984. What were your instructions to your men?—Our instructions were to make as good a piece of work of it as could possibly be made.

1985. Do you not think it is as fine a piece of work as there is of the class?—It is as fine as I have ever seen. I do not think we could make it better.

1986. Then as to the crib-work that bulged out, what explanation do you give of the bulging out of the crib-work?—I have not the least doubt but that the bulging out was caused by the pressure behind in the spring when the frost was going out of the material with which it was packed in the winter. The shape of the back of the crib was a half V, that is the material had to be excavated above the rock and taken out with a very slight slope on the back side. Of course the other side would be straight up and down so that it made the shape of a half V, the slope on one side and straight

up on the other. Then as the material was taken out of the cutting in the winter, it was dumped into that place. Of course it would naturally be frozen, a great deal of it, and in the spring, when the frost began to come out of that, a great deal of it was of a quick-sandy nature and it ran down in that place and that forced that crib-work forward.

1987. Now, Mr. Ryan, in reference to the wall that is on top of the crib-work, you heard the description of the character of the work last day. I furnished you with a couple of photographs of the work this morning. Would you please show the photographs to the committee and put them in as evidence as to the character of the work that is described as rubble work? (Witness put in the photographs, which were marked Exhibits 5 and 6.)

Mr. GIBSON—Is that what Mr. Thompson called rubble work?

Mr. HAGGART—It is Scotch random coursed work.

By Mr. Haggart :

1988. What was your payment per yard for this work?—The agreement was \$7.50.

1989. What did the department pay you for it?—The department in the early part paid us \$7.50. Latterly they paid \$4.50 and we would not take it.

By Mr. Davies :

1990. That was for the random coursed masonry?—That is what is called random coursed masonry.

By Mr. Haggart :

1991. Have you done a lot of that masonry work?—In other places?

1992. In other places?—I have built a good deal of masonry; yes.

1993. Do you know whether that comes within the designation of the work that you were to do under your contract?—Well, we considered it so.

Mr. HAGGART—There was some reference by Mr. Lister as to the depth of water on the approaches. I want to put in the engineer's report and the soundings of the approaches to the entrance and exit of the canal as evidence.

(Engineer's report and soundings put in and marked Exhibits 7, 8 and 9.)

Examination of witness continued.

By Mr. Gibson :

1994. When you were building this random-coursed masonry, did you expect to be paid \$4.50 for it?—I did not.

1995. What did you expect to be paid?—\$7.50.

1996. And did you build it with a view of being paid \$7.50 for it?—We did.

1997. Did you cut the stones for the work?—Well, we did not cut them as we cut the stones for the lock or anything of that kind; we dressed them to suit the class of work they were intended for.

1998. There is no dressing on that?—I beg your pardon.

1999. There is no dressing on that?—Well, there is the dressing that would be put on coarse stones to make them lie well on their beds, and give them fairly good joints.

2000. That is known as random-coursed masonry?—Well, Mr. Gibson, that is a matter of opinion. There are some men call one work rubble, and another man would call it perhaps by a different name.

2001. What do you call it?—I call it—it was called there—what is known in Scotland as Scotch random-coursed work; not as rubble, certainly not.

2002. It is not random-coursed masonry as known in this country, is it?—Well, I don't know. I don't know that I have read the specification of random-coursed masonry.

2003. How did you come to build it in that way? What do you call it?—Well, I would call it just what I have stated to you.

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2004. What is that?—I have stated that it is good work for the purpose for which it is intended.

2005. That is not an answer. I don't think there is any clause, Mr. Gibson, in our specification for random-coursed masonry at all.

2006. Have you got the specification dealing with that with you?—No, I have not. Mr. HAGGART—It is here.

By Mr. Gibson :

2007. It was not built according to the specification?—Well, if there is a specification we will see.

Mr. HAGGART—If it is not it won't be paid for, that is all.

By Mr. Gibson :

2008. At page 30, vol. 2, of the file of papers produced by Mr. Schreiber you will find the clause in the specification governing this matter. Perhaps you will be kind enough to read it to this Committee.—This specification was for the old contract.

2009. Read that specification if you please to the Committee, it?—“Side Walls.—In case the rock through which the canal is formed proves to be of a sound and durable nature, walls are to be built to raise the side to the required height, 3 feet over highest known water line, proper seats for which must be prepared by the removal from the space to be occupied by them, of all earth, muck, clay, sand, gravel, and loose stone down to the solid rock and placing them in spoil banks. For this work the contract rate for excavation on the section, corresponding to the position of the work done, will be allowed.

“The walls must be built of large sized, flat-bedded, well-shaped stones, not less than 9 inches thick, laid on their natural beds, of approved gray limestone, or an accepted quality of sound, close-grained, durable sandstone. They are to be of random-coursed work $2\frac{1}{2}$ feet wide on top increasing downwards on the face side at the rate of $2\frac{1}{2}$ inches to the foot, and on the rear side increase at the rate of 3 inches to the foot for the first five feet from the top, thence downward the back is to be plumb.

“The front stones are to be laid at right angles to the face, which must be hammered, scabbled, picked or pointed off before being brought on to the walls, so that, when laid, no projection shall exceed two inches beyond the pitched lines at the joints. All the stones must be properly bonded over with each other in the heart of the wall, as well as in the front and rear side; and in every course there must be headers of at least three feet depth of bed not more than seven feet apart.

“If the stones used for the walls are of a class that cannot be readily hammered or dressed into shape, an oblique timber may be bolted on to the rock of such a height on the front side and properly filled in the rear as will give the top of the first course of stone the required inclination and the face the proposed batter. The coping stones must be of the full width of the top of the wall (two and a half feet) increasing in width downwards to the batter on both sides in pieces of at least nine inches thick on the face side and sufficiently thick on the rear, that with ordinary joints, without spalls, the top will be level.”

2009a. So you did not follow the specification then in cutting the stone?—That specification does not refer to that wall at all.

2010. Does not refer to that wall at all?—No, sir.

2011. They made a specification to suit this work?—They did not.

2012. Did they alter the work?—That is for a dry wall.

2013. For any kind of a wall?—No sir, it is for a dry wall.

2014. It is, eh?—That is the case.

2015. Does it mention there “dry”?—It does not mention “dry,” nor does it mention “wet.” There is no mortar intended to be put in that wall, as is evident. You can see from the last part of it where it is stated “no spalls to be allowed.”

2016. Exactly, Mr. Ryan, because you could not use spalls in random-coursed work?—On the back portion.

2017. You could not use spalls ?—I could use spalls in the back.

2018. Where ?—In the back.

2019. Not in the face of it ?—Not in the face of it.

2020. Exactly, but there are spalls in here ?—I do not think there are many.

2021. There should not be any ?—I do not know that there are any.

2022. It is rubble work ?—I do not know.

Mr. GIBSON—But you do know?

The CHAIRMAN—You are not entitled to contradict the witness. He has stated on oath that he does not know. I am sure Mr. Gibson did not wish to be offensive.

Mr. GIBSON—No, I do not think Mr. Ryan will take it in that way. I only wished to point out to him that this is not random-coursed masonry as mentioned in the specification.

The WITNESS—May I be allowed to make a remark. I am quite sure that that specification referred to a dry wall that was provided for in the original contract, not to the wall we built.

2023. Well, that specification covers, does it not, the random-coursed masonry without regard to where it is built ?—That is the original contract, but that is not the wall that was built. It is not the same wall that was built at all.

2024. Are there any other specifications in connection with this work dealing with random-coursed masonry other than that you have read ?—None that I know of.

2025. Then how can you say that that specification does not apply to this work as well as to the dry wall ?—Because the word mortar is not used, nor the word lime, nor anything else that appertains to it.

2026. Is the word "dry" used there ?—I do not see it here.

2027. No, it is not there.—No contractor would build a mortar wall under that specification for the price that he would have stated for the work under that specification.

2028. Was that retaining wall in the original contract ?—A dry wall was provided for in the original contract ; that is the wall we tendered for under that specification ; it was to be a dry wall.

2029. If it was to be a dry wall you would have been required to cut the stone properly so as to alight on the top of one another ?—In a dry wall it is more necessary that they should be nicely dressed so as to alight well on the top of one another.

2030. So instead of random-coursed masonry you built a rubble wall ?—We built a wall as directed and the engineers were satisfied.

2031. They were satisfied with the change you made from random-coursed to rubble ?—We did not change the work. The whole thing was changed. This was intended to be a dry revetment wall on top of rock. The other thing was a mortar wall on top of crib-work, not on top of the rock at all.

2032. Well, now, the wall on top of this crib-work, what class was it to be ?—There is no specification for it that I know of. This specification did not provide for that wall. It provides for a wall on top of the rock.

2033. So that the Government not specifying the class of work the contractor was able to do the work just as it suited him ?—No.

2034. Well, let us hear what you say ?—I say we built it to suit the engineers and their instructions and not to suit ourselves.

2035. Verbal or written instruction ?—I think verbal.

2036. And not according to specification ?—The specification did not apply to it.

2037. What does the specification apply to ?—It applies to a dry wall upon that rock when the earth was taken from it under the contract.

2038. Give me your reason for saying a dry wall ?—I am satisfied, if I might be permitted to put it in this way, that you would not build a mortar wall under that specification, Mr. Gibson,

2039. That is not my answer. Give us the reason why that applies to a dry wall ?—Because it does not say anything to the contrary. It merely mentions stone, not mortar.

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2040. You did not cut the stones under that specification?—We were not building under that specification.

2041. What specification were you building under?—Under the direction of the engineers. I do not think we had any specification when the wall was built at all.

2042. Now then, Mr. Ryan, you heard Mr. Thompson saying the other day that the cribs were improperly filled?—I did.

2043. What have you to say about that?—I have simply to say this, that I saw the cribs being filled in the early part of the winter of 1894. I saw them again very frequently in the early part of the spring. I have been down into the cribs where some of the material was taken out to examine, and the crib was filled with material taken from the cutting in the prism of the canal. That is what I say.

2044. The material that the cribs were filled with was the material excavated from the prism of the canal?—From the rock.

2045. Was that according to specification?—I do not think there is any specification for that particular work.

2046. Well, what about this I am going to read you:—"The crib-work was of such a design that its stability and efficiency as a retaining wall were dependent largely upon the manner in which the stone filling was done. The specifications for this work contained a clause in the words following: 'The crib-work shall be well and solidly filled with stone from bottom to top, which shall be carefully packed around and between the ties and properly levelled off at the top?'"—What specification is that?

2047. This is from the engineers' report, Messrs. Hobson and Gregory. Now, there was a specification, according to this?—I have not seen it.

2048. But we have seen it. The Government did not provide you with specifications.—I was not on the work all the time.

2049. That is not the question?—I did not see it.

2050. You never saw it?—I did not.

2051. How was it you thought you were allowed to fill the crib-work with the material from the excavation?—My partner told me it was done every day under the supervision of the inspector.

2052. So, that instead of following the specification and filling the crib well and solidly with stone from bottom to top, you filled it with the material from the excavation of the prism of the canal?—I think the specification was for the old contract, not for the new. I do not know that we have a specification. I have not seen it.

2053. Is that specification correct or not?—It may be correct, I will not say it is not.

2054. Do you say it is not correct?—I have just said what I say now, that I do not know.

2055. How were you allowed to depart from it?—I cannot tell. If we did depart from it I do not know.

By Mr. Sproule :

2056. Was the stuff taken out from the bottom of the canal stone?—Yes.

By Mr. Gibson :

2057. You say it was stone?—Yes ; there is no doubt about it.

2058. No doubt of what?—That it was stone.

2059. That is not what you said a while ago?—I did not say anything else.

2060. You said it was material taken out of the prism of the canal?—I said it was stone taken out of the bottom.

2061. Was it all stone?—What was put into the crib was all stone. In the rock cutting, there are seams between the layers of rock where there is decomposed or disintegrated rock, between the strata of rock. In the spring, when the frost came out, that became loose material, but it was lying among the solid stone, and the spaces that I saw there were not large. The crib was well filled with this material. Not hand packed. I would not say that, but it was well filled with the material taken from the rock cutting.

2062. Was it solidly packed?—Well, I do not think it was hand packed; no.

2063. You do not think it was hand packed?—No.

2064. So that there were spaces enough in the crib-work to allow a settlement in the retaining wall on top?—Well, there was not many spaces. This loose material filled up those spaces.

2065. Well, then, what caused the crib to bulge?—The crib, undoubtedly, was caused to bulge from the pressure from behind. I have seen plenty of that kind of work, and I have no doubt in my mind at all.

2066. You heard what Mr. Thompson said the other day that there were lumps of frozen clay adhering to the rock, and that when it thawed, it left spaces in the crib?—I have only to say that I think Mr. Thompson was mistaken, for this reason, that the clay overlaid the rock, and had all been removed before the winter set in at all.

2067. Were you present when that piece of crib-work was taken down to find out what it was filled with?—I was

2068. What did you find?—Just as I have described.

2069. And what did Mr. Thompson say?—I don't remember what he said then. I had no conversation with him about it.

2070. How much larger was the new crib put in than the old one?—I could not tell you.

2071. It was larger?—It was larger a portion of the way; yes.

2072. For what reason, Mr. Ryan?—I think where the depth of the crib was greater, to make it stronger, and to give it greater strength to resist the pressure.

2073. So they built the new crib much larger than the old one?—I think it was built deeper, thicker.

2074. In consequence, I suppose, of the engineer's thinking that the old crib was not strong enough?—I suppose that was the view they took of it.

2075. Is not that your own opinion?—Well, perhaps it would be better if it was somewhat thicker.

2076. You think probably if the cribs had been larger they would not have been so liable to bulge as they were?—I had to make them large enough to resist any pressure. I thought at the time they were put there, there was an idea they were strong enough.

2077. You do not think it was bad filling had to do with the bulging?—It was fairly well done as it was done. It was not hand packed; otherwise it was filled with the rock taken from the cutting.

By Mr. Haggart :

2078. Did you ever hear of hand-filling cribs yourself?—I never did in my life. The stone generally is taken to the crib and filled into it. You cannot hand-pack when the cribs are filled under water.

By Mr. Gibson :

2079. Now, Mr. Ryan, were those cribs under water?—They were not.

2080. Don't mislead the committee, please. There was no water in the canal at the time these cribs were filled?—Not any.

2081. So there was no trouble to hand pack. Come, be fair. Well, now, do you believe that stone that was filled in the crib was the proper material to be put into it?—I do think it was good sound stone.

2082. Now?—It was really.

2083. Was it proper material to be put into the crib?—Yes. It was good material for filling cribs with.

2084. Will it last?—I think it will last,

2085. You think it will?—I think the great bulk of that sandstone will last. It is first class durable sandstone, the great portion of it.

2086. I thought it was liable to disintegrate?—I told you the seams between the beds was filled with this disintegrated matter. There will be a thin seam not over an inch thick and some four inches.

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2087. I suppose you did not put any of that material into the crib at all?—We did put that material. It was frozen to the beds of rock and was put in just as it came out of the rock cutting.

2088. You made no distinction? You put it in helter skelter I suppose?—It was put into the crib as I have put stone into cribs very often before.

2089. Now, Mr. Ryan, you gave us a reason the other day why the Minister or the Government increased your price \$90,000. When under examination the last day you named the amount extra of plant that you bought in consequence of this rush on the work. You made an estimate of the amount for the Minister at the time you were making a claim for the \$90,000. Now that was only an estimate. Will you kindly give us the exact amount of the different plant you bought and paid for?—With regard to that first estimate, Mr. Gibson, it was like this; that was an idea I had formed very hurriedly and a very crude one. When I went back on the work to meet my partners there, we went over that very carefully and we changed that plant a great deal, and instead of getting all these articles mentioned we got others of a different kind.

2090. What others did you get?—We got a very great deal of hoisting power, great big steam derricks and cars and rails, I could not enumerate them.

2091. How many big derricks had you on the work?—We had on the work at one time 14 derricks.

2092. All steam hoisters?—All steam hoisters.

2093. Fourteen?—On the walls alone.

2094. On the walls alone, 14 steam hoisters?—Yes, sir.

2095. That was in consequence of the lock being 900 feet was it?—And having to do it in much quicker time we had to use double the plant.

2096. Mr. Ryan, did you require any more plant on account of having to hurry the work or did you have plant sufficient to cover the work?—We had plant sufficient as we calculated to cover the work, had we another season to build the walls in. When we built them in half the time we had to about double the plant, and I might say here the season there is little better than five months.

2097. Yes?—And I might say when you have to build some 65,000 yards of masonry in that length of time you know, and nobody knows better, how much plant is required to do it with.

2098. How much extra plant did you buy?—I had the book-keeper check them from the books, the money we paid out on account of plant, from the fall of 1892 to the end of 1893, that is when we finished with the work.

2099. Give us that please?—Until we had the walls built he reports to me that we paid for plant outside, \$64,643.45. He also says that we paid for putting this plant together, building those derricks through the winter, preparing for the spring work and everything else that was done on the ground, \$21,173.97.

2100. Extra money?—I won't say it was all.

2101. How much of that was for the extra plant?—There would be 70 per cent of it.

2102. Seventy per cent of that \$60,000 was for extra plant?—There is more than \$60,000. There is \$64,643.45 and \$21,173.97.

2103. So that in reality after all, Mr. Ryan, you spent \$63,000 for extra plant?—Well, I could not tell to the dollar what it was now.

2104. Have you any doubt you did not spend that money?—Have I any doubt I did not spend that much?

2105. Have you any doubt you did not spend \$63,000?—I have not the slightest doubt as to the correctness of those figures.

2106. You have not the details?—I have not, but they can be given.

2107. You mentioned the other day, you estimated a stone crusher at \$5,000?—Yes, and its engine, and it cost more than that.

2108. How much did it cost?—The cost? I think the thing cost, this bare crusher alone, somewhere about \$35,000.

2109. You mean \$3,500?—Yes, \$3,500, and in addition to that we got a large boiler, and it was built up and set into masonry, and I am satisfied when set in its place (and we never turned a wheel on it) it cost us \$5,000 or over.

2109a. You have never used it?—We never used it.

2110. How did you break your stone before you had the crusher?—We had another crusher before that. This part of the plant we doubled in case of emergency.

2111. So that after all you did not require it?—Not that particular article. We required all the extra derricks. We kept a lot of plant duplicated in case of emergency, otherwise we could not have done the work.

2112. So that this \$90,000, allowed by the Government enabled you to double your plant?—That and for other reasons.

2113. What other reasons?—We were paying very high wages before this arrangement was entered into. The next spring our stone cutters struck for higher wages. We had to pay them \$4.83 a day and they did not increase the quantity of work that was done. On the contrary it was very much decreased. The stonecutting in 1893 cost us fully 25 per cent more than the season before and the season before that again.

2114. What did your Portland cement cost you?—I do not know.

2115. You do not know?—I do not say I do not know, but I do not think I will tell you.

THE CHAIRMAN—Give us the market value. If Mr. Ryan has exceptional opportunities of buying cement, that is his affair.

By Mr. Gibson:

2116. I do not ask you what you paid for it, but the market value. You said to Mr. Haggart that you paid about 80 per cent more for Portland cement than for native?—I have no objection to tell you. We bought it at \$1.25 per barrel of 240 pounds—that was the size of their barrel at Welland.

2117. At Thorold?—No, it was delivered at the Sault.

2118. But you bought the Thorold cement delivered at the Sault for \$1.25?—That was the first contract we made.

2119. Did you continue paying that all through?—The second year we did not pay quite so much, and the third year we paid more, because the two makers there, Usher and Battle got together and made us pay more the third year than the fourth. They got up a combine.

2120. I thought there was no Thorold cement used in the third year's operations?—Oh yes, there was.

2121. Where?—There was Thorold cement used in what you call the rubble wall and what I call random-coursed. That was Thorold cement. There was some used in the back wall.

2122. That was not according to the new arrangement?—Yes, it was.

2123. I thought they gave you \$12.60, so that you would not require to use native cement?—No, they did not.

2124. Well, according to Mr. Thompson's statement the other day, there was no Thorold cement used on the lock at all?—I do not think he stated that, and if he did he would be mistaken.

2125. He admitted that in the early part of the work, when it was first commenced, that it was all Thorold cement?—I did not hear him. The whole of the lock walls?

2126. The first part of the work, he said, as originally intended, was built of Thorold cement?—The first contract called for masonry, for the face work to be built with Portland cement and the backing with native cement.

2127. Was the concrete when the work was first started built of Thorold cement or Portland cement?—You mean the concrete?

2128. Yes?—There was no concrete built of native cement at all.

2129. None at all?—None whatever.

2130. All through the work, the whole of the face work of the lock was built of Portland cement and backed up with native cement?—Not the whole of it.

2131. How much of it?—I could not tell you.

2132. But you used it every year?—What?

2133. Native cement?—Yes, we did.

2134. Right along?—Yes.

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2135. What proportion of native cement to Portland cement did you use in the backing of the wall?—Perhaps I had better tell you how much was used altogether and take the yards of masonry and concrete.

2136. How many barrels of cement were used in the lock?—I could not tell you.

2137. Then give us the whole?—52,063 barrels of Portland cement were used.

2138. Yes?—And there were 37,686 barrels of native cement used.

2149a. Yes?—About 90,000 barrels in all.

By Mr Haggart :

2140. 37,686 barrels of native cement?—Yes.

By Mr. Gibson :

2141. And 52,063 barrels of Portland cement?—52,063 of Portland.

2142. 89,749 barrels altogether?—Yes.

2143. Now, Mr. Ryan, what other work outside of the lock and the revetment wall that has been under discussion this morning did you use native cement upon?—Not any.

2144. How many yards were there in that revetment wall?—I really cannot say.

2145. Would it average a yard to the running foot all through on the top of that crib-work?—I should think it would.

2146. So that in that work for about how many yards of masonry would a barrel of cement be required?—Well according to the number of yards that we had and the amount of cement that we used in that masonry, I think fully a barrel of cement to a yard and a half of masonry.

2147. It would require to be, the way it is, for it would require to be all cement almost?—What is it you have reference to?

2148. This beautiful piece of work. You would use 3,000 barrels of cement to 3,000 yards of that masonry?—There was some Portland cement used for that wall. The backing was done and the coping was all laid on with Portland cement.

2149. How much would that require?—I do not know.

2150. Half a dozen barrels would point the whole thing. Allowing that you used 3,000 barrels of cement in that retaining wall—I am giving you a liberal allowance I think?—Yes.

2151. That would still leave you about 34,000 barrels of native cement that you used in the lock?—That is according to those figures.

2152. According to your figures?—Yes, sir.

2153. So that you used about 60 per cent of native cement?—No.

2154. Not 60 but 40. You used about 40 per cent of native cement in completing that work?—Which work?

2155. The lock work?—Oh, no, we did not, because that 37,000 barrels of native cement had only 240 pounds to the barrel. The other cement had 350 pounds to the barrel.

2156. Yes. What proportion would that be, then?—Well, I may tell you this. This is the nearest thing I can come to it. We built so many yards of concrete. We made good concrete, and the balance of the Portland cement went into the lock walls.

2157. Is it not a fact that you used as much Thorold cement at the back of the wall as you did of the Portland?—In the walls of the lock?

2158. In the masonry of the lock did you not use as much Thorold cement as Portland?—I do not think so, but in the masonry of the backing we used as much, not including the whole work.

2159. Did you use Portland in the backing?—We did, a great deal. We did it under positive orders from the Chief Engineer.

2160. Why?—Because he considered it a great deal better than the other.

2161. Why did he allow you to use any Thorold at all if he thought the other was better?—I cannot tell you that.

2162. But you were willing to take his orders and use Portland cement, although it cost you twice as much money, or eighty per cent?—We were told we would be paid for it.

2163. You were told you would be paid for it?—Yes, sir.

2164. You expected to be paid extra for that?—I did not know it would be extra. I expected to be paid for that cement.

2165. It is a wonder to me you did not use it altogether?—I would have if instructed to do so.

2166. Of course, always keeping in view you expected to be paid for it? Of course you still expect to be paid for it?—I still expect to be paid for it; I was instructed to put it there.

2167. You would have used it altogether if you had been instructed?—Certainly.

2168. I suppose the engineer when he ordered you to use Portland cement gave you to understand as it was outside the specification you would be paid for it?—He gave me to understand I would be paid the difference in the cost between the cement called for by the contract price and the specification—that cement.

2169. I suppose the engineer then kept a correct account of the number of barrels of Portland cement used?—I don't know that.

By Mr. Davies :

2170. Have you your account charging that?—We have not.

2171. You have not put in your bill yet?—We have not put in our bill. We asked payment for it, but did not get it.

By Mr. Gibson :

2172. Did you apply in writing?—No.

2173. Now, Mr. Ryan, how many yards of concrete did you build in that work?—I really could not tell you, but the estimate would show it. I think it is somewhere about—excuse me I don't know whether I have it.

2174. You think you have got it here?—I think I have got it, Mr. Gibson. Yes, we have built about 24,000 yards.

2175. About 24,000 yards of concrete?—Yes.

2176. How many barrels to the yard?—Oh, a barrel to the yard would make good concrete.

2177. So that would really after all leave 28,000 barrels of cement to the lock work?—That is what it would be.

2178. Not 52,000 barrels?—No. Not 52,000 barrels. You could not put 52,000 barrels in that lock.

2179. Certainly not. You used 28,000 barrels of cement on the lock against 34,000 of native cement?—No, because the native cement, a good deal of it, went into that retaining wall.

2180. But we took off 3,000 barrels for that?—Perhaps you might take off more.

2181. Mr. Ryan, tell the committee now (you are an experienced contractor) if a barrel of cement won't build three yards of that work?—Three yards?

2182. Yes.—Mr. Gibson, it did not.

2183. How many, then?—Well, I don't believe it built a yard and a half of that.

2184. Well, then, I have allowed you a barrel for every yard and you say it built a yard and a half. Now, I have taken off 3,000 barrels and there still remain 34,000 barrels of native cement against 28,000?—I think you must take off more than 3,000 barrels.

2185. Take off another 3,000?—Yes, take off another 3,000.

2186. Now, that brings us back to the same question I asked you before : Did you not use more native cement in the lock work than Portland?—I don't mean in barrels, I mean in pounds. You must make a distinction between those barrels.

2187. I understand that distinctly. Portland cement weighs 350 lbs. to the barrel gross weight, does it not?—No, 375 gross weight.

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2188. What does the other weigh gross?—The other weighs gross 260.

2189. 260. The other nets 240 lbs. to the barrel. 60 lbs. to the bushel?—That is right.

2190. What is Portland cement?—350 lbs.

2191. How many bushels to the barrel?—The barrels are larger. There is about 3 feet and one-third to a barrel.

2192. I do not want to lessen your chances of getting paid for the Portland cement if you have a claim against the Government for it, by any means. They say a fellow feeling make us wondrous kind. But I want to get at the facts. I understand from Mr. Thompson that no native cement was used in the lock after the work was begun?—I did not understand it that way.

2193. And he gave a reason. He gave it as a reason that they were justified in increasing your prices in consequence?—Who?

2194. Mr. Thompson.—They did not increase our prices in consequence of any such thing.

2195. Well, you expect your prices to be increased?—I expect to be paid for that cement, because I was instructed by the Chief Engineer and the Minister to use it. We bought it and paid for it under their directions, and put it in the work.

2196. Now, Mr. Ryan, you heard Mr. Thompson say that he considered that that random-coursed work was well paid at the price that Mr. Schreiber had given for it, \$4.50 a yard.—Well, I don't think Mr. Thompson would be a good judge of what that work cost.

2197. Who would be a good judge?—We would be good judges, because we know what it costs. Remember the men that did that work were getting \$4.30 a day wages. Labourers were being paid in proportion, and every other man employed about the work paid in proportion.

2198. It will look well when it is under water, Mr. Ryan?—It looks well now when it is above water—that is what is above the water, a portion of it.

2199. This is the whole lock?—Oh, yes, but there is a portion of that above the water.

2200. Well, what do you think it is worth?—\$7.50 a yard.

2201. You are very modest, Mr. Ryan.—Very modest. Contractors are always that.

2202. Why, of course. Now, you told us the other day that you bought a steam shovel, but you did not use it?—I did not tell you I bought it. I told you it formed part of the plant that I thought about getting. No, I did not tell you that, Mr. Gibson; we did not buy it.

2203. You did not buy it?—I told you we did not buy it.

2204. So there was an amount of \$8,000 that could have been deducted from that \$90,000?—No; because we substituted other plant for it, which made up the figures which I gave you here before.

2205. What could you substitute for a steam shovel?—We increased the—that was for the purpose of prism work; that had nothing to do with the lock walls, the building of it. We were obliged to have that work done in shorter time than I thought to have—for the prism, not for the lock walls.

2206. Did this tend to expedite the work outside the lock walls?—Certainly.

2207. And instead of that you used labour, did you?—Used labour.

2208. Was that more economical?—Well, I don't know that it would be.

2209. Had you not rails and cars before the Government decided to shorten the time for finishing the work?—We had.

2210. And how many more did you buy?—Well, I cannot tell you just now, but I know we bought enough to enable us to do the work in the time. We went over it carefully and we ordered plant of every kind to enable us to get that work done by the time we had agreed to do it.

2211. You heard Mr. Thompson state the intention was to build it of Portland cement and back it up with native cement?—That was the original contract.

2212. You said that you bought a large number of extra rails and cars in consequence of having to expedite the work?—Yes. That would be a part of what makes up those figures.

2213. How much did you pay?—I could not answer that here, but we bought fully as many cars as we had before.

2214. You could tell the Minister before making the bargain that it would require \$6,000 to buy extra rails and cars but now that the rails and cars are bought you cannot tell how much you did pay?—Well, I have not got all these before me.

2215. Did it cost you \$6,000?—I would not say, Mr. Gibson.

2216. But it cost you \$3,000?—Oh it cost more than that.

2217. How much?—Well, now, I cannot tell you. We got several hundred tons of rails besides the cars and other plant connected with it.

2218. Well, you said that you estimated \$4,000 for electric plant?—Yes.

2219. How much electric plant did you buy?—We did not buy any. I told you so before.

2220. You told Mr. Lister, and that you estimated \$2,000 for operating?—Yes.

2221. That was \$6,000. What did you substitute for that?—For that light?

2222. Yes.—We substituted wood barrels.

2223. You burnt up your old cement barrels?—Everything we could find to get light.

2224. Was that as satisfactory as electric light?—It answered the purpose very well.

2225. So that by a little thrift you saved \$6,000?—Not so much, the other cost us something.

2226. How much would you have got for the old barrels?—Not much. But it cost us something to get them together.

2227. How much did you get for your cement barrels?—Not a cent, nor for much better plant either.

2228. So you burnt them?—Yes.

2229. And it gave you sufficient light?—And other kinds of wood as well.

2230. There would be cuttings from the ends of your crib-work and so on?—Yes.

2231. So that with your empty barrels and any refuse timber, you were able to light up your works by night?—I may say that that estimate I gave to Mr. Haggart was entirely changed—not entirely, but to a great extent, with regard to the plant we bought.

By Mr. Haggart :

2232. In other words your \$90,000 is not an estimate you formed at all?—Not at all. The estimate I gave you was not as much as \$90,000.

By Mr. Gibson :

2233a. I understood in your evidence at the last sitting that you gave a complete account making up the \$90,000.

Mr. HAGGART—That is different from the original. There were two estimates. There was an original which he estimated before he entered into the work as to what it would cost. Then there was the actual figures, what it did cost.

The WITNESS—The first one was merely guesswork made in half an hour's time.

By Mr. Gibson :

2234. You say, Mr. Ryan, that you simply made an estimate that it would cost you about \$90,000 to buy extra plant?—Not all for plant. I estimated the cost of the change would be \$90,000, extra wages and so on.

2235. Plant and extra wages?—Extra cost of every kind.

2236. Now will you be kind enough to tell the committee how much night work you did?—I think, Mr. Gibson, we worked more or less every night. I may say I was not there all the time, but when I was there there were men working every night, some nights more, some nights less.

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2237. Well, were you not made aware that the work was being prosecuted at night when you were not there?—I am aware from the time books. My partner was there all the time, day and night.

2238. In consequence of night work you estimated that it would cost you about \$16,000?—That was a guess, you know.

2239. Well did it cost you \$16,000?—I cannot say. We kept no account of that extra cost.

2240. But if the work had not been rushed, or rather required in a shorter time, you would not have done any night work at all—We would not have been obliged to. I do not say we would not.

2241. Would you have worked or not?—Unless it was for the benefit of the work we would not, of course not.

2242. Now, Mr. Ryan, you estimated that it would cost you \$1,000 for extra cement houses?—I think it did.

2243. More than the one you had before?—Well, we had two altogether, or rather we had three altogether. We got a good deal of cement in the summer of 1893, I think over 40,000 barrels of that cement in that summer, and we had to have houses to take care of it. We had one very large one, one smaller, and a third smaller still.

2244. So that you were compelled, in consequence of rushing the work, to provide for a greater quantity of cement?—Than we otherwise would have stored. Well, I think so?

2245. Did that cost you \$1,000?—Well, I cannot speak exactly. That is what I put in the estimate.

2246. Of course it did not cost you \$1,000?—I do not know what it cost. It may have cost more.

2247. What did you make of it after you were through with it, a ball-room? It is standing there yet, and we would be glad to sell it for very little.

MR. WILLIAM CRAWFORD called, sworn and examined.

By Mr. Gibson :

2248. What position did you occupy at the Sault canal?—Assistant engineer.

2249. How long were you in that position?—I was in that position —

By Mr. Davies :

2050. From that date, that is the point?—From July, 1888, to October, 1894.

2051. Did you succeed Mr. Thompson, or were you under Mr. Thompson?—I was under Mr. Thompson.

By Mr. Gibson :

2252. You were under Mr. Thompson from the dates you have given?—No, I was not. In the early part I was in charge of the surveys. Did I say 1888? I am wrong. I went in July, 1887, and I was up to the end of 1888 making the surveys.

2253. So then from 1888, when did you go back again to the Sault?—I was there all the time.

2254. Why do you say 1888?—I was wrong in giving that date; it was when the contract was let.

2255. In other words you have been continuously there since 1887?—I have been continuously there since 1887.

2256. Since the first survey was made?—Yes.

2257. You went right up there when the survey was made and have been there ever since?—Ever since.

2258. What position did you occupy there?—As I said, for the first year I was in charge of the survey. After that I was assistant engineer until 1894.

2259. From the commencement of the practical part of the work you were assistant to Mr. Thompson?—Yes, from the building.

2260. Until when?—Until 1894.

2261. Until last year?—Last year.

2262. And then what position did you occupy?—Engineer in charge.

2263. You were made engineer in charge in 1894? So you have been practically on the work since its inception till the present moment?—Yes.

2264. Are you aware, Mr. Crawford, that complaints were made about the cribs along that revetment wall?—Yes.

2265. Did you see Mr. Thompson's evidence in regard to that?—No, I did not see it.

2266. You are not aware of what he said?—No.

2267. The complaint Mr. Thompson made was that they were improperly filled, and that you, your assistants and the contractors were to blame for the cribs bulging out in the way they did?—Well, I differ from Mr. Thompson. They were properly filled. They were well filled.

2268. You differ with Mr. Thompson and you say they were properly filled?—Yes.

2269. Well, can you give any reason, Mr. Crawford, why they bulged out?—From the wet material behind them.

2270. From the wet material behind them?—It was soft, spongy stuff behind them.

2271. Should there have been soft, spongy stuff behind them?—Being built in the winter you could not help it being spongy.

2272. What kind of material was put behind?—It was with material—it is a sort of sandy clay that covers the island.

2273. A sort of red sandy clay?—No, not a red.

2274. Yellow?—It is a mixture of sand and of clay.

2275. A mixture of sand and clay? So that the effect of the winter upon it was it was all frozen up?—It was frozen up, yes.

2276. And then when the frost came out of the ground, the cribs were bulged out?—Bulged the cribs out.

2277. Were you present when the cribs were taken down?—Yes.

2278. How did you find them filled?—They were well filled.

2279. Did Mr. Thompson call your attention to the manner in which they were filled?—He complained at the end they were not well filled.

2280. He complained they were not well filled?—Yes.

2281. And what ground did you take?—Well, I said I differed with him.—I said they were well filled; that he was mistaken.

2282. Did he point out the vacant spaces in the crib that was taken down?—No. He might have pointed out one or two, perhaps.

2283. There were no large holes in the crib?—No, there was no large hole there, that you would not expect from broken stone. Of course there were some holes.

2284. Mr. Thompson said that when he found fault with the filling of the cribs, you found fault with the design?—Oh, no; he is mistaken there. I might have said that—

2285. The question was put in this way: "Now the engineer was there, I suppose, the assistant engineer, at this time?—A. At that particular moment? Q. Mr. Crawford?—A. He might have been. I don't know. He was beside me as it were. Q. Was he on the works?—A. Oh, yes, he was on the works. Q. What explanation did he give of the crib-work and the other matters you have spoken of?—A. As regards the crib-work, everyone—when I say everyone, the contractors and Mr. Crawford—found fault with the design. They said that they thought that the difficulty arose in a great measure from not having longitudinal ties in this crib-work." Did you say that?—Well, I dare say I thought it would be better; I will admit that.

2286. So that when Mr. Thompson complained to you that the cribs were improperly filled you denied that assertion and said the crib-work was faulty in designs.—I said it might have been improved by that.

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2287. In what position were the ties placed in the crib? Were they on the top of one another?—Yes.

2288. In pockets?—In pockets.

2289. They were not irregular?—They were not irregular.

2290. They were running up and down?—Running up and down.

2291. Don't you think that is the most improved way of having cribs properly filled?—Yes, it is a very good way to fill cribs.

2292. Is not a crib of that design more easily more easily than one where the ties are placed promiscuously?—Yes, of course.

2293. So that there are really pockets in the crib-work?—Yes.

2294. Was there any difficulty in filling the pockets?—No.

2295. Were there complaints about them being improperly filled?—I don't know.

2296a. Do you think that the material was frozen when they were filled?—There was some little, there was some.

2296. There was some frozen material. Much?—No, not very much.

2297. Was there enough of it frozen to leave a space when the frost left the cribs?—No, I do not think so. I think there was only the seams between the—

2298. At page 5 of the evidence taken at the last meeting of the committee, Mr. Thompson was asked, "Then what you say to the committee is this: That the assistant engineer in defiance of your orders, put that in—allowed it to be put in?—Well, that would be making a direct charge of something very wrong.

2299. Well, it was very wrong?—I would not like to make that charge, that that material was put in. I would be more inclined to say it was a matter of neglect rather than a matter of wilful misdoing."—But he did not give any orders about it. It was all done,

2300. Well, he says he was present with the minister and with you when this crib-work was taken down and he complained to you?—There was one piece taken down when he was there.

By Mr. Davies :

2301. He says he called attention to the fact "That the filling was not properly done. The spaces between the timbers should have been thoroughly packed in with stone. Instead of that it was to be seen that larger stones had been thrown in which had fallen in all sorts of shapes, and there were large interstices; that there was a good deal of clay that had been adhering to the stone when it was frozen that had melted and left large voids, and in making the excavation to ascertain how it was filled in we came upon ice in several places. Q. You came upon ice?—A. Yes. Q. Thrown in?—A. Some of it appeared to have ice that was thrown in and some of it might have been ice that was formed on it, that had made its way under the crib and formed there."—A. That was the only ice that I saw there. Water underneath the crib had frozen up, and there was ice there, a little, we saw.

By Mr. Gibson :

2302. Well, Mr. Crawford, was the nature of the material such that in the winter time you could not discern whether it was solid ice or rock?—Well, it was hard to separate those seams from the rock.

2303. It was hard to separate them? If you had any doubt, why allow it to be put in?—I don't know. I did not consider it at all harmful.

2304. You did not consider it at all harmful, and yet when the crib-work was taken down you had pointed out to you large voids in the crib, by Mr. Thompson?—Pardon me. I differ with him there. There were not large voids.

2305. Were there any voids?—There were voids that you will get in any crib that is filled with stone. Unless you hand pack your stone, you will get voids.

2306. Should not that crib have been hand-packed?—No; I don't think so.

By Mr. Haggart :

2307. Did you ever know in your life a crib on any other work hand packed?—No; I never did.

By Mr. Gibson :

2308. Were the cribs sufficiently strong?—Yes; I think I thought they were, but I think they would have been improved. Afterwards we found out more than we did at first. I did not think they were too light at first, but that weight of material was too much for them.

2309. Experience showed you, Mr. Crawford, when the cribs were built, and they were bulged out that they were not sufficiently strong?—Well, yes, experience showed that they were not sufficiently strong in some places.

2310. Do you think it was the improper filling that caused the bulging?—No.

2311. Do you mean to say to the Committee, Mr. Crawford, that if that had been properly filled, it would still have been bulged?—I say they were properly filled.

2312. Then what reason have you to give for them bulging?—Wet material behind.

2313. Then, in other words, they were not strong enough?—Well, with that wet material, I think they were not strong enough. We did not know that that would turn out that way.

2314. When the piece was taken down and rebuilt again, how much larger was the piece you put back again?—It was not any larger. We took down only 205 lineal feet.

2315. 205 lineal feet you took down?—Yes.

2316. And did you build it up the same size again?—I do not think it was much increased.

2317. Now, Mr. Crawford, did you build it the same size as it was before, yes or no?—I do not remember. I think it was built the same size.

2318. You think it was the same size, are you sure of that?—I am not.

2319. Would it be a surprise to you if I were to tell you that you made it larger?—I have heard you say so, but I do not agree. I would have to look it up and see. I could easily find it out.

2320. Mr. Thompson said it was built larger?—I think not. I do not think it was built larger.

2321. You then say most positively that the crib was not built larger?—No; I say I do not think it was.

2322. Well, if it was not built larger, why did you expect it to stand any better than the other?—Well, you see, the material behind was dryer then than when we put it in; it had drained off.

2323. The material was dryer?—It was not put in in the winter, it was done after.

2324. It was not put in in the winter, but it was the same material put back in again?—Yes.

2325. Well do you expect it will stand?—Oh yes.

2326. So you took no precautions to make the cribs any larger than they were before?—They were built in instead of with steps. They were built up higher. The back was built up higher and that gave greater weight to the crib.

2327. So you put in a heavier crib?—Yes, it was heavier.

2328. I thought you told me you did not make them any larger?—No deeper. I thought you said we added depth to them.

2329. You did strengthen your crib?—We added weight to the crib.

2330. Why did you add weight to it?—So as to keep it from bulging out again.

2331. Did that strengthen the crib?—Yes.

2332. It strengthened the crib of course. Why did you do that?—To strengthen it.

2333. That was the reason. Then you thought that the other cribs were too light, or you would not have added to these?—At that place it required a stronger crib.

2334. How far up from the end of the lock was this placed?—They varied. There were three or four places. If you will allow me I will read a report that I made.

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By Mr. Davies :

2335. Excuse me, is that a report made after the crib had bulged and you had fixed it?—Yes, that is a report to Mr. Keefer who was up there.

The CHAIRMAN—Is it before the Committee?

Mr. DAVIES—Mr. Keefer's report is, but Mr. Crawford's report to him is not.

Witness then read the following :—

“ SAULT STE. MARIE CANAL.

“ SAULT STE. MARIE, 19th September, 1894.

“ T. C. KEEFER, Esq.,

“ Ottawa.

“ DEAR SIR,—In reply to your questions regarding the movement in the Timber Revetment Walls of this Canal, I send you the following information :—

“ 1st. The percentage of length of crib-work on each side which showed no movement at all?—On the north side 30 per cent moved and 70 did not, and on the south side 16 per cent moved and 84 per cent showed no motion.

“ 2nd. The length taken down and rebuilt as crib-work?—Two hundred and five lineal feet or $4\frac{1}{2}$ per cent was taken down and rebuilt as crib-work.

“ 3rd. The length taken down and rebuilt as wall?—Two hundred and eighty-two lineal feet or 6 per cent of crib-work.

“ In addition to these 570 feet or $12\frac{1}{2}$ per cent of the crib-work showed motion and was propped up with shores, and the space between them filled in with concrete.

“ 4th. The date when crib-work above lock was begun?—31st October, 1893.

“ 5th. The date when crib-work above lock was completed?—2nd June, 1894.

“ 6th. The date when first failure showed itself?—May 1894.

“ 7th. Extent of greatest movement of crib on rock?—None.

“ 8th. Extent of greatest movement of crib in centre, that is the bulge?—As nearly as can be ascertained this was about $2\frac{1}{2}$ to 3 feet, and, in nearly all cases, before the wall was built on the crib, but it was impossible to keep such a record as seems desirable, after the event. No movement was anticipated and therefore the necessary preliminary arrangements were not made in time. The staff was exceedingly small and a great deal of other work in many places required immediate and constant attention to keep up with the rapid progress of the works. The banks were new and settling, therefore fixed points could not easily be formed at suitable places, and the distances were great, and it was difficult to get accurate measurements, besides which there were innumerable obstacles, such as derricks, &c., in the way.

“ The main point was to stop the movement and be sure it had ceased ; and to do this work took all the available force.

“ 9th. The extent in length of crib-work put in place before prism in front was excavated?

“ The excavation for the prism was taken out to full width (including crib-work foundations, and depth required for deepening canal from upper end of lock (Sta. 65) to about Sta. 70, as this was the prism originally and excavated wider than required when lock was lengthened. From this point to the swing bridge (Sta. 80) the material overlying the rock was stripped off the whole width including crib foundations and a gullet some 30 or 40 feet from the face of the south side was driven through the rock to the full depth of the canal to get a face to take out the rest of the excavation to advantage. Above the bridge wide gullets were taken out to the surface of sound rock on either side, except for a couple of hundred feet, partly with carts and partly with derricks, to allow the crib-work to be built and filled from the excavation and the centre was left in partly because there was some delay in getting through the swing bridge trestle, but principally because the rock was exceptionally good and reserved for building the wall. This question should therefore be answered Sta. 70 to 88 or 1,800 ft. on each side.

“ 10th. To what extent did crib-work move before it was raised to full height and filled?

“ 115 feet of crib west of the bridge and on the north side of canal was built, but could not be filled for some little time, as there was no derrick handy, and was moved

out by the wet quicksand behind it. It was then taken down, rebuilt and filled and there has been no further movement.

“And did any begin to move when first filled in behind?—There was no noticeable movement from filling in behind the crib at any place.

“11th. What space was left between crib-work and bank generally for filling?

“No more than sufficient to put the crib in place with as steep a slope behind it as possible to avoid unnecessary excavation.

“12th. What proportion gave way when there was no spoil bank behind?

“74 per cent of the crib-work which moved had no spoil bank behind, and 26 per cent had a spoil bank from 25 to 30 feet from the face of crib.

“I am strongly of opinion that the cause of the bulging of the cribs was the wet spongy quicksand which was formed in places behind, and at the time of construction was more or less frozen and therefore caused comparatively little apprehension, but when it thawed out there was not sufficient weight to resist the strain; that the spoil banks being placed on good solid ground and sufficiently far back had no injurious effect on the crib; that the crib was well and solidly filled, and the little snow and frozen material which necessarily got in did no harm whatever, and the few large stones put in gave greater weight and therefore were rather a benefit than otherwise.

“Yours truly,

(Sd.) “WILLIAM CRAWFORD,

“*Resident Engineer.*”

There is another one to Mr. Schreiber.

By Mr. Davies :

2336. Was that when Mr. Keefer was up making his examination?—That was before, when I was instructed to look into some complaints.

2337. Was it after Mr. Keefer went up, or before?—It was before, 27th August.

Mr. DAVIES.—That is in already. It is addressed by the witness to Mr. Schreiber on the 27th August. It is put in already. That is before Mr. Keefer and the other men went down.

By Mr. Gibson :

2338. You state in this report of yours, Mr. Crawford, that on the north side there was 30 per cent that moved and 70 per cent that did not, and on the south side 16 per cent moved and 80 per cent showed no motion. Did you build no more bracing than 30 per cent on the north side?—Yes. On the north side we built more than that. It was not bracing, it was more, we put concrete in front of the rock to face the rock and to keep it from being washed out, but of bracing we did not put any more than 30 per cent.

2339. And what kept the concrete up where you did not brace it?—We put little sticks—they were not regular braces—they were put up against it and filled in between. It faced the rock and kept the rock from being washed out.

2340. So you did not brace any more than 30 per cent on the north side?—No.

2341. Are you sure of that?—I am sure of that.

2342. And how many feet did you do on the south side? Any more than 16 per cent.?—Yes, I am sure we did not brace. Well perhaps—I could not tell that, I could not answer that question at present. I would have to look that up.

2343. Have you not got the measurements?—I have.

2344. Have you got them here?—I have not.

2345. Did you not bring some of the measurements here?—I have some at the hotel, I can get them.

2346. You had better get them for the next meeting. You had better get some of the exact measurements, because you say you only did a small percentage of shoring on the north side, not more than 30 per cent.

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By Mr. Haggart :

2347. Have you not cross sections of the whole of the cribbing from one end to the other?—Yes. (Witness produces cross sections of canal as finished).

By Mr Gibson :

2348. Is that showing the bracing?—It shows the cross section. Here is the whole thing.

2349. Well, that gives me measurements?—Yes, these are the measurements. These are the regular stations, every 25 feet between them.

2350. Give the stations that are there, that are braced.—That are braced?

2351. Yes.—I have those stations down—I would prefer if you would let me wait until after I can give the stations.

2352. You will give us a statement by the next sitting of the committee? Have it made up. You will be able to give us the cost, will you?—The cost of this?

2353. The cost of the shoring, of the filling?—An approximate, yes.

2354. I would like to get the number of yards of concrete and the number of pieces of timber approximately, that were used. You heard Mr. Ryan's explanation about the random-coursed masonry at the entrance to the lock?—Yes.

2355. You heard him state that that specification did not apply?—Please say to the committee whether that specification applies to this class of work or not?—There is an agreement—another agreement that that wall was built from. A letter.

2356. Where is it?

Witness institutes a search amongst the files of papers before the committee.

2357. Have you found the agreement?—No, I have not. There is no agreement, Mr. Schreiber says.

2358. You did not find the agreement?—No, I did not.

2359. There is no agreement, then? Do you know if there is one?—No, I do not.

2360. Was there an agreement?—I was under the impression that there was a letter.

2361. You were under the impression that there was an agreement?—I am wrong. It was not an agreement; it was a letter.

2362. From whom?—Mr Schreiber to Mr. Haggart.

2363. A letter from Mr. Schreiber to Mr. Haggart?—Yes.

2364. What did that letter state?—It stated—

By Mr. Davies :

2365. Where is the letter or the agreement?—It is not an agreement; I was wrong. There was a letter, of which I have a copy.

2366. You have a copy of the letter, you say?—I have a copy of the letter.

By Mr. Gibson :

2367. Was the letter sent to you officially from Mr. Schreiber for your guidance? I suppose so. I don't know how I got it now.

2368. Was it a letter from Mr. Schreiber to yourself?—I had rather produce the paper and then I could tell.

2369. Have you got it with you?—I have it down at the hotel.

By Mr. Davies :

2370. Did you act on that letter?—Yes.

By Mr. Gibson :

2371. From your impression that letter gave you the power to build this class of work instead of random-coursed work?—It was called random-coursed masonry just the same, and I thought that was random-coursed masonry.

2372. What directions did it give you about changing the class of work?—I don't consider it a change at all.

2373. You don't consider it a change at all?—I thought it was random-coursed masonry—that was the wall being put up. I think so still.

2374. So you returned the quantities every month at contract prices?—At contract prices.

2375. You were not aware perhaps that change was made in the price?—Oh, yes, that was at the price mentioned in this letter.

2376. Who made that change?—Well, I must have the letter.

2377. You must have the letter. Well, there must have been some misunderstanding about the class of work or there would not have been a reduction made in the price?—I cannot answer without seeing the letter.

Mr. HAGGART—If I remember the matter, it is simply this: The contractor was claiming \$7.50 and I objected to the price on the ground that he was not entitled to it, and he was instructed to classify it under another classification.

By Mr. Gibson:

2378. I suppose, Mr. Crawford, as resident engineer?—I am wrong in calling that an agreement.

By Mr. Davies:

2379. You now call it a letter of instructions from Mr. Schreiber?—Yes.

2380. It was under that letter of instructions this wall was built?—No, I can show you the letter.

2381. You say the wall was not built under the agreement as it appears in the specification?—No; it was built according to that specification.

2382. Well, you stated a moment ago it was not; then it was an error?—I was in error.

2383. You were in error in stating that the wall was not built under this agreement and specification?—Certainly.

2384. Then the wall was built under this agreement and specification?—Yes.

By Mr. Gibson:

2385. You were furnished with a copy, a detailed copy of the original contract?—Yes.

2386. Setting forth the various prices, to which you were to attach the quantities, and money out the amount due to the contractors every month?—Yes.

2387. Under No. 13 "Revetment wall along the sides of the canal, if formed of stone from the excavation," the contractor was to be paid \$3 a yard?—Yes.

2388. "Revetment walls alongside of the canal, if formed from stone procured from a distance" ?—\$6.

2389. These were to be dry walls?—These were to be dry walls I understood.

2390. Now, then, item 55 on the schedule, "random-coursed masonry of gray limestone laid in cement mortar where directed, \$7.50" ?—Yes.

2391. Now Mr. Crawford, you say that this random-coursed masonry was built according to a letter received by you from Mr. Schreiber?—It was built according to the specification.

2392. According to the specification?—The price was changed in that letter.

2393. Can you give us the changed specification?—It is not a changed specification. There is no change in the specification. The price was changed.

2394. Do you mean to say that this work was built according to that specification?—Yes.

2395. You do?—Yes.

2396. Read that specification, please.—Witness then read the following:—

"*Side Walls.*—In case the rock through which the canal is formed proves to be of a sound and durable nature, walls are to be built to raise the side to the required height. 3 feet over highest known water line, proper seats for which must be prepared by the

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removal from the space to be occupied by them, of all earth, muck, clay, sand, gravel, and loose stone down to the solid rock and placing them in spoil banks. For this work the contract rate for excavation on the section, corresponding to the position of the work done, will be allowed.

“ The walls must be built of large sized, flat-bedded well-shaped stones, not less than 9 inches thick, laid on their natural beds, of approved gray limestone, or an accepted quality of sound, close grained, durable sandstone. They are to be of random-coursed work $2\frac{1}{2}$ feet wide on top increasing downwards on the face side at the rate of $2\frac{1}{2}$ inches to the foot and on the rear side increase at the rate of 3 inches to the foot for the first five feet from the top, thence downward, the back is to be plumb.

“ The front stones are to be laid at right angles to the face, which must be hammered, scabbled, picked or pointed off before being brought on to the walls, so that, when laid, no projection shall exceed 2 inches beyond the pitched lines at the joints. All the stones must be properly bonded over and with each other in the heart of the wall, as well as in the front and rear side ; and in every course there must be headers of at least 3 feet depth of bed not more than 7 feet apart.

“ If the stones used for the walls are of a class that cannot be readily hammered or dressed into shape, an oblique timber may be bolted on to the rock of such a height on the front side and properly filled in the rear as will give the top of the first course of stone the required inclination and the face the proposed batter. The coping stones must be of the full width of the top of the wall ($2\frac{1}{2}$ feet) increasing in width downwards to the batter on both sides in pieces of at least 9 inches thick on the face side and sufficiently thick on the rear that, with ordinary joints without spalls, the top will be level.”

2397. Was that specification carried out ?—I think so.

2398. Will you look on that photograph and tell the committee if that stone is properly bonded according to random-coursed masonry ?—I think it is properly bonded. (After examining Exhibit “ 5 ” at a point on the photograph indicated by Mr. Gibson.)

2399. According to the specification ?—I think so.

2400. Are you sure, Mr. Crawford ?—I am sure, I think so.

2401. Do you notice there are some two or three feet without a bond in it at all, right there (again indicating the spot on the photograph). Is that properly bonded according to the specification ?—I think that is well bonded.

2402. Is that properly bonded according to the specification. Look at the specification ?—(After examining specification). I think so. I think that wall was built according to the specification.

2403. Were the stones hammer dressed ?—No.

2404. They were not hammer dressed. Did not the specification call for hammer dressed ?—No.

2405. Read that and see if you find it there (handing witness the specification), Does not the specification, which you read, distinctly state that the stone shall be laid at right angles to the face, which must be hammered, scabbled, picked or pointed off before being brought on to the walls ? Does it or does it not ?—Yes, it does call for it.

2406. But the work was not done that way ?—It was not exactly carried out that way, according to the letter of the law.

2407. Now, Mr. Crawford, would not you call that good rubble work ?—No ; I would not.

2408. Would you call it bad random-coursed work ?—It is a good wall.

2409. That is not the question. Is it good random-coursed work ?—I think it is a good random-coursed wall.

2410. Did you ever see anything worse done in the shape of random-coursed work ?—I do not want to see much better.

2411. Did you ever see any better ?—Yes ; perhaps in the buildings here. You might call that random-coursed work.

2412. Is it as well done as that revetment wall in front of the Parliament buildings steps ?—That is random-coursed work too, but it is fancy work. Random-coursed is an indefinite term that applies to many kinds of masonry.

2413. Then as it was an indefinite term you let the contractors off as easily as you could?—I had the wall built according to the requirements.

2414. You had no quarrel with the contractors?—No.

2415. You were well satisfied?—I was satisfied with the wall.

2416. And that it was good enough according to the specification?—Yes.

2417. Did you read the specification to the contractor and point out that though that wall was not according to the specification it was good enough for you?—No; I thought it was a good substantial wall.

2418. Did your inspector call your attention to this class of work that was being done?—He showed me the work, yes. I went over it.

2419. Did he find any fault with it?—No.

2420. Did he say it was according to the specification?—No; I don't remember.

2421. You don't think he did? Who was your inspector, Mr. Crawford?—Robert Scott.

2422. Was he a man of experience?—Yes, a man of experience.

By Mr. Davies :

2423. Is he here?—No.

By Mr. Gibson :

2424. Where is he now?—In Perth.

Mr. HAGGART.—We had better have him at the next meeting.

By Mr. Gibson :

2425. So Mr. Scott made no complaint to you about this work?—No.

2426. Mr. Thompson found no fault with this work when he came up. (No answer).

2427. Did Mr. Thompson find any fault when he came up?—Yes, he found fault with it, but in a general sort of way.

2428. Why, in a general sort of way?—Well, he was finding fault with many things, and he found fault with it. He said it was bad; it was not random-coursed masonry.

2429. What did you say to Mr. Thompson when he found fault? Did you tell him that it was good enough?—I said if he thought it was not good enough that he ought to have it stopped—stop the work.

2430. This was during the progress of the work?—During the progress of the work.

2431. He did not offer to stop it?—No, he did not offer to stop it.

2432. Did you tell him you had special instructions from Mr. Schreiber? Did you produce this letter from Mr. Schreiber?—No. Oh, yes, there was a letter. It was not in the nature of no special instructions, they only changed the prices.

2433. What was the change made in the price?—That putting it into item 55a.

2434. You were to class it under item 55a, that is random-coursed masonry? Well what class had you it in before?—It had not been in any class.

2435. It was in no class at all? Well, why did you require to get instructions, Mr. Crawford, to put it under item 55a?—It was not in any class. It was put in 55a \$7.50. That changed the item because it was built with mortar.

2436. Because it was built with mortar it was changed from 14?—It was not changed from any because it was not in any item before.

The Committee then adjourned.

Sault Ste. Marie Canal Inquiry.

COMMITTEE ROOM, No. 49,

HOUSE OF COMMONS, 2nd July, 1895.

The committee met.

Mr. HUGH RYAN recalled and further examined.

By Mr. Lister :

2437. Mr. Ryan, you are the contractor for the lower entrance to the lock at Sault Ste. Marie?—I was one of the firm, yes.

2438. You were one of the firm?—Yes, the firm of Hugh Ryan & Company.

2439. Allan & Fleming were the contractors for the north entrance?—They were.

2440. Did you become interested in the Allan & Fleming contract in any way?—No.

2441. Did your firm?—Not as a firm.

2442. Did any member of your firm?—Not that I am aware of. In fact, I am sure of it.

2443. Did any member of your firm give you to understand that they had?—Never.

2444. And you had no interest in it either as a firm or as an individual?—None whatever.

2445. Do you claim against the government for the work of putting in the concrete to support the crib-work? Is that a part of your claim against the government?—Well, we have not any claim yet. We have not put any claim before the government or made any yet.

2446. Well, do not fence, please?—I am not fencing at all. It is not settled.

2447. Of course not, but you know perfectly well what your intended claim is against the government?—We shall expect that portion of the work to be returned in the estimates the same as any other work we did.

2448. Exactly. Then the work that was done for the purpose of supporting the crib-work will be put against the government just the same as any other work?—We expect the government to return it in the estimates and pay us for it just the same as any other work we did.

2449. Exactly, and you also expect to be paid the same way as you were paid for any other work for the so-called random-coursed masonry?—Certainly.

2450. At the price mentioned in the contract?—At the price mentioned in the contract.

2451. \$7.50 a yard?—That wall is not in the original contract. It was a wall that was built afterwards by instructions from the chief engineer.

2452. Is that to be the price that you put in?—That is to be the price, \$7.50 a yard.

2453. \$7.50 a yard. You have already told us who the members of this partnership are, Hugh Ryan, and who else?—Hugh Ryan, John Ryan, and Michael J. Haney.

2454. They were partners and contractors from the first to the last?—Quite so.

2455. Now as to the changes that were made in the lock. Were any changes made in the approach? In other words have you any claim against the government over and above the contract price, the \$299,313?—That sum was only an assumed sum. It was only an estimated sum. We are paid on schedule prices.

2456. I know that very well, but that was an estimated sum, estimated by the engineer?—Yes, before the work was begun at all.

2457. Before the work was begun at all?—Yes.

2458. And the contract was let to you upon that basis?—It was let to us on a schedule of prices.

2459. Totalling?—Presumed to total that amount.
2460. \$299,313?—Well, somewhere about that.
2461. How much is the actual charge for the work?—Up to now?
2462. Yes, for that work?—I have not got the figures, Mr. Lister.
2463. I suppose you have not the exact figures, but you can tell us pretty near.—The estimates here will show that.
2464. You and the estimates differ?—I do not think so. We have never been paid except on the estimates furnished by the engineers.
2465. I know you have not been paid, but these estimates have not been always satisfactory to you?—I do not think there has been much difference, taking a work of that kind.
2466. But they have not been always satisfactory to you?—They were never considered as final estimates, but simply as progress estimates and approximate.
2467. If they were considered as final estimates they would not be satisfactory to you?—Perhaps not quite.
2468. Now, then, I ask you, for the work that you undertook with the government to do, for \$299,000, how much is your charge against the government for that work?—Up to now?
2469. Up to its completion?—Well, it is not completed yet.
2470. It is not completed yet?—No.
2471. What has to be done?—There were 500 feet or thereabouts of additional cribbing ordered to be put in last fall on the south side of the entrance, and it is not done yet.
2472. Is it all finished with the exception of that cribbing?—I think so.
2473. You have attained the proper depth?—That is what we are told.
2474. Eh?—I think so.
2475. You are satisfied as to that?—Well, the engineers have decided that part of it.

By Mr. Haggart :

2476. The soundings are here?—They have gone over it several times to my knowledge.

By Mr. Lister :

2477. I am told, and I have read also, that the tug "Jessie" drawing 10 feet of water went aground there?—Well, I heard that.
2478. You heard that?—Yes.
2479. Well, if that is so, then the work is not finished?—Yes, that is so, if that account of it is correct, but I am told that the tug "Jessie" was nearly 100 feet out of the channel when she struck on the ground.
2480. Report says she was in the channel?—It is said she was in, but I am told by people who were there that the buoy was placed 200 feet nearer the shoal than it ought to have been, and if she went near the buoy of course she was out of the channel.
2481. Then the buoy did not indicate where the channel was?—Not at that particular point.
2482. Then, what you say as one of the contractors, is that the deepening of the approach has been finished?—We think so, yes.
2483. You think so?—Yes.
2484. Now, then, coming back to the \$299,000. I ask you again whether the amount of \$299,000 covers fully the claim against the government for that portion of Section 1?—Well, it is like this. For Section 1 our contract price is so much per cubic yard, and the work will be returned as so many cubic yards of excavation done and such an amount of cribbing done, and it will be all paid for by the schedule of prices.
2485. I know that?—And I do not think it will amount to much more than the original schedule of prices. It will not amount to much more than it was estimated, and it is a better job.

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2486. I know that it is according to a schedule of prices that it is to be paid. I know that perfectly well, but I know also that the contract was awarded to you after being worked out by the department to ascertain the figures of all the tenders. Yours being \$299,000, the contract was awarded to you on that basis. Now I want to know if the price to be paid by the government is to exceed the \$299,000?—Provided that there are not a greater number of yards than the calculation upon which they base the estimate. Of course if there are more it will amount to more. If the number of yards in the quantities is greater than the quantities we calculated on, of course it will amount to more. If the quantities were less it will amount to less.

2487. But it will not amount to less?—It will not amount to less.

2488. Oh, come now, Mr. Ryan?—We are not paid in that way, we are paid on a schedule of prices.

2489. You know what your progress estimates are, what you have received, and you expect to receive. Now, I ask you, speaking approximately, whether the \$299,000 will cover the cost?—If I had the estimates here I could tell you.

2490. Cannot you give us some idea?—I think it will come very near.

2491. Will it come within \$50,000?—Oh, less than that.

2492. Forty?—Perhaps less than that.

2493. Thirty?—Well, I won't say.

2494. You won't say it will come to less than \$30,000?—You must remember that this additional 500 feet of crib-work and the dredging connected with it has been added to it since the original estimate was made.

2495. We will get at that in a moment. Does your \$30,000 include the 500 feet of crib-work?—No, I am not to be fixed at \$30,000 at all, because I have not got the quantities, but I fancy \$30,000 would cover it.

2496. Cover the additional crib-work and the whole cost?—There will be no further cost than our prices per yard applied to the quantity of material we have moved.

2497. But I want to get you down to the \$30,000?—Well, I have not seen the figures since last year.

2498. Well, you told me a few moments ago that \$30,000 would cover the whole additional cost?—I think so now.

2499. That will cover the crib-work too?—And the crib-work too.

2500. It will cover everything?—That is my opinion. It was according to the last figures or estimates we got. Let me tell you that they have not, as far as I can tell you, made the final estimate of this work, consequently we cannot tell, until we get that final estimate, what the quantities really will be.

2501. They have been working at it since last winter?—I think they have been working on the quantities on the other section—section 2.

2502. And section 1 was yours, too?—Yes.

2503. Were they not working on both sections?—I do not think they were working on the lower section.

2504. Have you any accountants working with the government accountants?—None. We have engineers working for ourselves, not with the government engineers.

2505. Making up your own estimates?—Certainly.

2506. And the government have their engineers?—I suppose so.

2507. They have been at work since last winter?—Whom?

2508. The government engineers?—I don't know. I have not been in the office of the government engineers since last winter.

2509. Have yours been working?—Ours have been working, yes.

2510. Since when?—Last December.

2511. And they are not through yet?—Ours are about through.

2512. You have no idea what the result is?—No.

2513. None, whatever. I want to understand what the cost to the country is. Is this not going to cost \$30,000 over and above the \$299,000?—I am not to be fastened so any such thing, because I have nothing to do with it, I am only to be paid so much a yard for the material we move.

2514. How much would the crib-work be worth?—Perhaps \$14,000 or \$15,000. This is merely a guess. I cannot tell you those things right off.

2515. You have been thinking over it for weeks?—No, my dear sir, I have not. I have not thought of it since we got the instructions to have it put in.

2516. Your tender was the lowest on No. 1?—Quite so.

2517. And the next tender was \$322,000?—Yes.

2518. So, as a matter of fact, your contract will exceed the amount of his, if you get the \$30,000?—No, because his would have exceeded his original estimate in proportion as ours do. It would not have made any difference. If he had done more work he would have been paid for it.

2519. As a matter of fact the estimate made by the department, when they said \$299,000, was not a very accurate estimate?—I think they were very accurate under the circumstances.

2520. Very accurate under the circumstances?—I do.

2521. Of course, Mr. Ryan, you would think so. Now, tell me who was your book-keeper from the time you commenced this work? In 1889, was it not, you commenced?—Yes, in 1889.

2522. Who was your book-keeper during those years?—Mr. Healy.

2523. Where is Mr. Healy?—Mr. Healy is in Toronto.

2524. In your employ still?—Yes.

2525. And the firm kept regular books, of course?—I think so.

2526. And he during all the time was the book-keeper?—During the whole time, yes.

2527. I suppose the firm kept a bank account also?—They also kept a bank account.

2528. They also kept a bank account, of course with proper bank books? And the books of the concern, where are they?—They are in Toronto.

2529. At your office?—Yes.

2530. The office of the firm in Toronto?—Yes.

2531. And can be produced if necessary?—I suppose so.

2532. Were you much on the work yourself?—Well, the work—the organization was like this: I did the whole of the outside work, practically, that is the purchasing of supplies and everything connected with the getting of supplies, material, and all that. My brother attended to getting the face stone principally. Mr. Haney took more particular charge of the work, but I was there off and on for two or three weeks at a time, and sometimes I was not there for more than three or four days.

2533. How long were you working on the job before it became necessary to have a departure from the original plan, before that scheme began to be worked up?—We commenced you know in the spring of 1889.

2534. And I think it was in 1890 that the first change was suggested.

2535. In 1890 the first change was suggested?—I think so.

2536. I observe from the papers that Sir Frank Smith and Sir William Van Horne and the Toronto Board of Trade urged upon the Government the propriety of changing the lock from the size provided for in the contract to a greater size?—I think they did; but the first suggestion that was made in connection with it that I have any recollection or knowledge of, was made in the *Toronto Globe*.

2537. Yes?—And then afterwards an article appeared in the *Montreal Gazette*. Then I think the Board of Trade at Toronto took it up to some extent and the Board of Trade in Montreal, I understand.

2538. Of course you had nothing to do with any of these things or you did not suggest it yourself to anybody?—I did not suggest nor write an article nor anything else.

2539. But did you not talk with people about having it done?—If I did talk with anybody about having it done I said it was the proper thing to do.

2540. That is all I want to know. I do not want to know anything else. I simply want to get at the fact if the contractor did not speak to people about having these changes made?—Yes, I did.

2541. Who did you talk to?—I talked to Sir Frank Smith.

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2542. Yes, I thought so?—And to Mr., now Sir, Mackenzie Bowell, but not about any change we were interested in.

2543. Of course you were not interested, but you know changes are the contractors, opportunities?—It did not make a bit of difference. The change I suggested—the one that I suggested to them, was to change the shape of the lock from the width of 85 to 100 feet and 65 feet wide gates to make the gates the same width as the prism, and I had very good reasons for making the suggestions.

2544. No doubt?—Not of the nature you insinuate, because it did not make a bit of difference to me.

2545. You know the breaking of a contract makes a great deal of difference to a contractor?—It did not in that case, and, I tell you further: Those suggestions were made during the conversations I had with the American engineers on the other side of the river, and with Mr. Wheeler especially, who had been on the construction of the American lock, and who had been the superintending engineer from the time it was opened until then.

2546. Then it was the American engineers who suggested the changes to you?

Mr. HAGGART—Let him finish.

WITNESS—Mr. Wheeler said to me, it was a great pity for our people to go on and construct their lock on the same plan and design as the American lock was constructed; that the design of their lock was a mistake and the only one of the kind he knew of or heard of anywhere. I watched the working of their vessels through their lock and I saw what Mr. Wheeler had said was, to my mind, quite correct, and consequently I felt it was well to let our people know it.

2547. So, then, you let your people know that a change was desirable?—Yes.

2548. They would be building more canals than the Americans had in the last forty years, but you thought the American suggestions were the better ones?—We had no lock built in the last forty years or any other number of years; there was no design like it in the world.

2549. That it not of much consequence. At all events, what the engineer told you, Mr. Ryan, caused you to talk to somebody else?—That is right, sir.

2550. And that somebody else was Sir Frank Smith?—Sir Frank Smith, who was then, I think, Acting Minister of Public Works.

By Mr. Haggart :

2551. Minister of Railways and Canals?—No; of Public Works. And I happened to come down here, and saw him at the hotel on the evening of my arrival, and talked the matter over with him; and then he talked it over with Mr. Bowell; and they came to the conclusion they would go up and see the work for themselves, and they did so.

2552. Then Sir Frank wrote a letter?—Perhaps he may have.

2553. Did you not know that?—I did not know it.

2554. He never told you?—No.

2555. And you never knew it?—Not till I heard it spoken of the other day.

2556. Did you talk with Mr. Van Horne?—Very little. I had a talk with Mr. Van Horne about the deepening, not the widening.

2556a. About what?—About making the lock the same depth as the American lock.

2557. Exactly; and Mr. Van Horne wrote a letter?—I did not know that.

2558. He never told you that?—No.

2559. Did you talk to any members of the Toronto Board of Trade?—I may have; yes.

2560. Did you?—I think so.

2561. Who?—Really, I cannot recollect. I think Mr. A. M. Smith—the late Mr. A. M. Smith—was one. He was then president of the marine section of the Board of Trade; and I may tell you that whoever I spoke to or heard speak about it, they all agreed that the canal should be deepened.

2562. Was that the first change?—That was the first change.

2563. Then about the second change?—The second change to the 900 feet lock?

2564. Yes.—I think that change was made principally by Mr. Trudeau, the chief engineer at the time.

2565. Now, Mr. Ryan, do you tell the committee that you never talked with Sir Frank Smith about that change?—I never said a word to any one about that change till I saw the plan in Mr. Trudeau's office.

2566. You never had any conversation with any one about that change?—Not until it was decided.

2567. These letters from Sir William Van Horne and Sir Frank Smith happen to be about that change?—I do not know anything about that. I said nothing more to ministers than what I said at the time I told you of.

2568. The letter of Sir Frank Smith is about the change to 900 feet, and that of Sir William Van Horne is also about the change to 900 feet, with a depth of 20 feet 2 on the mitre sill?—Not at my suggestion.

2569. Then your suggestion was as regards the smaller change?—My suggestion was as regards making the lock chambers the same width as the gate, or the gates the same width as the chambers.

2570. Was that adopted?—Yes, it was adopted and it is a much better lock than it would have been otherwise.

2571. Certainly it is, and the second change was not suggested at all by you?—No.

2572. So Sir Frank Smith's letter does not refer to the first change, and you say that Sir William Van Horne's letter does not refer to the first change? Both letters refer to the second change?—I do not think there was any necessity for them writing letters as to the first change. They went over the ground and saw for themselves, and went over on the American side and had a conversation with the Mr. Wheeler I told you about, and he advised them to have the change made at whatever cost.

2573. That was the first change?—That was the first change.

2574. So that when one change was made, it made little difference? The contract was broken?—It was like this: Senator Ferguson, who knows about locks, and Mr. Trudeau were with them; when they were there they decided to make our lock 650 feet long and 100 feet wide, the same as the American. After they got back home Mr. Trudeau had doubts about the advisability of making the lock 100 feet wide and gates 100 feet wide, so he changed the design, and instead of making the lock 100 feet wide and 650 feet long he made it 900 feet long and 60 feet wide.

2575. Now, was Mr. Perley in the department at the time you made this contract?—Perhaps he was.

2576. At the time the estimates were made?—Well, it may be.

By Mr. Haggart :

2577. Mr. Perley was not in the Department of Railways and Canals at all?—No, no, he was in the Public Works Department.

By Mr. Lister :

2578. He was not in the Railways and Canals?—He was never there that I know of. I may be permitted perhaps to say that Mr. Wheeler said to me on more than one occasion that the present design of the Sault Ste. Marie lock is by far the best design of any that was got out, and a better design than the one they had adopted for their own. He was quite open about it.

2579. Mr. Crawford, I believe, was the Assistant Engineer at the commencement of the work?—Mr. Crawford was there before we went there.

2580. And he has been there ever since?—Yes.

2581. Part of the time as assistant and part of the time as engineer in charge?—I suppose that would be the way.

2582. Mr. Thompson was there for about a year or more?—I think he was there more than a year. He came there in the spring of 1889 and I think he left in the early part of 1891. He had moved his family away, but he was back and forth all the time.

2583. Yes, occasionally. Did you and he have any trouble?—Nothing special.

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2584. You made no complaint?—About these estimates?

2585. Made them where?—Here.

2586. To the chief engineer?—Yes.

2587. Were these complaints in writing?—No.

2588. How were they made, verbally?—They were made in this way: I would walk into the engineer's office and I would tell him I thought the estimates were not what they ought to be. He would ask me in what particular, and I would tell him. In one or two instances we got relief.

2589. That is to say, Mr. Thompson did not estimate you as you thought you ought to be estimated?—Not on all the works. It was particularly on the quantity of stone delivered.

2590. How often did you make these complaints?—Perhaps two or three different times.

2591. Two or three different times. That would be within a year?—From now?

2592. No, from the time you commenced the work?—More than a year had elapsed before we had any occasion to make complaints, but all the complaints we made were made within one year.

2593. All the complaints you made were made within one year?—I think so, but I do not carry all these dates in my head. I am pretty well satisfied that is the case.

2594. You complained two or three times?—We got the estimates changed twice.

By Mr. Haggart:

2595. What were the complaints made about?—The quantities of stone, and the price allowed for this stone.

2596. That is your progress estimates?—Quite so.

By Mr. Lister:

2597. The complaints were about the quantities and prices for stone. Is that the only matter you had complaints about?—That is the only matter I remember having complaints about.

2598. Did you complain to the chief engineer or to the minister?—We complained once to Mr. Trudeau, and he changed the figures about the time that he was leaving. We had been making some complaints against the advances, which were not what they ought to have been. These were merely advances on account of material delivered. Mr. Schreiber came upon the ground where Mr. Thompson was. He saw the material delivered, the quantity and condition it was in, and he made a further advance.

2599. Well, then, there were only two complaints made?—Practically there were only those two complaints made.

2600. At all events the result of two complaints was that you got your estimates increased?—Excuse me, that is not a fair way of putting it.

2601. You got the price increased, the total amount increased, and the total quantity was increased?—No.

2602. Well, let us hear what you have got to say about it?—We claimed we had 20,000 yards of stone for that work. Mr. Thompson would call it 10,000 or 12,000. Mr. Thompson would say we were entitled to \$4 a yard. We claimed \$8 for the stone delivered on the ground.

2603. Was the stone cut or uncut?—Oh, uncut. These were faced stone. For the cut stone we claimed more.

2604. You claimed more than Mr. Thompson would allow?—Mr. Thompson would not allow it to us. Then it was we appealed to Mr. Trudeau. Mr. Trudeau advanced it to very nearly what we claimed.

2605. Is not that what I said?—No.

2606. Did I not say the quantity of stone was not sufficient according to your view of it and you got it increased?—Those are not the words, but it has the same meaning, I suppose.

2607. You wanted an estimate for so much stone and Mr. Thompson would only give you a smaller quantity?—Precisely.

2608. It was the same with the prices. You wanted a higher price than Mr. Thompson would allow, and you got it?—That would be an advance.

By Mr. Haggart :

2609. Did it make a cent's difference in the final prices or in the amount you received whether you got twice the value in the way of an advance?—Not at all.

By Mr. Lister :

2610. What I say is that the difference between you and the engineer was that he had not estimated you for the quantity you claimed you ought to have been estimated for and the price you claimed you ought to have been estimated for?—That is right.

2611. It makes no difference what the ultimate result and the consequence of all this was. You made complaints to the department?—That is so.

2612. And the result of these complaints was that Mr. Thompson went to St. Catharines?—I do not know anything about that. I cannot tell at all.

2613. But you know the fact that he did go to St. Catharines?—I know the fact that Mr. Thompson was going to St. Catharines, especially after Mr. Page's death, that he was going to St. Catharines all the time more or less.

2614. All I want to know is the fact that Thompson did go to St. Catharines?—That is correct.

2615. And Crawford was left in charge of the work?—I suppose so.

2616. You know that?—We took instructions from him.

2617. Did you make any complaints about him?—About his estimates?

2618. Yes?—No, the matter was all settled then. The stone was all used and put in the wall.

2619. There were other matters involving estimates?—Only the quantities.

2620. You had no complaints about quantities after Crawford assumed charge?—We had never any complaint about quantities excepting this material delivered. That question did not arise after Mr. Thompson left. Besides, the previous settlement had fixed it.

2621. I say no complaints were made, no matter whether they were justified or not? No complaints were made after Thompson left?—We made 1.0 complaints against Mr. Crawford.

2622. You made no complaints?—No.

2623. And so far as the suggestion of changes is concerned, you say you never made any suggestion except on the first charge?—The first charge embodied all the suggestions that I made.

2624. Of course, Mr. Ryan, you know that when the contract was once departed from there was virtually no contract?—Is that so, I am glad to hear it.

2625. Did you know that?—I did not.

2626. You do not know anything about extras?—We have no claim. I do not know what you call extras.

2627. You have no extras in this at all?—I do not know what you call extras.

2628. Do you not?—No.

2629. Now, Mr. Ryan, as a contractor for many years, do you mean to tell me you do not know what extras are?—There is that 500 feet additional. Do you call that an extra?

2630. Yes?—Well, then, I claim to be paid for it.

2631. Then the concrete was an extra, putting it to support the crib?—Well it was ordered to be put in and we put it in as part of the work.

2632. And you are going to collect pay for it?—We are going to be paid for it. We were instructed to put it there and we did it, so we expect to be paid for it.

2633. Although you did not build the crib-work according to contract?—Yes, we did build the crib-work according to contract.

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2634. You put it in by hand?—We had no contract to put it in by hand.
2635. You just dumped it in?—Our contract was to fill them with stone and we did so.
2636. Not hand packed at all?—No.
2637. Was it not to be hand packed?—We did it by instructions and under the superintendence of the engineers and inspectors.
2638. You say your contract does not provide for hand packing?—No, that is what I claim.
2639. The crib-work on the prism?—On the prism, yes.
2640. Does it provide for it on the approaches?—I think it does.
2641. Was that hand packed?—You could not hand pack it all because a great deal of it was put in in 18 or 20 feet of water.
2642. In fully 18 or 20 feet of water?—Yes.
2643. Then as a matter of fact none of it was hand packed?—The top of the crib was hand packed, but where there was no water—
2644. What do you mean by “where there was no water”? The prism of the canal?—It was filled with stone as we had agreed to do.
2645. Dumped in?—Dumped in, brought there in boxes and filled in.
2646. Was there any water when the cribs were being filled?—Oh, yes, the crib was built and stone put in to sink it to the bottom, and then it was put in on the top.
2647. Where?—At the entrance on section 1.
2648. How much have you received on this work altogether?—I really could not say just now.
2649. Can you tell us?—You mean on the two sections?
2650. On your total contract?—I think it is something over \$2,000,000.
2651. \$2,000,000?—It is above that.
2652. \$2,500,000?—Not quite so much as that, I think. However, the estimates will show.
2653. How much do you claim against the Government now?—We have no claim against the Government now.
2654. Why?—Because our quantities are not all quite done and we cannot tell anything about it till we get the final estimate.
2655. But you have made your final estimate?—We have not quite finished it.
2656. Not quite but pretty near?—We do not know until we get their final estimates.
2657. You cannot tell absolutely until you get their estimates?—We do not know until we get their final estimates whether we will claim one dollar beyond their estimates. If their estimate will give us what we are entitled to we shall not claim one cent.
2658. What does your estimate show?—We have not added it up yet. We have not put it together.
2659. Who is making out your estimates?—Our engineer, Mr. Birmingham.
2660. What is your engineer's name?—Mr. Birmingham.
2661. Is he here?—No, he is at the Sault.
2662. Birmingham?—Yes.
2663. He is your engineer?—Yes.
2664. Anybody helping him?—Oh, yes.
2665. Who?—We had Mr. Brophy here with him a good deal of the time during the winter.
2666. Who is Brophy? Is he of Ottawa?—He is Mr. John Brophy. Yes, I think he lives here now.
2667. Yes?—We had another man working at the figures. They were simply working at the figures, carrying out the calculations.
2668. Anybody else?—Yes, there was a young man we had there on the work all the time.
2669. What is his name?—Crawford.
2670. Any relation to the engineer?—Well, I cannot tell you.
2671. You had him on the work all the time? Do you know what is his christian name?—I cannot tell you, I forget for the moment.

2672. When did he go on the work?—He has been on the work for about three years.

2673. He has been on it for three years?—I may tell you he is a son of an engineer under whom I worked 25 years ago.

2674. No doubt, a very deserving man.—And I was very glad to give employment to his son.

2675. Then he has been on the work for 3 years?—Mr. Crawford? Well, I don't think it is so long as that. He was a young man merely in the office, not on the work at all, but in the office helping our book-keeper. We were overcrowded with work.

2676. The amount you have received thus far is \$2,391,352.54?—Well, I suppose that is correct.

2677. That is the amount you have received up to this time. Now, speaking approximately, will the balance due to you amount to a million dollars?—I am afraid not. In fact I will take half a million for it.

2678. You will take half a million?—Yes, bulk it right now and take my chances.

2679. You will have made how much out of the Government?—Four millions, I suppose. It did not take anything at all.

2680. You are on oath?—I beg your pardon, do not take it down.

2681. Take it down just as he says it.—Then I withdraw the statement. If you are going to put that statement down, I withdraw it.

By the Chairman :

2682. It will be well for you to remember your answers are to be taken down.—Yes, sir, if you please I will withdraw that statement. Put that question again and I will answer it.

By Mr. Lister :

2683. I asked you a few moments ago if the amount still due to you by the government would approximate a million dollars according to your calculation?—No.

2684. You told me you were willing to take half a million dollars to settle the work now?—I will stick to that.

2685. You make that offer now?—Yes.

2686. Would you be willing to take less?—Perhaps a little less, yes.

2687. A few dollars?—May be more than a few dollars.

2688. Four hundred?—I cannot tell you until I get our estimate made out, and their estimate.

2689. You would take half a million?—We would take just what is owing to us.

2690. You would take half a million?—I would take half a million.

2691. But not four hundred thousand?—Yes.

2692. You would take that much?—A. Yes.

2693. You would take three hundred thousand?—Oh, I cannot say.

2694. You do not want to say the amount?—I cannot say what I would take until we get our estimates completed.

2695. When do you expect to get your estimates?

Mr. HAGGART—Those are not fair questions to ask a contractor who has a claim against the Government.

By Mr. Lister :

2696. Did Crawford call your attention in May last to the bulging out of the crib-work?—In May last; my partner was on the ground at the time—saw it with Mr. Crawford—and there was no necessity of calling my attention to it. We both saw it at the same time.

2697. Do you know Shelletto at the American "Soo"?—I don't know.

2698. You don't know him at all?—Don't know him at all.

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2699. Well, now, Mr. Ryan, during the time that this work has been going on from the commencement up to the present, have you, individually, or has your firm or any member of your firm, to your knowledge, lent or given any money to any of the officials on the canal or anything else, or made any present to any official on the canal?—On our canal?

2700. On the Sault Canal?—Not a cent.

2701. Not a cent?—Not that I know of.

2702. Not that you know of?—No.

2703. Nothing?—I want to tell you when our inspector was appointed and I was notified—that when we were notified that he was appointed—I asked him to go down and examine the work that was then being done on the St. Lawrence Canal. As I said, “We want to make a better job, if it is possible to do it, than they are making. We have good material, the very best we can get, and we want to make it, if possible, a better job than they are making, and I wish you would see that work.” I paid his expenses going up and down, and that very much against his inclination. I had to press him to take it, although he went there at my instance and it only amounted to \$10. I said, “You must have this, because you went there at my expense and for my benefit.”

2704. What is his name?—Mr. Scott.

2705. Then, so far as you are concerned, no present was ever made by you to any official of the Government on the canal or off it?—Not one dollar.

2706. Not one dollar?—And I want to say further than that, I never gave one dollar to an engineer for any such purpose, nor to an inspector, nor to any one else.

2707. Do you know Couvrette?—I know him as a foreman.

2708. He was one of the inspectors?—He was inspector for awhile, and he would be in our employ as foreman for awhile.

2709. He would be in your employ?—Yes.

2710. Was he an inspector for the government?—He was.

2711. For how long?—Oh, I could not exactly say.

2712. And was he dismissed by the government?—Well, I really don't know. I think his services were not required as the work was drawing to a close.

2713. Well, when did he cease to be employed by the government?—Perhaps in the fall of 1893.

2714. In the fall of 1893?—And how long had he been working for the government?—Well, he was there from the time the masonry was begun or perhaps before that.

2715. As inspector for the government?—As inspector; yes.

2716. One of the inspectors? Was it part of his duty to measure the work?—Not that I know of.

2717. You don't know anything about that?—I don't think it was.

2718. Whose duty was it to measure the work?—The engineer's.

2719. Did the inspectors assist him?—Not that I know of, in fact I know nothing about their measurements, we never interfered with them.

2720. Then he ceased to be an employee of the government in 1893?—That is my recollection.

2721. And he was hired by you?—He was put on as foreman, yes. As lock foreman.

2722. Do you know where he is now?—No; I do not.

2723. Were charges made by him that there had been overmeasurements?—I know nothing about it.

2724. Had you heard of them?—I had not.

2725. Never heard of them?—Never heard he made any charges of overmeasurement.

2726. Never heard he said there had been overmeasurements?—Not that I heard at all.

2727. You never heard that at all?—Never heard he made any such charges.

2728. Did you hear he made charges about the inferiority of the work?—I heard something about it; not from him.

2729. Was that while he was working for you or for the government?—That he made those charges?

2730. Yes.—I think it was after he left the work altogether.

2731. Never made them before?—No; not that I heard of.

2732. Not that you heard of. You don't know where he is working now?—No; I do not.

2733. You have had that work in charge since 1889?—Yes; the contract was signed in 1888, in November.

2734. From that time forward, Mr. Ryan, up to the present time have you contributed to the election funds of the Dominion Government directly or indirectly in anyway?—(No answer).

Mr. FOSTER—You have no right to answer that question.

By Mr. Lister :

2735. You refuse to answer, Mr. Ryan?—I must decline to answer now, yes.

Mr. LISTER.—Very well, that will do.

By Mr. Haggart :

2736. I want to bring out more clearly about the advances that were made during the progress of the work. Did the amount that you receive on your progress estimates affect the amount of your contract to the extent of one cent?—Not one cent.

2737. The price, then, was only increased for the purpose of assisting you in carrying on the work to the extent that is done with all contractors under their contracts?—You mean the additional allowance we got on those stones?

2738. The allowance that you have got on those stones.—That is it.

2739. And it did not affect the prices that you received under the contract one bit?—Not one dollar.

2740. Not one dollar. Mr. Lister talks about the contract being broken. Was your original contract at any time changed at all by these works, by any subsequent contract?—We did not so understand it. When the changes were made, the plans for those changes were submitted to us. We submitted prices for them, and contracts were made for the work that was necessitated by that work.

2741. Your original contract, your original prices and quantities never were affected?—Not at all.

By Mr. Gibson :

2742. I want to say, Mr. Ryan, just one word about that. In reply to the minister just now you said there was no increase in the price. In the earlier part of your examination did you not admit that you got \$16 a yard for masonry?—That was work necessitated by one of the changes, not by the original contract.

2743. You say now that there was no excess paid at all?—I say the original contract prices were not affected by any of the subsequent changes.

2744. They were altered for the additional work in the subsequent changes?—Yes.

2745. Everything was increased subsequently?—Some things were not.

2746. What things were not increased?—Well, really, I have not the schedule before me.

2747. Well, I have your evidence here and the schedules. Was not the price of the unwatering increased?—Yes.

2748. And of the earth excavation?—For the increased quantity, yes.

2749. And the rock excavation?—Yes.

2750. And the timber?—Yes. We had no contract price under the original contract for timber other than for the mitre sill platform. We had no contract prices for those big culverts and everything of that sort under the original contract.

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2751. Was not the price of the timber increased from \$25 a thousand to \$45 a thousand on the culverts?—Not for the same work, nor under the same contract.

2752. You had \$25 a thousand for your mitre sills and the bottom of the lock?—I really do not remember.

2753. And then when the culverts were decided upon and the deepening of the lock you were paid \$45 a thousand?—It was not by the thousand but by the cubic foot except for the planking.

2754. At any rate there was an increase for the increased work in the things I have mentioned?—It was a new contract and we fixed prices for them.

2755. Did you not receive \$1.30 additional on concrete?—Yes.

2756. And did you not receive \$1.60 additional on your rock masonry when the length of the lock was increased to 900 feet?—We got bigger prices for the work under the later contract than under the first.

2757. On the 900 foot lock the price of your masonry was increased by \$1.60 a yard?—We got a higher price for the last work than for the first.

2758. On the subsequent masonry, when the lock was increased from 600 to 650 feet, were you not paid \$1.60 additional for this increased work?—That is right.

2759. When the lock was increased from 650 feet to 900 feet, was there not \$5 a yard added for the price of the additional work?—For that portion.

By Mr. Haggart :

2760. It is hardly worth while asking this once more because you have explained it again and again, but I wish to make it clear that the original quantities and the prices under the original contract were not increased one cent?—Not a dollar.

2761. The timber that you used for the purpose of the culverts in the lock was not provided for at all in the original contract?—No.

2762. It was intended to be iron?—That was what the specification said.

2763. It was completely changed?—Yes.

2764. Then the extra prices were for the increased work over and above your additional contract?—That is right, and I want to give the reasons for that.

2765. Yes, go over it again, you have given them before?—We increased the depth of the lock after the lock was excavated; our derricks had been removed and our plant was on other portions of the work. We had to bring all of them back again and put them in the same place for that very small quantity which had to come out.

By Mr. Lister :

2766. Small quantity?—Yes, a small quantity in the bottom. Taking two or three feet off the lock would be a small quantity and the same way in the prism. We had to take it from a deeper place and hoist it to a higher point and we got nothing more than was fair and reasonable.

By Mr. Mills (Bothwell) :

2767. Then the increased work done over and above what was originally contemplated was not paid for at the prices in the original contract?—That is right.

By Mr. Taylor :

2768. The contract for this work was let in 1888, as I understood you?—Yes.

2769. Mr. Lister asked you whether since that time you had contributed anything to election funds?—He asked me that question.

2770. And defined it to mean the Dominion elections?—That is what I understood.

2771. And you refused to answer that. I ask you, since that time have you contributed anything to election funds in the Province of Ontario?—I must decline to answer anything of that sort at all.

2772. Did you contribute anything to assist Mr. Greenway in his election?—I must decline that also.

By Mr. Gibson :

2773. I will not touch on election funds, but I want to ask you one thing. When the lock was increased to 900 feet in length, how much thicker were the walls made than before?—So much thicker in proportion to the height. They carried a certain percentage of thickness all the way through.

2774. Then you had a larger thickness in the 900 feet than in the 600 feet?—A shade.

2775. How much of a shade?—From 37 to 39 per cent of thickness. The thickness of the walls was, if I remember right, about 37 and perhaps they were changed to 39.

2776. Are you sure they are not 40?—I think not. I would not be positive, but I think not.

2777. Would not 2 per cent upon a work of that kind add very largely to the profits of the contractor without an extra price?—Not very largely. It would not add largely to the quantity even.

2778. Not on the 900 feet lock?—You know, Mr. Gibson—

2779. Well, at any rate, in spite of the increased size of the lock the Government was kind enough not only to give you that, but to give you an increased price?—They gave me the increased price on account of the wall being made higher, and consequently they had to increase the thickness. They did not do it for me, but for the stability of the work.

By Mr. Lister :

2780. One question before you go. You have not been a contractor for the local Government?—I don't think so; no.

2781. No, you go for bigger game?—Yes.

2782. Now the canal is not open yet, is it?—I really don't know I have not been up there this spring.

2783. It was to have been opened on the 1st July, 1894.—I don't think so.

2784. Was it not?—Not that I know of.

2785. Or the first of August?—Not the first of August; I don't know when it was to be opened.

2786. You don't know anything about that?—I don't think it was to be opened then.

2787. Eh?—Not under our contract.

2788. Was not the arrangement to shorten the time for completing the lock to get it open a year earlier?—Yes.

2789. It is not open yet?—It will be opened a year earlier.

2790. You would have been a year later?—No.

2791. Is it open yet?—Well, I am not aware. I don't know, but I think it is ready to be opened.

2792. Do you think it is?—Yes, I saw vessels going through it last fall.

2793. You think it is ready to be opened. Do you know anything about a leak?—No.

2794. Do you know whether it is possible to open it at all or not?—Well, it was opened last fall and closed again. We went through on the boat that went through it. The witness was then discharged from further attendance.

Mr. WILLIAM CRAWFORD was recalled and further examined.

By Mr. Gibson :

2795. Mr. Crawford, at the last meeting of the committee the question was asked you whether you could give the exact length of the walls that required to be

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braced on account of the bulging of the cribs, and you said you could not until you had brought some papers. Have you got those papers?—I did not understand you to say the exact length of the walls. I thought you said the amount of concrete.

2796. I asked you at the last meeting whether you braced any more than 30 per cent on the north side, and you said no. You were then asked, "Are you sure of that?" and the answer returned was, "I am sure of that." These questions were also asked, "And how many feet did you do on the south side," any more than 16 per cent?—Yes, I am sure we did not brace. Well, perhaps I could not tell that, I would not answer that question at present. I would have to look the matter up.

2797. Those were your answers as taken down. Now, have you looked the matter up?—I did not have a copy of that, as I thought what you asked for was the amount of the concrete put in.

2798. Can you give us the length on the north side of the canal that was braced in order to keep up, to save the cribs from crowding on to the work?—Give me that question again?

2799. Will you kindly state to the committee the length of wall that was required to be braced to prevent the cribs from bulging into the canal?—(Witness after consulting memoranda) The length of crib-work that required to be braced was 570 feet.

2800. On what side of the canal was that?—That was on both sides.

2801. Only 570 feet required bracing?—Required bracing 400 feet on the north side and 170 on the south.

2802. Did you do any more shoring than that?—Yes, we did some more on each side of a bulge; it was continued on each side.

2803. How much further than 400 feet would there be on the north side?—About 230 feet more than that.

2804. About 230 feet that was braced in addition to the 570?—Yes.

2805. Was this 230 feet done after you wrote this letter to Mr. Keefer?—Oh, no, it was not.

2806. Well, then in the letter that you wrote Mr. Keefer dated 19th September, 1894, you mentioned this 570 feet?—That required to be braced?

2807. Yes?—Yes.

2808. And you say in addition to the 570 feet you had 230 feet more?—Yes, they were extended at the bulges on either side. The bracing was carried on in case of the bulge extending.

2809. What was the greatest bulge that you had upon your cribs, Mr. Crawford?—About 3 or 4 feet.

2810. Three or four feet?—I think that was it.

2811. I notice in your report to Mr. Keefer that it was only 2½ to 3 feet?—Well, I am wrong. I am speaking from memory. I thought I had said to him 3 or 4 feet.

By Mr. Haggart :

2812. What you stated to Mr. Keefer was correct?—Yes, that was correct as far as I could get at it.

By Mr. Gibson :

2813. Was your first report to Mr. Keefer so far as bulging was concerned 2½ to 3 feet in the centre of the cribs?—Yes.

2814. The other day you stated you would look up your papers and see exactly how much stronger you rebuilt the 205 feet of crib-work and whether you made it wider or not?—I thought I told you I raised up the back of the crib-work higher and thus gave greater weight to the crib.

2815. You built the crib higher up?—Yes.

2816. But you were to tell us whether you made it any extra width or not?—I did not make it any wider.

2817. You said you stepped it?—It was stepped originally, but instead of that at these wet places where they bulged the back was carried up.

2818. Oh, the back was carried up plumb instead of being stepped?—Yes.

2819. Was not that making it wider?—Well, I do not know.

2820. In sections it was?—Yes.

2821. In sections you were making it wider?—Yes.

2822. Have you got that letter you promised to bring with you at this meeting, giving you instructions about that random-coursed masonry?—I was wrong in saying it gave me instructions. It was a letter from Mr. Schreiber to the minister about the matter. There was no instructions about it. It merely gives an opinion about this business.

By Mr. Lister :

2823. Whose opinion?—Mr. Schreiber's. It gives his opinion to the Minister about the cribs.

2824. Where is the letter? Is that it?—This is a copy of it.

2825. You had better read it?—Witness then read the following:—

“DEPARTMENT OF RAILWAYS AND CANALS,
“OTTAWA, February 10, 1893.

“DEAR MR. HAGGART,—As you are aware, a question has arisen with the contractors with regard to the building of a revetment wall along each side of the prism of the Sault Ste. Marie Canal.

“If the rock proved to be of a sound and durable nature, the revetment wall was to be of masonry built from the rock surface up to the top of the tow path, if on the other hand the rock proved to be unsound and unsuitable to rest a revetment wall of masonry upon, the revetment wall was to be of wood.

“Upon my recent visit to these works I observed that the superintending engineer, having found the rock of too shaky a character upon which to rest a masonry wall, was having it cut down to the level of the bottom of the prism of the canal for a wall 11 feet 6 inches in width at the bottom, and that a length of about 500 feet on each side of the canal had been so prepared, in fact as far as the excavation of the rock in the prism of the canal had advanced at that date.

“I was informed by the engineer in charge that a test pit had been sunk towards the western end of the prism, which showed no indication of a more solid class of rock being met with. To carry out the plan of building a masonry wall from the bottom of the canal to the top of tow path would no doubt make a neat and substantial piece of work, but it would add considerably to the cost of the canal and would not be in accordance with the specification.

“I propose that the specification shall be conformed to, by building a revetment of wood from the surface of the rock upwards to within six inches of the lowest water, topping it up with a revetment of masonry, but the contractors while admitting that the building of a revetment of wood would be according to contract, they contended there was no price in the contract for the construction of such a revetment, and that the contract and specification gave no indication of how the revetment of wood was to be built, nor was there any plan, general or special, of its construction.

“The matter was submitted to the Justice Department, who advise that there is no provision made in the schedule of prices attached to the contract for the building of a revetment of wood, and that it will be necessary to agree upon a price with the contractors.

“I have since gone into this matter with the contractors and the superintending engineer, which has resulted in the contractors making an offer of \$3.50 a cubic yard for a revetment of timber with an open back, or \$4 a cubic yard with a close back.

“The superintending engineer reports that if it is decided to build this revetment of timber, he considers the price of \$4 for the revetment with a close faced back reasonable and might be accepted. I concur in this view, and recommend its acceptance, upon the understanding that the revetment of wood will extend from the surface of the rock to within six inches of lowest water level, and from the lowest water level to the top of the tow path, a random-coursed masonry wall of gray limestone laid in cement

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mortar is to be built, which masonry under the contract is to be paid for at \$7.50 per cubic yard.

The estimated cost of the work as it was being done with masonry from the bottom of the prism of canal to the top of the tow path at \$7.50 per cubic yard.....	\$320,000 00
The estimated cost of the work with a revetment of timber from surface of rock to within six inches of lowest water level at \$4 per cubic yard, and thence masonry to top of tow path at \$7.50 per cubic yard is.....	\$160,000 00

“This latter plan, which is the one I recommend, will make a lasting, satisfactory piece of work, and such as I think you will approve.

“Faithfully yours,

(Sgd.) “COLLINGWOOD SCHREIBER,
“Chief Engineer of Canals.””

By Mr. Gibson:

2826. So, Mr. Crawford, in consequence of the character of the stone work you were obliged to build cribs right along the face of this wall?—To build cribs?

2827. In consequence of the shaky nature of the rock you were obliged to build a wooden revetment wall up to and for the purpose of carrying on the stone revetment wall?—Yes.

By Mr. Haggart:

2828. Was not the real reason to save the price?—There were other reasons.

By Mr. Gibson:

2829. Well, we will get at that by and by. Your chief engineer considered it was on account of the nature of the rock that it required a wooden revetment wall and you agreed with him?—I was not consulted.

2830. However you carried out his instructions?—Yes.

2831. And in his report or letter to the Minister he said that \$4 per cubic yard for the timber work was a fair price?—Yes.

2832. Did that include the filling?—It included the filling.

2833. And was this shaky rock put into the crib filling?—Yes.

2834. So that while it was not good enough to build upon it was good enough to put in?—It was good enough, but in this position it was not good enough for a foundation.

2835. Was it not far enough out in the channel?—It did not make a good foundation, but it was a good solid rock.

2836. Did you say this \$4 per yard included the filling?—Yes.

2837. And you filled it with the shaky rock?—We did not fill it with shaky rock, we filled it with good rock.

2838. Where did you get the good rock?—Good rock from the canal.

2839. From this very place that the chief engineer objected to build the wall upon?—He objected to it, I understood, as a foundation. The rock was good enough to fill but not to build on as it stood.

2840. Now, Mr. Crawford, in other words that rock was not compact enough to build a retaining wall on the top of it?—No, I do not think so.

2841. And in consequence the chief engineer reported to the Minister that the rock would require to be removed and the wooden revetment wall put in its place?—That is a fact.

2842. Is it not a fact?—Yes.

2843. And they built the retaining wall on the top of that?—They put the crib-work on the top of that.

2844. They built the crib-work on the top of that wall?—Yes.

2845. And it was improperly built and it bulged?—No, it did not.

2846. You stated the other day that you were present when Mr. Thompson pointed out to you the large spaces that were in the crib-work?—No, he did not point out to me large spaces in the crib-work.

2847. He said in his evidence that there were and you disputed that?—Yes.

2848. Did you take issue with him at the time?—Yes.

2849. And did he admit that you were right and say that he was wrong?—No, I said that there was nothing wrong with the large stones that went in. I had not seen anything loose in filling that crib. That is what I said.

2850. Would you read to the committee the specifications about the crib filling? Have you got them?—No.

By Mr. Haggart :

2851. Is there any specification for the filling of the upper cribs?—I think not.

MR. HAGGART—You think not. Then what is the use of hunting for one?

MR. SCHREIBER—There is.

By Mr. Gibson :

2852. You heard that the Minister says, Mr. Crawford, that there was no specification? Should there have been?

MR. HAGGART—I did not say there was no specification. I asked you to ask him if there was a specification in the first instance.

MR. GIBSON—I will ask him that.

2853. Was there a specification?—I don't think so.

2854. Do you think there ought to have been one?—I don't know.

2855. Now, Mr. Crawford, I ask you not to play with the committee. First of all you got instructions from the chief engineer.

MR. BERGIN—That is not a fair statement to make.

THE CHAIRMAN—There is an objection to your lecturing the witness or suggesting that he is not acting fairly.

By Mr. Gibson :

2856. You received instructions that this work is to be paid for at so much a yard?—Yes.

2857. You got no instructions as to how the work was to be carried out?—Yes, a plan was given.

2858. A plan was given? Is that plan here? There is vol. 1 of the papers produced before the committee, perhaps you will find the plan there. Mr. Schreiber has gone over to see if there is a specification. At all events you never saw it did you?—I don't think so.

2859. You don't think so? Do you think as an engineer it was proper to carry on the work without some instructions from the department?—Well, I think I had plenty of instructions.

2860. Well, where are they? Can you produce them here to the committee?—The plan will give all the instructions that were necessary.

2861. Oh, no, the plan only gives the shape, does it not?—The shape, but it shows that it has to be filled.

2862. The sizes?—And the sizes.

2863. Dimensions?—Yes.

2864. The size of the timber, but the plan does not say what the quality of the timber is to be, does it?—No. Well, I am not sure. I think it does. Well, no.

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2865. Did you ever make a plan and write specifications upon it?—No; but I have made many a plan and put on it what the timber is to be and what work has to be done.

2866. The size of it?—The sizes and the kinds of material and all the information wanted.

2867. On the plan?—Yes.

2868. Talking about the wane edges; would you describe whether the timber was to be sound or not sound?—As a matter of course.

2869. Would you describe it on the plan whether it was to be full of knots or anything of that kind?—No, not necessarily. But why is it necessary to say that?

2870. Because the contractor would say, "there is your plan." You asked me a question and I will answer you. The contractor would say, "I carried out the plan. I carried it out with inferior material." The specification, as I understand, it gives the specification of the work. The plan simply directs the contractor as to the style in which the work is to be carried on. Is that not your impression as an engineer?—I think the engineer sees that the work is carried out properly.

2871. But you have no instructions in regard to carrying this crib-work out?—Nothing more than that, I think.

2872. Nothing of a definite character?—I don't think so.

2873. So you allowed the crib-work to be built in this manner and it bulged?—Yes.

2874. You thought they were big enough?—Yes.

2875. And still you say that the wet material bulged them out?—At wet places, yes.

2876. At wet places. Why was the material put in wet?—It was not put in wet. Behind, it was filled with the material that was about there, and it was wet material—wet places.

2877. You stated the material was not wet and you afterwards say it was wet?—I do not say it was not wet. There were wet places along that canal and that material was frozen when it was put in and the frost came out and it became soft, spongy stuff.

2878. When the frost came out it bulged the cribs?—Yes.

2879. And should not greater care have been taken with the filling behind those cribs?—It was not expected it would turn out as bad stuff—no indications.

2880. There were no indications, so you allowed the stuff to be put in the cribs promiscuously? But you knew when the thaw took place that you had allowed the work to be carried on without proper supervision?—No, I found that there was bad material there that bulged the cribs. I did not think that it was bad supervision.

2881. Bad material bulged the crib? Well, why did you allow bad material to be used in the crib?—It turned out bad, but it looked good.

2882. Did you see it?—I saw it.

2883. And you could not tell whether it was frozen ice or frozen clay?—It was like ordinary clay.

2884. Ordinary clay pretty well frozen?—It did not appear very badly frozen.

2885. Had it been long excavated?—No, it was excavated during the winter.

2886. Excavated during the winter. Well, how did you know it was wet?—Well, it did not show wet at first. It showed wet afterwards.

2887. Now, Mr. Crawford, what class of work did you have the backing of the lock prepared of?—Of masonry.

2888. Of course, they were not built of concrete?—No, they were built of masonry.

2889. Of what size were they built?—They were large. Well, they varied a great part of them, the size where they were built of mortar. Then there were some of it built with very large stones, built in concrete.

2890. Large pieces built in concrete?—Yes.

2891. Where was the concrete used?—They were built into this concrete.

2892. Built into the centre of the wall?—No, into the backing of the wall.

2893. Did the specification allow that?—Yes.

2894. Does not the specification call for the stones to be scabbled?—That is a supplementary.

2895. Picked or pointed into good blocks. But this was not done?—Yes, that was done in great part.

2896. Where did you put the concrete in, if it was built of blocks?—In other parts.

2897. What other parts?—Other parts of the backing. There was a part of it built by that specification and part by a supplementary.

By Mr. Haggart :

2898. Is it concrete? Do you mean concrete or cement?—Yes, concrete. Large stones were built in with concrete.

2899. That is broken stone and cement?—Broken stone and cement and sand.

By Mr. Gibson :

2900. You say this was allowed, Mr. Crawford?—There was a specification allowing, an agreement allowing, the contractors to use concrete in the backing.

2901. So that the backing of the lock was not done with solid stone work?—Solid stone work? Yes. It was good masonry, built as I told you of stones on concrete.

2902. Was it built of solid concrete?—Yes, it was built of solid concrete.

2903. But not according to the original contract?—Not according to the original contract.

2904. According to a supplementary contract?—Yes, part of it was.

2905. How much of the work was done in this way?—I could not tell you now. Mr. Schreiber, I think, says in his evidence three or four hundred yards. I could not say.

2906. Was this abandoned altogether?—It went on to the end.

2907. So that instead of carrying on the work as it was originally intended you carried it on in two ways?—Yes.

2908. You carried it on by placing a piece of backing where it suited you on the wall, did you not?—Yes.

2909. If there were a space between the backing and the faced stone, what did you put in there?—Some times it was mortar and some times it was concrete.

2910. But does the specification call for that?—No.

2911. Did you ever see masonry built in that way before with a mixture of backing and concrete?—No, I cannot say that I have, but I think it is a most excellent piece of work.

2912. Oh, of course, this was an excellent piece of work, I have no doubt about that. But would it not be a more excellent piece of work if a stone had been cut to fill that space?—No, certainly not, for lock backing you could not have anything better.

2913. Solid stone is not as good as concrete, in your opinion?—For lock backing?

2914. For any kind of backing?—I think that concrete is better.

2915. Better than solid stone?—It was mixed with solid stone.

2916. I know it was mixed. It was mixed in a very improper manner was it not?—Very improper?

2917. Yes.—Certainly not.

2918. You never saw any backing done better you say? Did you ever see any on the Welland Canal done in that way?—No.

2919. Did you ever see it done anywhere else?—No.

By Mr. Haggart :

2920. Did you ever see work done on the Welland Canal as well as this?—No.

2921. Or anywhere else?—Certainly no better than this anywhere else.

By Mr. Gibson :

2922. Seeing that the Minister has departed from the Sault Ste. Marie Canal to call your attention to the Welland Canal, I will ask you what was the comparison between the prices paid on the Welland Canal and on the Sault Ste. Marie Canal for this class of work?—I could not tell you.

Sault Ste. Marie Canal Inquiry.

2923. Mr. Crawford, did you not make out some of the estimates on the Welland ?
—Yes.

2924. But you do not remember the prices of any of the locks?—It was a very hard thing, as you remember, to get hold of the prices, because there were so many prices.

2925. Did you ever hear of it being done for \$8.50 a yard?—It is many years since I looked at the prices on the Welland and I do not remember.

2926. Have you known it to be done for less than \$10 a yard?—I do not remember.

2927. It is so long ago. Still you remember that the work on the Sault is better than on the Welland?—Yes, I think it was.

2928. Is it better in comparison to the prices paid?—I do not remember the prices.

2929. What better was it than the Welland Canal work?—I think that very thing, using concrete in the backing, was an improvement. It made it water tight.

2930. Then this is a patent you have got out in building stone work?—No, it is not a patent I have got out.

2931. Who is the originator?—The contractors, I suppose.

2932. The contractors, of course. They were doing all this for the benefit of the country, Mr. Crawford?—(No answer).

By Mr. Taylor :

2933. Who was the contractor on the Welland Canal?—Well, there were many contractors.

Mr. TAYLOR—I thought, perhaps, Mr. Gibson was one, because he knew the prices.

Mr. GIBSON—Mr. Crawford was on my work on the Welland Canal.

By Mr. Lister :

2934. Is it true, or is it not true that the spoil from the pier was put into the crib-work—The spoil?

2935. The excavation from the pier?—From what pier?

2936. The pier put in for the support of the bridge?—The excavation? There is no excavation.

2937. Mr. Thompson told us the other day that the excavation instead of being taken to the spoil was put into the crib-work. Is that so?—The excavation was taken to the spoil and excavation was also put into the crib-work from the canal.

2938. From the canal?—From the prism of the canal.

2939. Well now, Mr. Thompson says that was not proper?—Well?

2940. Do you say it was?—I say it was, certainly.

2941. In the face of the specification?—The specification says nothing against that.

By Mr. Haggart :

2941a. It was the excavation from the rock prism of the canal?—From the rock prism of the canal.

By Mr. Lister :

2942. Now, you say there was an agreement allowing you to use concrete instead of stone?—Yes.

2943. Was it a form of contract drawn up and signed by the department, or was it merely a letter?—A specification made out by Mr. Thompson, I believe.

Mr. HAGGART—It is among the papers.

Mr. LISTER—I do not see it here.

By Mr. Lister :

2944. How did the prices range? Was the price allowed to the contractors the same as if they had done their work with stone?—I do not understand that there was any change in price.

2945. No change in price? So that they were to get the same figures as if they had done it according to the specification?—According to the original specification, yes.
 2946. Was the work worth as much?—Yes; I thought so.
 2947. You think it was worth as much?—Yes.

By Mr. Haggart :

2948. Would it not cost more to build it of concrete than of stone?—Yes.

By Mr. Lister :

2949. That would be concrete paid on lock prices?—Yes.
 2950. How much a yard?—It varied. It was \$11 and \$12.60.
 2951. And \$16?—And \$16.
 2952. So that you allowed the concrete at \$11, \$12.60 and \$16?—Yes.

By Mr. Haggart :

2953. Did you allow any more for concrete than you would allow for backing?—No.
 2954. Would not the concrete cost more than backing cut in the ordinary manner?—So I understand from all.

By Mr. Lister :

2955. You estimated for the random-coursed masonry, allowing them \$7.50 a yard?—Yes.
 2956. That was paid to the contractors for some time?—I do not know about payments. I sent it in in that way.
 2957. You sent it in in that way. When will that canal be ready to open for public traffic?—I expect very soon.
 2958. How soon?—I cannot tell exactly, because I am waiting to find out and to get a few boulders taken out of the channels.
 2959. The only obstacle or difficulty in the way is the removal of a few boulders from the channels?—That is all.
 2960. When do you expect to get those out?—It is very hard to tell. I was just sweeping to find out how many there were when you called me down here, and as soon as I get back I hope it will be done in a very short time.
 2961. Then your opinion is that the canal will be open by the 1st of August?—I should think so. I do not know of any serious difficulties. Though I cannot tell till I go there with the sweep and find out.
 2962. Well, are there any difficulties other than the entrance?—No.
 2963. Sure of that?—Yes, there were no difficulties.
 2964. Eh?—No difficulties.
 2965. No difficulties at all? Is the lock chamber perfectly tight?—Perfectly tight.
 2966. When did you try it?—It has been empty for some time and there was no water in it for any leaks.
 2967. There is no difficulty there?—No difficulty there at all.
 2968. And all that remains to be done is the sweeping out of the channel?—That is all.
 2969. Whose duty is that?—Well, that is my duty to see that it is done.
 2970. To see it is done? But first whose duty is it to do it?—I go and see it done as much as I can.
 2971. Who has to do it?—Oh, the assistants, my assistants.

By Mr. Haggart :

2972. But who has to do the actual work?—Oh, the actual work, that is being done by Hugh Ryan and Company.

Sault Ste. Marie Canal Inquiry.

By Mr. Lister :

2973. Is that part of their contract ?—It is a subsidiary contract, a little contract made for that.

2974. Oh, that is a subsidiary contract. Is the steel pipe leaking ?—No.

2975. Is it all right ?—It is all right.

Mr. HAGGART—Here is a specification for the crib-work which Mr. Schreiber has found.

By Mr. Gibson :

2976. You never saw that before, Mr. Crawford ?—I don't think so.

2977. Read it please ?

“ DEPARTMENT OF RAILWAYS AND CANALS, CANADA.

“ Specifications for work to be done in the construction of timber revetment on each side of the prism of the Sault Ste. Marie Canal.

“ The contractor must prepare the foundations as near level as practicable, any such levelling as may require to be done shall be covered by the price of the crib-work.

“ *Crib-work.*

“ The crib-work is to be of the width shown on the plan, and of such varying height as the surface of the rock on which it is to be founded, may necessitate to bring it up to the uniform level on top as shown on plan, the sides to be of timbers not less than 11 inches square, straight, sound and free from wane and shakes.

“ *Framing.*

“ The timbers of the walls of the crib-work to be framed for close joints, the front wall to have a batter of $2\frac{1}{2}$ inches to the foot and the rear wall to be plumb.

“ *Cross Ties.*

“ The cross ties shall be at least 10 inches thick of sufficient size to square 10" x 10" at both ends, and of the full length of the outside width of the cribbing. They are to be placed not more than 10 feet apart centres, and so arranged that the ties resting on the different rounds of timber, shall be midway between those of the courses immediately above and below. These ends are to be dovetailed $3\frac{1}{2}$ inches into the timbers under and over them, the dovetail to splay $1\frac{1}{2}$ inches on both sides so as to stand 8 inches at the neck and 11 inches at the outer end. The crib-work from bottom to finish shall be formed of white pine, hemlock, tamarack or spruce, straight, of good quality, free from unsound knots, shakes, sapwood or other defects.

“ The crib-work shall be well and solidly built with stone from bottom to top, which shall be carefully packed, well rounded and between the ties and properly levelled off at the top.

“ The sides of the crib-work shall be built as shown on the plan and everything done that is necessary (although not herein particularly mentioned) to place the whole in a finished and satisfactory condition.

(Sgd.) “ COLLINGWOOD SCHREIBER.

“ OTTAWA, 10th February, 1893. ”

By Mr. Taylor :

2978-9. Mr. Crawford, you are a practical engineer of considerable experience, are you not ?—Yes.

2980. Did you act in the capacity of engineer on the Welland Canal ?—Yes, assistant engineer.

2981. When was that?—That was about 1886, I think it was.
 2982. In whose employ were you, then?—The Government employ.
 2983. The Government employ?—Assistant to Mr. Munro.
 2984. You were assistant engineer when the Welland Canal was building?—Yes.
 2985. And you were employed on that work?—Yes, that is the last enlargement.
 2986. The last enlargement of which Mr. Gibson was contractor?—Yes.
 2987. One of the contractors? You were engineer, you made the estimates for the work that he did, and supervised the work that he performed?—Yes.
 2988. Did Mr. Gibson make you any present while you were on that work?—No.
 2989. Did he offer you any?—No.

By Mr. Gibson :

2990. Did you ever hear it reported that he ever made an offer to anybody?—No.
 2991. Do you believe he would do such a thing?—I never heard any one do that.

By Mr. Taylor :

2992. Then when Mr. Gibson was contractor you were doing the same work in your capacity as engineer as you were at the time of Mr. Ryan's contract?—Yes.
 2993. And you say the contract on the Welland Canal is not as good a class of work as that performed on the Sault?—It was a very good work on the Welland Canal, but I prefer this kind of work for lock wall backing.

By Mr. Mulock :

2994. Did you pass the Welland Canal work?—Yes.
 2995. It was up to the contract?—It was up to the contract. Very good work.

By Mr. Taylor :

2996. And you passed this work?—Yes.
 2997. And it was up to the contract?—Yes.
 2998. And the timber put in the revetment on each side of the prism was of first class quality?—Yes.
 2999. And the work was performed in a good workmanlike manner?—Yes.
 3000. How long have you been down here in connection with this investigation?—Since last Thursday.
 3001. You have been retained here for this investigation. Is that causing delay in getting the canal opened?—Yes.
 3002. Your being kept here is causing a delay in getting the canal opened?—Yes.

By Mr. Gibson :

3003. You stated to Mr. Lister that the concrete that was used in the lock masonry was paid for at the same prices as that paid for lock masonry?—Yes.
 3004. And you gave as a reason for that that it was more expensive to make?—I did not give any reason for it.
 3005. To the minister when he asked you a question?—I said it was—I stated that as a fact, but that was not the reason.
 3006. How far was the stone for the backing of the lock work brought?—For the backing?
 3007. Yes.—It was brought from Manitoulin.
 3008. It was brought from Manitoulin?—Yes.
 3009. Was it all brought from the Manitoulin Islands?—Yes.
 3010. The whole of the backing?—No, there was some sandstone mixed up with it. Some sandstone out of the excavation.
 3011. The stone for the concrete did not require to be brought from the Manitoulin Islands?—No.

Sault Ste. Marie Canal Inquiry.

3012. Any kind of small stones that could be found around there, at the quarry and where they were cutting stone could be used for concrete?—Yes.

3013. So it could not be as valuable for the backing?—Oh, the contractors have told me that it was more expensive.

3014. More expensive to scabble a piece of ordinary backing, we will say a yard in size, no matter what its dimensions a yard in quantity, 3 feet by 3 feet by 3 feet—more expensive to scabble that and to lay it than to make a yard of concrete? Is it or is it not?—I don't know.

3015. As an engineer have you not seen a good deal of stone cutting done?—Yes, I have seen some.

3016. You have seen some?—A good deal.

3017. And you think it is more expensive to make a yard of backing of concrete than to cut a yard of stone?—You mean to cut a cubic yard?

3018. To scabble a yard of backing and to lay it?—That is not ordinary work.

3019. Ah, but this specification calls for extraordinary work, Mr. Crawford. Of course you did not see the specification, although it is dated 10th February, 1893?—No, I did not.

3020. And you never asked for any instructions about the filling of those cribs?—No, I did not think it was necessary.

By Mr. Mulock :

3021. You did not know about it?—No, I did not know about it.

By Mr. Gibson :

3022. It says, they were to be carefully packed well around and between the ties and properly levelled off at the top. And you were not aware this had to be done?—I think it was done. It was carefully packed and levelled off at the top. I did not see that, I think.

3023. You think you did not see it?—Still in your examination the other day you said that the cribs were fairly well filled, but they were not hand-packed?—They were not hand-packed, no.

3024. And you never saw any cribs hand packed?—No. I never did.

3025. But what did these specifications call for? Did they not call for that?—No; I don't think so. Well packed, but not hand packed.

By Mr. Lister :

3026. When was this crib-work filled in, in winter or summer?—It was filled in winter and some of it in summer.

3027. What proportion of it would be filled in in winter?—The greater proportion.

3028. Three-quarters of it?—I dare say.

3029. Do you know where Couvrette is working?—No. I do not know.

The witness was then discharged from further attendance.

The committee then adjourned.

COMMITTEE ROOM 49,

HOUSE OF COMMONS, 11th July, 1895.

The Committee met.

MR. MICHAEL J. HANEY called, sworn and examined.

By Mr. Haggart :

3030. Mr. Haney, you are one of the firm of Ryan & Co., contractors for the Sault Ste. Marie Canal?—I am.

3031. You have been on the work of that contract from the beginning, I suppose, to the finish?—From the beginning to the finish.

3032. Do you know anything of the changes of contract from the time you commenced the work?—I know that there were changes from the original plan.

3033. I suppose you know nothing of the reasons which induced the department to make the changes, except by hearsay?—No, sir, I had no communication whatever with reference to that.

3034. However, there were several changes made in the plan of the lock from the time you had the contract until the final plan?—Yes, there were two principal changes.

3035. What is the final plan as completed?—It was a lock 900 feet between the quoins and 60 feet wide, with a depth of 20 feet 3 inches of water on the mitre sill.

3036. There was a small change I think, from 19 feet to 20 feet 3 inches on the mitre sill?—There was.

3037. Did you hear the evidence of Mr. Thompson in reference to what the cost of that change would amount to?—I did. I think he said it was practically *nil*.

3038. Practically *nil*. So that the change from 19 feet to 20 feet 3 inches was practically *nil*?—It was a very small matter.

3039. I suppose you do not know the reason of the change, but the fact is the depth of water on the mitre sill is the same on that lock as on the lock at Sault Ste. Marie?—On the American side, yes, sir.

3040. On the American side, the same depth of water?—The same depth of water.

3041. What is the character of the work in the lock?—First-class. You are speaking of the Canadian lock?

3042. Of the Canadian lock?—First-class throughout.

3043. First class masonry?—Yes, sir. Of course, in speaking of classes of masonry I am speaking of the general character of the whole work.

3044. Yes?—There is first class masonry and there is backing, but in speaking of the work as a work I say it is first-class throughout, being built of first-class materials and by the best workmen that we could procure in the country.

3045. You have been on public works, I suppose, most of your life?—Since I was 18 years old.

3046. Since you were 18 years old. Did you ever see, taking the same character of work, a better job?—I did not.

3047. What were the instructions that you were to give to your men in reference as to how they were to do the work?—Well, my instructions were to do the work in a first-class manner throughout.

3048. Yes, and in every respect it is done in a first-class manner?—That is my opinion.

3049. The material used in it is first-class?—First-class.

3050. In every respect?—In every respect, yes.

3051. You have been listening to the evidence here for some days and you have heard the account given of the increased prices that were paid to the contractors over and above the original contract price for doing the extra work required?—I have.

Sault Ste. Marie Canal Inquiry.

3052. Why was it you asked for and received higher prices?—The cost of the work we considered was increased to us. The wages which we found had to be paid were greater than were contemplated when the original contract was made. The work had to be pushed which necessitated working nights as well as day. All those things add to the increased cost of work. Those were the principal reasons why we asked an increased price for the work.

3053. You got \$90,000 for finishing the work a year sooner than you were required under the contract?—We did.

3054. What did that work cost you to finish over and above the prices that you should have executed it for under the contract?—Well, I am not prepared to make a statement with reference to that.

3055. Well, do it as near as possible?—I think—my impression is it would have cost fully the amount of \$90,000.

3056. \$90,000?—I don't think there was much money in that job.

3057. You had a contract also for dredging at the lock?—At the east approaches.

3058. Yes. What was the price moneyed out, taking the estimated quantities of the engineer of the department? What was the amount moneyed out that the contract would come to?—Well, to the best of my recollection, it was nearly \$300,000.

3059. Two hundred and ninety and some odd thousands, I think?—About \$300,000.

3060. You were required to do some extra work besides that work?—Some additional work.

3061. What would that additional work come to?—Well, that is a matter I have not gone into, but I should say thirty to forty thousand dollars.

3062. Thirty to forty thousand dollars?—Have you made up the quantities of the whole work completed under that section?—Under section 1, the lower end?

3063. Yes, that is the approach, I forgot the number?—We have not made it up.

3064. Do you know whether the department has made it up?—I do not.

3065. Do you know what would be the total amount included in that extra work you were required to do—what the total amount would money out in section 1?—I know about the amount we have received. It is, as near as I can recollect, about \$305,000 or \$306,000.

3066. \$306,000?—And the amount of the work remaining to be done would be in the vicinity of thirty-five thousand dollars. It is the additional pier, the additional crib-work, you might put it. I assume the work has been measured up pretty close.

3067. That is your estimate?—Yes.

3068. Then, if those figures are correct, adding the extra work—that is the extra pier work—the work will be done for very near the figures of the original contract?—I should say it would be done very close to it. I may say it was a schedule contract.

3069. Yes, I know?—The opportunities for taking the soundings and measurements were good and the work naturally would be measured very close originally.

3070. Or in other words, that the original estimate of quantities has turned out very nearly exactly what it was estimated?—That is the answer, yes.

3071. Now we come to that portion of the contract dealing with the crib-work above the lock. Were you away from the commencement of it until the finish?—With the exception of a couple of weeks.

3072. With the exception of a couple of weeks?—With the exception of a couple of weeks during January I was on the work all the time.

3073. When did you commence that work?—We commenced it in the latter part of October or November, 1893.

3074. When did you finish it?—We finished it in the early spring—the spring of 1894.

3075. Who was the superintending engineer of that work?—Mr. W. G. Thompson.

3076. Was he there at any time during the period that the work was progressing?—I saw him in Sault Ste. Marie in January.

3077. When was he there next?—It must have been the latter part of June or the first of July.

3078. The work was finished then?—Practically.

3079. Mr. Thompson was not on the work then from the beginning of January until June?—No, sir, I did not see him on the work.

3080. He was not there on the work? Give us a description briefly, of that work and the reason of the bulging out of the the timbers on it?—The preparation was made for the construction of the crib-work during the summer of 1893. Also for the taking out of the rock excavation during the fall of 1893 and the winter of 1894, these preparations consisted of stripping the rock, so that we would have but very little frost to contend with in the excavation, or in other words that we would not have any earth excavation in which there would be frost during the winter months. We also provided a large portion of the timber during the latter part of the winter and the summer of 1893, and also made arrangements to provide the balance of the timber during the winter of 1894. The construction of the crib-work was commenced as I said in October or November, 1893. In that work as in all other work we endeavoured to employ the best men that were available, and we have good men in the construction of the timber work. When the timber work was being constructed we also carried on three classes of work from the excavation. The work was being forced through to completion early in 1894, and in order to do that it was necessary for us to build the cribs, fill the cribs, make the embankment behind the cribs, and also at our own expense build a retaining wall immediately or in the rear of the masonry wall, so that the whole of the material that was required for the backing up of the cribs would be in place when the masonry was built. When this work was done which I have been speaking of, it would be completed when the masonry wall was finished. Now I have heard in the evidence that there was very little complaint about the framing of the cribs, or the timber that was used. The objections seemed to be in the filling, and I desire to say that there should always be a motive in doing bad work, and we had no motive whatever for putting anything but the very best rock in the filling of these cribs. There certainly could be no advantage or gain to us in doing otherwise, and we did that. The instructions were to sort the material carefully, and I was there continually to see that those instructions were carried out. The inspecting engineer was on the work and the inspector was there, and the material was sorted, so that the most suitable rock for crib-filling was put in the cribs; the quarry waste would be placed behind the crib and in the embankment above the crib, and the larger stones were saved for the purpose of building this retaining wall that I have spoken of. That is the manner in which the work was done. There was perhaps some little frost on the rock as it was being put into the different kinds of work, but as the rock was broken up from day to day with powder, there could be but very little frost which would have adhered to the rock and which would be put in the crib-work, so that was specially sorted for that particular part of the work. If any material that ought not to have gone into the crib was put in, it was owing to the carelessness of some of our men when they were not specially looked after by our foreman. That is liable to occur upon any work, and while we gave to the work the most careful supervision, I would not say that from time to time a man in a careless way—we have some men who did not speak English—would not dump a box of material there, which, had I been there, or the inspector, or the engineer or the foreman, he would not have been allowed to put into the crib. We also kept men on the crib to see that the material was distributed about in the crib so that it would be as solidly filled as is usually the case in a work of that kind.

By Mr. Haggart :

3081. You saw some of them opened afterwards?—We excavated test holes in the cribs, and we found they were well and solidly filled. We also found that the cribs which were not bulged were filled in the same manner as the cribs that were. With reference to the bulging I might say that there was no bulging after the cribs were filled above the movable dam about station 75. The bulging was below that, and only a part of that bulged; the greatest movement in the crib-work was at a point where an old tree had crossed the line of the canal, and the material in the original formation at that point was of a quicksandy, silty nature.

Sault Ste. Marie Canal Inquiry.

3082. You have not given the reason, Mr. Haney, in your opinion of the bulging out of the cribs?—I think it was due to the fact that the work was done in the winter time, and owing to the pressure from the material behind caused by settling of the material that was put behind the crib. There was very little sediment in the crib.

3083. You saw the crib-work on the American side?—Yes.

3084. What is the difference between the mode of construction on this side and the mode there?—In the crib-work on this side the ties extended from front to rear wall without longitudinals. As the crib was brought out, offsets were made in the back of the crib. The face of the crib was battered, and the crib was filled with stone.

3085. On the other side?—On the other side there was no offset in the bank. The crib was built plumb in back and rear. The ties extended from front the back.

3086. Perpendicularly?—Horizontally, and longitudinals were placed parallel with the face and back of the crib, so that square pockets were formed instead of long pockets.

3087. The object of that was to fill it with clay?—It was filled with clay.

3088. To keep it from leaking?—I suppose to use it for coffer dam purposes

By Mr. Gibson :

3089. Where was this?—On the American side.

By Mr. Haggart :

3090. Do you know the masonry that was on the wall?—I do.

3091. Just give us a description of it and what you think of it?—The masonry was built under an agreement which was made at the time the crib-work was decided upon, and I have no special instructions that the specifications for the masonry were changed, but I would say that the masonry was built, or that the specifications which were in the original contract for random-coursed masonry can be applied to this class of work with one exception, and that is that random-coursed masonry called for in the specification was to be laid dry, and this was laid in mortar.

By Mr. Gibson :

3092. The specifications called for that being hammer-dressed?—It was hammer-dressed.

3093. I suppose you call it good random-coursed masonry?—Yes, sir; I call it good random-coursed masonry, good work. In speaking of the specifications I might say that there is no other point which enters into the details of all specifications and in this as well, and that is that the engineer decides how the work shall be done, and the work has been done in this case under the directions in accordance with the specifications.

Mr. HAGGART—That is all I have to ask Mr. Haney.

By Mr. Lister :

3094. The number 1 section was contracted for by Ryan and Haney?—It was, yes sir. Hugh Ryan & Company, that is the firm. There are two Ryans.

3095. The firm consists of John and Hugh Ryan and yourself, Mr. Haney? At the time that contract was made had it been determined to deepen the lock to 20 feet 3 inches?—No, sir.

3096. Then what was the depth that the approach was to be?—My recollection is 18½ feet.

3097. 18½ feet?—Yes, sir.

3098. That would be for a depth in the lock of 16 feet?—16 feet 3 inches, yes.

3099. 16 feet 3 inches? When it was determined to deepen the lock to 20 feet 3 inches was any arrangement made for deepening the approach, making it a greater depth than your contract in the first place required?—It was not deepened.

3100. No. Then, as a matter of fact, it was determined to deepen the lock to 20 feet 3 inches and the approach to the lock was to remain at 19 feet or 18 feet 6 inches, was it?—18 feet 6.

3100a. 18 feet 6? But the approaches at the south end, at all events, were to remain at 18 feet 6 inches, while the lock itself was to be 20 feet 3 inches?—The approaches at the east end. That is the way we designated the approaches east and west. You said the south.

3101. Well, I call it the south. It is from the "Soo" River and the other is from Lake Superior down. Well, now, Mr. Haney, as a practical man, I ask you the question, whether the canal or the chamber or lock could have taken a vessel in, drawing more than say, 17 feet, in view of the depth of the approaches?—About 18, I should think.

3102. About 18 feet? Well, then, what was the object of making the lock 20 feet 3 inches with an approach of 18 feet?—I don't know.

3103. Eh?—I could not say. I was not consulted.

3104. You were not consulted, I know, but I want to find out if you know any reason, with an approach of 18 feet 6 inches, why the lock should have 20 feet 3 inches depth of water?—I could give a reason.

3105. Give us your reason?—The lock on the American side was 20 feet 3 inches.

3106. Yes?—The traffic going through both of those canals would be the same.

3107. Yes?—With the lock deepened at a very slight expense—a very small expense, comparatively speaking—during the construction of the lock, the approach could be deepened later on without interfering with traffic or injuring the character of the work, at a very small expense.

3108. Yes?—That is the reason I would assign, and I might further state I think it would be better if all the locks on the various canals were to be deepened to a greater depth in the prisms, and the prisms, as necessity would require, could be deepened without interfering with the operation of the principal part of those works.

3109. Is the approach of rock?—A portion of the approach is rock.

3110. The upper portion of section No. 1 or the lower?—The upper part and a part of the lower.

3111. Part of the lower?—Yes; there are pockets in between where no rock appears, I understand.

3112. In case of deepening, it would be very necessary to either apply powder, or whatever you use, for blasting?—It would; yes.

3113. Would the walls be at all interfered with?—I think not. They are doing it on the American side—deepening.

3114. You think the blasting of the approaches with powder would not interfere with the walls?—With care, it ought not to.

By Mr. Haggart :

3115. What walls would it interfere it?—The cribwalls, I presume.

By Mr. Gibson :

3116. The lock walls, the retaining walls?—The crib-walls. You are misleading.

3117. I am not misleading you, because you ought to know?—You are branching off. Excuse me, Mr. Chairman, but I desire to place myself right in this matter. We were speaking of the approach.

3118. Yes?—And your question related to the walls and I assume it was the walls or crib-work of the approach.

3119. Yes?—Now is that what you mean?

3120. Yes, I mean that?—I don't think it would seriously injure them with care.

3121. You don't think it would seriously injure them with care?—Injure the crib-work.

3122. Injure the crib-work. Would it at all injure the lock itself?—It would not. The deepening of the approach would not injure the lock. Care was taken in that particular to provide against coming in contact with the lock by the excavation to the full depth of the lock of 50 feet outside of the lock walls.

3123. Then the reason for the government allowing you higher prices when they decided upon change is that the labour was higher than you anticipated?—Well, all those matters were gone into carefully at the time.

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3124. Those matters were gone into?—And our reasons were set forth. The government reasons I don't know.

3125. Those were your reasons?—Yes, sir.

3126. And you got the job?—What's that?

3127. You got the contract?—We had the original contract.

3128. You had the original contract and you received the subsequent contract?—We did the work, finished it.

3129. Under contract?—Under contract.

3130. Original?—I think most of the contracts were original.

3131. Will you undertake to say Mr. Haney, that the subsequent contracts were original contracts?—Which one do you speak of?

3132. For the extension of 50 feet and the extension from 650 to 900?—They were.

3133. When these changes were determined upon nobody else but Hugh Ryan & Company could get the contracts, I suppose, unless you threw up your original contract?—Well, I don't know what could have been done.

3134. Well, you had the contract for the lock at 600 feet?—Yes.

3135. That was your contract?—It was.

3136. And unless you liked to throw up that contract or get a new one for the additional work it was your right either to throw up the contract or to say to the government, "We must have the additional work."?—I might say we would not be a consenting party.

3137. So that the additional work, of course of necessity, was given without tender. It was a matter of negotiation?—It was a matter of negotiation.

Mr. HAGGART: I did not hear the question.

By Mr. Lister:

3138. The question I asked him was, that the subsequent contracts were contracts made by negotiation?—You were speaking of the lock.

3139. Of the lock?—Yes.

3140. From 600 to 650 and from 650 to 900?—Yes.

3141. How long after the contract had been awarded to you for the lock was it that you received the contract for the approach?—Well, tenders were called for in November, 1888, for the lock and prism, and I think in January, or it may be February, 1894, for the lower entrance.

3142. Do you think that it was wise and prudent to do the work that you have spoken of in the winter—the crib-work?—Well it depends altogether on the object to be attained. Under the circumstances I think it was. The object was to complete the work within a certain time.

3143. The object was to complete the work and in view of the great necessity for the completion of the work you think it was wisdom to carry on this portion of the work in winter?—I think so.

3144. You were to have completed the prism and the lock up to what time?—The lock by 1893.

3145. What time in 1893?—The 1st of December, 1893, or perhaps it was the season of 1893.

3146. And you got \$90,000 to complete it at what time?—1893.

3147. That could not be so?—That is a fact.

3148. You got \$90,000 as a bonus to complete the lock a year ahead of time?—We got it to complete it in 1893.

3149. When were you bound to complete it by your contract?—In 1894.

3150. You were bound to complete it in 1894, and \$90,000 was given to you as a bonus to have it completed in 1893?—That is the way I understood it.

3151. By what time in 1893?—On the 16th November the last stone was laid.

3152. What time was it to be completed by your contract?—The end of 1894.

3153. And \$90,000 was to have it completed in 1893, and you say it was completed at what time in 1893?—On the 16th of November, 1893, the last stone was laid.

By Mr. Haggart :

3154. How much quicker was that than your contract?—Something over a year.

3155. How many weeks over?—You were to complete it by the 1st of January, 1895, if I remember rightly or the latter end of 1894?—The latter end of 1894.

3156. You had it completed about six or seven weeks before your contract?—I do not remember the exact date. I know the object was to complete the masonry in 1893 under the last arrangement, and naturally on account of cold weather we made arrangements to have it completed before the 1st of December. Whether that is our contract or whether it is the 1st of January I do not know.

By Mr Lister :

3157. Your original contract was to have it completed in 1892?—That was the 600 foot lock.

3158. 600 feet?—Yes.

3159. Then the enlargement took place and after the contract for the enlargement took place, there was a contract made between you by which you were to receive \$90,000 to have it done a year ahead?—I think there were two agreements.

3160. One for 650 feet and the other for 900 feet, and then there was a contract for a bonus of \$90,000?—Yes.

3161. Is the canal open yet for traffic?—I have not heard of it being opened.

3162. Do you know any reason why it should not be opened?—No, sir.

3163. Have you completed all the work necessary to be done by you for the opening of the canal?—We have.

3164. Including the sweeping and cleaning out of the approaches?—Well, sweeping is a matter that we have nothing to do with, or had nothing to do with after last August, a year ago nearly. We made a subsequent arrangement with the department to rig up a sweep and operate it for them up to a certain time last summer.

3165. So far as you are concerned your contract was completed a year ago?—I do not say that.

3166. What do you say?—I was speaking of the sweep.

3167. Well, is your contract completed?—Our contract is not completed on the lower section.

3168. What is to be done yet?—Some crib-work.

3169. Some crib-work is to be done yet, but I asked you furthermore whether the work had been so far completed as to enable the canal to be opened for traffic?—I think so. That is my opinion. I might say that there were some boulders found when I was up there, some boulders found by the sweep, that could be buoyed if it was necessary to do so.

3170. Does not the contract require that these should be taken out of the approach altogether?—It does when they are found, and I think they are working at them now.

3171. When those boulders are taken out is there any obstacle to the opening of the canal?—I do not think there is any obstacle.

3172. You do not think there would be any obstacle?—No, sir.

3173. You do not know of your own knowledge or you have not heard that the canal has not been opened for traffic?—No, I do not know.

3174. You do not know the reason?—No.

3175. Have you ever heard anything about the lock leaking? Do you know anything about that?—I have not—well, I heard there was a leak there, but it was discovered that it was not so.

3176. You have discovered it was not so?—Yes.

3177. Where was it you heard the leak was?—In the breast wall.

By Mr. Haggart :

3178. On that point you found out that it was a false report?—Yes.

3179. How did you find out it was a false report?—By observation.

3180. You were there?—Yes.

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3181. When would that be?—This spring.

3182. Have you heard anything about it lately?—No, sir.

3183. Have you not heard it stated that the lock was leaking?—No, sir.

3184. Never heard that at all since last spring?—I do not think so. I may have heard that report. I am not sure about that, I have heard so many reports.

3185. Then what I understand you to say is that the timber put into it was all of first quality?—That is what I say.

3186. And the work was of first quality for a work of that kind?—Yes, sir.

By Mr. Macdonell :

3187. With regard to the crib-work, did I understand you to say that there were no cross ties, only longitudinal in the crib-work?—Only cross ties without longitudinal.

3188. So that consequently there were long pockets instead of small pockets?—Yes, sir. Longitudinal ties would make the pockets smaller.

By Mr. Gibson :

3189. Were you present when that piece of crib-work was taken down that Mr. Thompson complained of?—I was.

3190. Did you see any of the vacant spaces he complained of?—I did not any more than you would see in ordinary crib-work.

3191. You say that when you saw that work done in winter time it was well done?—I do.

3192. If you were aware that the work was being done in the winter time, and you say it was well done, how do you know that it was owing to its being done in the winter time that it turned out bad?—I say that it proved insufficient. I will not acknowledge that it was bad.

3193. Now, Mr. Haney, you have given the Committee this morning a very nice description of the work, generally speaking?—Yes.

3194. Is that an unusual thing for contractors to do?—To give a very nice description.

3195. Yes.—I don't know, I am sure.

3196. I suppose you have heard the old story, have you not about a fish wife selling stinking fish?—I have never heard. I would like to hear it, though.

3197. You never heard a contractor running down his work?—I think the contractor would be very foolish to do it.

3198. Of course. You see, Mr. Haney, we would not expect you to do anything this morning except give the work a good name. Now, you said you had no motive for putting bad articles into the cribs?—That is what I said.

3199. And if any was put in it was more by accident than by anything else?—By accident.

3200. Not intentionally on the part on the contractor, at all? Was the specification that you got for building the retaining walls different from that laid down in the general specifications?—I never saw any specification for building those retaining walls, but I understood from the engineer that he was following the specification in the original specification for random-coursed work.

3201. Were you not supplied with a general specification when the work was let, Mr. Haney?—I am referring to the general specification.

3202. Well, were you not supplied with a copy of that?—We were.

3203. Did you not follow it?—We did.

3204. But you say you did not pay any attention to see whether you were following the specification?—I did not say I did not pay any attention to it, but I understood from the engineer that in completing this random-coursed work he was following the original specification.

3205. But you did not understand that you were following it?—I understood I was to do the work as directed by the engineer, and if he was following it and directed it to be done in a certain manner, I assume it was our duty to do as he directed.

3206. You carried out the instructions of the engineer? but when carrying out the instructions of the engineer, had you any doubts that you were carrying out the general specification for the random-coursed work?—No. Nor have I now, except that we built it of mortar instead of building it dry.

3207. You have built it of mortar instead of building it dry. Is there anything in the specification to lead the committee to believe it was intended to be dry?—There is nothing in the specification to lead me to believe it would be mortar, except the specifications where it refers to a wall that has to be built of mortar and it refers to two or three classes of work, in which different kinds of cement are to be used. It specifies the cement that is to be used, how it is to be mixed and how it is to be laid.

3208. Yes. There were three prices for that class of work, Mr. Haney. The item in the schedule states the revetment wall was to be built, if formed of stones from the excavation, at \$3.50 per yard.

By Mr. Lister :

3208½. Was this built of stone from the excavation?—Partially.

By Mr. Gibson :

3209. It was to be paid at \$3.50 a yard if built of stone from the excavation?—Yes, that was the dry wall.

3210. Now then, if stone was procured from a distance you were to receive \$7 a yard for it.

Mr. HAGGART—Not the dry wall, I think?—\$6 a yard.

By Mr. Gibson :

3211. I notice in one place it says \$6 a yard and further down \$7.50?—\$7.50 for a mortar wall.

By Mr. Lister :

3212. How about that dry wall?—\$3.50.

3213. Built with stone from the excavation?—With stone from the excavation. I said \$3.50, but I think the price was \$3. That is my impression.

By Mr. Gibson :

3214. \$3, and \$6 if it was brought from a distance?

Mr. HAGGART—There was a difference of \$1 between the price paid for the dry wall and the one laid with cement.

WITNESS—Excuse me, it is \$1.50.

By the Chairman :

3215. \$3 if the stone was taken from the excavation, \$6 if taken from a distance, and \$7.50 if laid in mortar?—\$3, \$6 and \$7.50.

By Mr. Haggart :

3216. I think all you were to get for that wall was the difference between a dry wall and one laid in cement. That was \$1?—That would be it, Mr. Haggart.

By Mr. Gibson :

3217. When I asked you the question previously, I was looking at another tender. There are a number of tenders here. I have now got your tender, and according to item 13 you were to be paid \$3 a yard for building a revetment wall alongside the canal if formed of stone from the excavation?—Yes, sir.

3218. And for the revetment wall alongside the wall if formed of stone procured from a distance by the contractor you were to be paid \$6 a yard?—Yes.

3219. Now, this wall was not built dry?—It was a mortar wall, yes.

3220. It was built with mortar, and it was built of stone taken from the excavation?—Part of it.

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3221. How much?—I should say by the permission of the chief engineer, allowing us under this agreement to substitute the sandstone or the stone from the excavation for gray limestone with three-quarters at least of this stone from the excavation.

3222. Three-quarters of the work was done with the stone taken from the excavation?—Further, I would like to add in connection with this, that we kept our quarry at Manitoulin Island open, or a man there all the winter, and during the early part of the summer, to make sure and to satisfy the chief engineer that the stone from the excavation was suitable and would be allowed to be substituted before we disbanded the quarry.

3223. Who are we to understand, from the remark that you make, was Chief Engineer?—Mr. Schreiber.

3224. So Mr. Schreiber gave you consent to use the stone out of the excavation?—To substitute the stone out of the excavation.

3225. And you built three-quarters of the wall out of that stone?—About that, I should say.

3226. Where did the other 25 per cent come from?—From Manitoulin Island.

3227. From Manitoulin Island?—Some was Amherstburg stone that was left over.

3228. What kind of stone was it that was left over?—What kind of stone?

3229. Yes?—Limestone.

By Mr. Lister :

3230. Left over where?—After the face-stone.

By Mr. Gibson :

3231. Surplus stone after completing the locks from Amherstburg. Having built the work in the manner you stated you were paid for it at a certain price?—We were paid \$4.50 a yard for it.

3232. Exactly. But when did this happen? When was it struck down to \$4.50?—Excuse me.

3233. When was the change made to \$4.50 a yard?—We were paid at \$7.50 a yard first and then we were only allowed \$4.50 a yard.

3234. When?—Well, it was after the payment of \$7.50.

3235. When Mr. Thompson found fault with the work a change was made by the chief engineer here?—I beg your pardon.

3236. Were you not paid \$7.50 for that retaining wall up to the time, or prior to the time Mr. Thompson found fault with the class of that work?—I cannot tell what Mr. Thompson did, but I will say this. Mr. Thompson came up there and gave directions, found fault with the manner in which the work was being built. He gave directions to have the work as he said differently, but for my part I could not see that there was any difference in the construction, although it was done under his immediate supervision, from the manner in which we had been building the work before.

3237. If that work had been done of good random-coursed work, would it not be worth more a yard than you were paid for it?—It is good random-coursed work.

3238. If it had been proper random coursed work?—It is proper random-coursed work according to the specifications.

3239. Is it properly bonded? There was a photograph here. I do not know whether it was made an exhibit or not?—I know what you refer to.

3240. There were three or four feet—I cannot judge exactly because it is not to a scale, but from my eye and the size of the work, I should say there are three or four feet of a vertical joint without any bond at all?—There is a bond. That is what constitutes random-coursed work.

3241. Let me see the photograph? (Exhibit 5, was here handed to Mr. Gibson, who pointed out to the witness the place he referred to.)—I have a distinct recollection of calling our mason's attention to the fact of this very high joint, and he explained it by saying he had a very large and long stone, which extended into the wall, and he considered that by leaving that vertical joint in the manner in which he did, he was making much stronger work than he would make if he attempted to veneer the work to suit the eye.

3242. That was the explanation of your mason, was it?—And I quite agreed with him.

3243. Perhaps you are looking at one part of the work and I am looking at another. Let me show you the place I mean. (Spot pointed out on photograph.) There are no joints about that. There is no large stone. You will admit that that is not very good work?—I cannot admit that because I know the work, I know that that is a stone from Amherstburg, which was 6 feet in length and about $2\frac{1}{2}$ feet square. I remember it distinctly.

3244. I will not dispute where the work comes from, but it is badly built, badly bonded?—I am the witness, I suppose.

By Mr. Haggart :

3245. What do you think of it?—I say it is well bonded and well built and in accordance with the specifications.

By Mr. Gibson :

3246. In accordance with the specification that was afterwards altered, and not in accordance with the original specification?—I am speaking of the original specification now.

The witness was discharged from further attendance.

Mr. T. C. KEEFER called, sworn and examined.

By Mr. Haggart :

3247. Mr. Keefer, you were requested by the department to go up and examine this work that we have been talking about, the Sault Ste. Marie Canal?—Yes.

3248. Have you got the letter of instructions you received when you went up?—No, but I have a copy of my report which recites them.

3249. Have you got a copy of your report with you?—Yes. That recites the character of the instructions. They were, “directing me in consequence of unfavourable reports having reached you as to the character of the work of the construction of the Sault Ste. Marie Canal, to proceed with Messrs. Hobson and Gregory, C.E.’s, to that canal, and make a thorough investigation and inspection before the water was let in, and before any payments were made to the contractors.” That was taken from the end of the instructions.

3250. You examined that work then, Mr. Keefer?—As far as I could at that advanced stage.

3251. Will you just give us a general opinion of the lock masonry in the first instance?—The lock was built and the other masonry completed except at the points where the crib-work had been rebuilt, and I think there was some wall yet to be built. My mission there was in reference to special complaints that had been made in a letter, a copy of which was given to me, and these complaints did not include the masonry except the lock. They did not refer to this revetment at all on top of the cribs so I did not look particularly at that. In fact, I could not see anything of it except the outside, and so with the lock, but I never saw finer masonry than the lock walls themselves. I tested the cement wherever I had the opportunity and found it as good as it could be.

3252. As good as good can be! You never saw finer masonry and you tested the cement and found it as good as good can be?—Yes.

3253. Did you look at the understructure, that is the wood work?—Yes. I saw the timber work that was nearly all in sight, the cribs below the lock foundations and the crib-work where it was exposed, which was on top of the rock and underneath the revetment wall. I did not see a stick of inferior timber in any part of the work.

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The letter of complaint which was referred to me had stated that the timber in some of the cribs and in the culverts—

3254. Yes, we will get to that. Oh, in the culverts?—In the culverts was so rotten that it could be torn down by the hand, and I sent for the man who had made the complaint and asked him if he had ever attempted, if he had actually pulled any of it away by the hand. He said no, and I asked him why he did not and he said, because it was frozen when he saw it. But I did not see any timber that was not only not rotten but I did not see any that was inferior. Take it altogether it is as fine a class of timber as I have seen for that class of work.

3255. You were instructed to look at the crib-work above the lock. Was that in your instructions?—I think so.

3256. You did look at it?—Yes. One of the items in this letter was with regard to the crib filling, and of course I could not tell anything about it, how it had been filled, because there was very little of it that was not covered with the wall. And where it was broken and they were repairing it, it had been so torn to pieces that I could not tell what its original state was when it was filled.

3257. Did you come to any conclusion then as to what were the reasons for the bulging out of the crib-work?—Oh, I think it was entirely due to pressure from the back of the cribs.

3258. Pressure from the back of the cribs?—I looked particularly to see if any crib had been moved on its seat, and I saw no indication of that. It was a bulge where it had not been straightened up. There was not much of it in that condition at the time I got there, but it was bulged out from the bottom towards the centre.

3259. As to the material in the work and the mechanical construction of it, what is your opinion?—You refer to the timber work?

3260. Yes, the timber work.—The material was, as I have said already, very good in every place I saw it, and the framing, as far as I could see it, was well done.

3261. Did you pay any particular attention to the wall?—Which wall?

3262. This wall here and the masonry on top of the crib-work, which was of a similar character, or do you remember?—I saw all the walls, of course.

3263. Yes—The external face of that, there was, as I say, no complaint made with regard to the revetment wall as it is called.

3264. There was no complaint made, but did you pay particular attention to it when you were up there?—Except looking at the face of it.

3265. What did you think of it?—I was asked the question by the engineer when I was there, if I would call it random-coursed work?—I told him I did not think it was random coursed work, that I thought random coursed work carried horizontal and vertical joints. I would call it random-coursed rubble work.

3266. Was it well done?—It was very much heavier work than the specification called for. Looked at externally the stones in it were larger. The specification only called for 9-inch stone. For the purpose, for the work it had to do, it was just as good as any other wall that could be put there, but it is not as good looking as it might have been if it had been what I would call random-coursed work.

By Mr. Gibson:

3267. Would you call that work on the revetment wall second-class masonry, more properly speaking?—Well, of course, if it is random-coursed rubble it is second-class.

3268. Exactly. It was larger than ordinary rubble work?—I call it a heavy rubble wall.

3269. But you would not, under any pretence whatever, call it random-coursed masonry?—I would not call it random-coursed masonry.

By Mr. Haggart:

3270. What is that work worth per yard laid in Portland cement?—I could not give any opinion as to value or prices without knowing all the conditions under which the work was done; the rate of wages and all the other circumstances of the case, and where the stone came from. Of course, some stone was brought from a distance and

the other was got upon the work. It would be necessary also to know the time in which it was done and the amount of machinery necessary. And whether it was a hurried work, and two or three derricks had to be put on when one would do at another time. All this would affect the cost.

By Mr. Lister :

3271. Just one question. I suppose all you were able to see was what was exposed on the canal?—Certainly ; just the exterior.

3272. And so far as you could see the timber it appeared to be as you have described it?

Mr. HAGGART—He could see all the timber.

By Mr. Lister :

3273. Could you see all the timber?—No ; I could not see all in the culverts, but what I did see was good. If you can see the exterior face of a stick of timber you can form a pretty good idea of what it is.

3274. There were other engineers with you?—Yes.

3275. And they also reported?—They also reported.

3276. I notice in the reports they made a good deal of their opinion seems to have been formed on what they have been told by people on the work?—I don't remember now.

3277. Have you read the report?—Yes ; I read it, but it was last year.

By Mr. Haggart :

3278. Just one word as to the lock itself. Did you ever in your lifetime see a finer piece of work of the same kind?—No ; I did not. And the American engineer told me he considered it a better job than their own. They had a fanciful idea by which every stone put in the lock face walls was of the same size.

By Mr. Gibson :

3279. Header and stretcher?—It is like a brick wall. Every stone is of the same dimensions. That was, I suppose, to guarantee a certain depth of bed and dressing, and so forth ; but the engineer told me he did not consider it as good work—as strong work—as our Canadian lock.

By Mr. Lister :

3280. More expensive work?—Oh, more expensive and not as good—a fanciful idea. I suppose the specification was made in Washington. They did not want to trust their people out there as to the bed and joints of the stone. They determined to know that so much of it from a certain depth in from the face of the wall was as true as brick work.

3281. And you saw the American, and saw our lock there?—Yes.

3282. Now, how do you think that our lock compares with the American as to work and everything else?—I think our lock is a finer piece of work than theirs as compared with either of the American locks, the old or the new.

By Mr. Gibson :

3283. Of course, you did not see the inside of the walls of the lock, did you?—No.

3284. There was none of that exposed to view?—No.

3285. I suppose you have had a great deal of experience in building masonry?—I have had some ; yes.

3286. Did you ever know of a case where backing and concrete were allowed to be used simultaneously together in a work of that kind—the backing of a wall?—Concrete as a backing?

Sault Ste. Marie Canal Inquiry.

3287. Did you ever in your experience as an engineer know of a piece of work being done under the supervision of an engineer in which the backing up of the face work was done partly of stone and filled up with concrete?—Not in my time.

3288. Not in your life time?—Concrete was not used a few years ago as it is now. Portland cement was not used until since my time.

By Mr. Haggart :

3289. Would not you think it would be a good plan?—Oh, certainly ; that is, if the concrete is right. It ought to make better backing as far as the tightness of the wall goes, provided, only, that it is, of course, bonded into the face work.

3290. But how could you bond into the face work with concrete from the front of the wall that is lined up with cut stone to the back of the wall that is backed up with backing?—If the headers that are in the front wall are not cut off square at the ends at the back of the wall they will run into the concrete.

3291. And would that be a good bond, Mr. Keefer?—I think it would. In fact, if the foundation is all right and the front wall is all right there would be no more bond needed there than filling up a crib.

3292. Is it not as necessary to bond up the back of the wall as the face?—I do not think it is necessary to bond concrete into a wall so long as it cannot escape.

3293. There is no bonding of concrete in this case because it is simultaneous?—They are building new masonry altogether of concrete, and locks of concrete with nothing but the face stone.

3294. That is why I am asking you this question. I am quite aware that they are building locks of concrete. They have built houses of concrete and so on?—Yes, and bridges.

3295. But in all your experience did you ever see concrete used with the same class of work as cut stone and backing in the same work together?—No, because it is so many years since I was connected with it. I did not use concrete.

By Mr. Haggart :

3296. Are you not aware that the locks on the Manchester Canal are faced with cut stone and backed with concrete?—Yes, so I understand.

By Mr. Gibson :

3297. What I want to get at it this. Mr. Crawford states in his evidence that he never saw it done anywhere else. What I want to know whether you ever saw cut stone backing and concrete built together?—It must be remembered that the wall is on rock bottom. Nothing could happen to it unless the foundation gave way. If it should sink at the back, it would open between the concrete and the face wall. I consider that it would make a lock wall tighter than it would in the ordinary way of backing, trusting to the flushing up.

3298. Would the concrete dry as quick as the ordinary bed upon a piece of backing in those vacancies that I spoke about. In building up the next course would the concrete be in a state to build upon the same as solid backing would be?—It ought not to dry before it is built upon.

3299. You know that masonry is built in course, and if it is done during the dry season, the walls have got to be wet?—Yes.

3300. If the front and the back of those walls are solid stone, cut at the front and scabbled at the back, then the space between them is filled with concrete. Has that concrete sufficient bearing qualities as compared with the cut stone when you come to lay the next course on top of it?—That would altogether depend on how the next course was laid, if the front course ran over the concrete, but I take it the bearings would be on the front wall.

3301. But you see the next time perhaps that they were using a piece of backing it might lie over that vacant space that was built in with concrete, and the concrete would not be able to bear it?—I assume this concrete was built in the ordinary way, and if so it would go under any space of a projecting stone, supposing there was a slack space.

Witness was discharged.

Mr. ROBERT SCOTT called, sworn and examined.

By Mr. Haggart :

3302. Mr. Scott, are you a practical mason?—Yes.

3303. Where did you learn your trade?—I learned it in Scotland.

3304. How many years did you serve your apprenticeship learning your trade?—I served four years.

3305. How many years have you been in the business?—I suppose about 45.

3306. You were one of the superintending master masons on the Sault Ste. Marie Canal?—Yes, sir.

3307. Would you just give us a short account of what you consider that work was? In the lock first.—The wall lock masonry? As has been said I consider it first class.

3308. Every detail that came under your observation, I suppose, was done in a workmanlike and thorough manner?—Yes, as far as we knew how.

3309. You were master mason superintending this work? What would you call the work on the revetment wall?—It was just made to suit the specification as far as we knew.

3310. What would you call that kind of work in this country?—We would call it random-coursed work.

3311. Does random-coursed work necessarily require parallel joints?—Well, we don't always make the upright joints parallel. Sometimes we lay one against the other. If the stones were big and high we just fit the joints to suit the angle.

3312. What would you call it in Scotland, such work as that? These joints are not parallel, some of them?—Well, I have never done any kind of work like that in Scotland.

By Mr. Gibson :

3313. What do you say?—I have never done any of that class of work in Scotland.

By Mr. Haggart :

3314. What is the character of the work, Mr. Scott?—This work?

3315. Yes?—Well, I call it random-coursed work.

3316. Is it well done?—Well done with heavy stone laid across. Outside the stones were hammer-dressed, and they were picked off in the face straight, or almost straight.

By Mr. Gibson :

3317. Would you look out of the window please and state what is the class of work done on this building?—I would call it broken rubble.

3318. Broken rubble? Was the work on the lock done as good as that?—It was a different class of work.

3319. A different class of work?—And you call the work that was done random-coursed masonry?—Yes.

3320. Was it done according to specification?—As near as we knew how.

3321. As near as you knew how?—Yes.

3322. Did you cut the joints parallel?—Well, some of them were and some of them were not.

3323. Were there more of them that were not, than were?—Well, I could not say.

3324. I thought you had charge of the work?—Yes.

3325. And you did not see all of those stones that were put in?—Not all of them, pretty much.

3326. They were just nobbled off and built as fast as contractors could lay them?—Oh, no.

3327. Well, that photograph looks like it?—Oh, I do not think it.

Sault Ste. Marie Canal Inquiry.

3328. You say that you angled some of the joints?—Yes. When we got two big stones coming together if they did not need much off, if they were not exactly plumb, we laid them angled.

3329. You laid them if they were not exactly vertical?—Some of them.

3330. Was that according to the specification?—We thought so. That made a stronger job.

3331. Was that according to the specification?—I don't know. The specification did not say.

3332. You could not lay two angled stones one on top of the other and make bond with them, could you?—Yes.

3333. Could you?—Yes. Supposing the joints lay that way (illustrating with his hand and walking stick). Of course the beds were level.

3334. You have had 45 years experience as a mason?—Yes.

3335. Builder and stone cutter?—I learned both, the stone cutting and the building.

3336. You worked at both?—Yes.

3337. For 45 years?—Yes.

3338. Off and on?—Yes.

3339. Did you ever in all your life see backing, cut stone and concrete used in the same work together?—Well no, I did not. I never had the experience of it before.

3340. Did you ever see anybody that had the experience of it before?—I don't think it.

By Mr Haggart :

3341. What do you think of the backing being done in that manner?—I thought it made a very strong job. Because we had a very large bed. Suppose we had a large bed and had concrete. We laid large stones upon it and kept away from the face of the wall and filled it all round.

By Mr. Lister :

3342. For whom were you inspector? For Ryan & Co., or for the Government?—For the Government, sir.

3343. Did you work for Ryan?—No.

3344. You never worked for Ryan & Co.?—I did once work for him.

3345. Did you work for him on this job at any time?—No.

3346. When did you work for him?—About thirty years ago I should think.

3347. You never worked for him since then?—No.

3348. And were you inspector for the Government from the time the work commenced until it was completed?—From the time the masonry was completed?

3349. Yes?—Yes.

3350. You were always inspector for the Government on the work?—Yes.

3351. You were always on the work looking carefully after it?—Yes, sir.

3352. You knew Couvrette? Did you not?—Yes.

3353. You know he charged there was over-measurement?—Well, I don't know anything about that.

3354. You know he said so?—No. I never heard it until I heard it here.

3355. You never knew anything about over-measurements?—No.

3356. Or the admission of improper material?—No, I do not.

3357. You do not know anything about that?—No.

The witness was then discharged.

The Committee adjourned.

Sault Ste. Marie Canal Inquiry.

EXHIBITS REFERRED TO IN MINUTES OF EVIDENCE.

EXHIBIT No. 1.

MEMO. *re* payments to Hugh Ryan & Co.

Date of Application.	Section No. 1.	Amount.	Date of Application.	Section No. 1.	Amount.
1889.		\$ cts.	1891.		\$ cts.
Dec. 10.	Estimate No. 1.....	2,100 00	Oct. 14.	Estimate No. 1.....	2,214 03
1890.			Nov. 12.	do	4,215 52
Jan. 9.	do	1,400 00	Dec. 12.	do	3,355 43
June 10.	do	6,608 80	1893.		
July 17.	do	9,382 50	Jan. 11.	do	4,818 14
Aug. 14.	do	12,818 25	Feb. 10.	do	4,098 61
Sept. 17.	do	12,681 90	Mar. 14.	do	1,419 40
Oct. 11.	do	12,781 80	April 11.	do	2,778 30
Nov. 13.	do	11,121 35	May 8.	do	1,953 45
Dec. 15.	do	8,544 10	June 17.	do	7,283 25
June 13.	do	15,307 65	do 30.	do	6,087 14
July 15.	do	16,984 40	Aug. 14.	do	5,985 91
Aug. 15.	do	16,143 52	Sept. 11.	do	15,985 26
Sept. 16.	do	13,280 05	Oct. 7.	do	2,123 65
Oct. 13.	do	6,808 69	Dec. 7.	do	1,966 55
Nov. 11.	do	6,579 99	1894.		
Dec. 5.	do	10,183 00	April 11.	do	2,502 37
1891.			May 10.	do	12,357 51
Jan. 8.	do	498 34	June 11.	do	13,138 95
June 13.	do	15,921 91	do 30.	do	5,968 52
do 31.	do	7,249 85			
Aug. 15.	do	9,729 46			
Sept. 15.	do	5,407 62			299,775 17

EXHIBIT No. 2.

MEMO. *re* payments made to Hugh Ryan & Co., Sault Ste. Marie Canal.

Date of Application.	Section No. 2.	Amount.	Date of Application.	Section No. 2.	Amount.
		\$ cts.			\$ cts.
1889.			1892.		
June 10.	Estimate No. 1	3,100 00	June 17.	Estimate No. 33	22,573 54
do 28.	do 2	1,800 00	do 30.	do 34	46,494 49
Aug. 9.	do 3	4,400 00	Aug. 15.	do 35	52,856 91
Sept. 10.	do 4	6,200 00	Sept. 15.	do 36	47,270 24
Oct. 11.	do 5	4,700 00	Oct. 18.	do 37	43,145 81
Nov. 11.	do 6	5,400 00	Nov. 14.	do 38	53,925 89
Dec. 10.	do 7	7,700 00	Dec. 12.	do 39	41,455 69
1890.			1893.		
Jan. 9.	do 8	3,700 00	Jan. 11.	do 40	60,586 04
May 8.	do 9	1,610 00	Feb. 16.	do 41	7,853 93
June 10.	do 10	4,082 45	Mar. 14.	do 42	2,248 02
July 17.	do 11	17,058 69	April 11.	do 43	2,875 55
Aug. 13.	do 12	14,089 54	do 15.	Advance on account of draw-back	40,000 00
Sept. 17.	do 13	14,792 58	May 12.	Estimate No. 44	19,319 22
Oct. 13.	do 14	14,141 34	June 17.	do 45	100,985 14
Nov. 13.	do 15	12,365 87	do 30.	do 46	126,058 03
Dec. 15.	do 16	14,282 86	Aug. 14.	do 47	159,102 39
1891.			Sept. 12.	do 48	163,298 07
Jan. 14.	do 17	9,737 00	Oct. 13.	do 49	94,157 72
Feb. 13.	do 18	10,797 00	Nov. 14.	do 50	44,468 52
Mar. 12.	do 19	25,816 00	do 17.	Advance on account of draw-back	70,000 00
April 14.	do 20	613 28	Dec. 13.	Estimate No. 51	69,926 88
June 13.	do 21	787 50	1894.		
July 15.	do 22	3,902 40	Jan. 12.	do 52	42,220 88
Aug. 15.	do 23	17,624 92	Feb. 9.	do 53	52,546 00
Sept. 11.	do 24	17,639 49	Mar. 9.	do 54	56,794 00
Oct. 13.	do 25	24,747 08	April 12.	do 55	51,568 10
Nov. 11.	do 26	19,550 02	May 5.	Advance on account of draw-back	70,000 00
Dec. 5.	do 27	3,357 68	May 10.	Estimate No. 56	51,635 72
1892.			June 18.	do 57	10,479 60
Jan. 8.	do 28	3,557 47	Total payments to 30th		
Feb. 11.	do 29	3,973 60	June, 1894.		
Mar. 12.	do 30	11,467 53	1,922,803 42		
April 14.	do 31	25,875 77			
May 13.	do 32	8,086 87			

Sault Ste. Marie Canal Inquiry.

EXHIBIT No. 3.

SAULT STE. MARIE, ONT., August 30th, 1894.

COLLINGWOOD SCHREIBER, Esq., C. M. G., Ottawa.

DEAR SIR,—Herewith I send you some more letters from the men who were employed on the construction of this canal, giving their views of the kind of material used and class of work done.

Yours truly,

(Sgd) WILLIAM CRAWFORD.

SAULT STE. MARIE, ONT., August 25th, 1894.

This is to certify that I have been in the employment of Hugh Ryan & Co., as foreman of masonry on the Sault Ste. Marie Canal for the past two years and have followed public works in the capacity of foreman of masonry for 20 years on the following works: Welland Viaduct, masonry on sections 1, 8 and 9 Welland Canal, Quebec Graving Dock, Esquimalt Graving Dock, Kingston Graving Dock, also Cleveland Viaduct, and have a thorough experience of how such work should be done. I hereby certify that I never saw a better class of work performed in every particular than was done on the Sault Ste. Marie Lock, the engineers' and inspectors' instructions were carried out to the letter and the contractors', Messrs. Ryan & Haney, instructions were to use the best possible means to make a first class job, they did not save any expense that was to the best interest of the work.

Any practical man can see that the work speaks for itself, I can prove this by men on the works.

(Sgd) W. R. HUGHES.

SAULT STE. MARIE, Ont., 25th August, 1894.

W. CRAWFORD, Esq

Sault Ste. Marie, Ont.

DEAR SIR,—In reply to your inquiry regarding quality of timber in culverts and mitre sill platform of lock of Sault Ste. Marie Canal, Ont., I beg to state that I had the superintendence of the unloading, assorting, planing, framing, and building of all the timber put in the culverts and mitre sill platforms in 1893, and that I know the timber to be good sound timber of the size specified.

Truly yours,

(Sgd.) W. WHITE.

SAULT STE. MARIE, 25th August, 1894.

At your request I make this statement, I have over 40 years' experience as a mason, and a good deal of that time on public works in different parts of this country and in Scotland, and have been inspector on this lock from its beginning until it was finished, and was every working day and all day long going over the work and seeing that the work was well done. The mason work of the walls was most carefully built and filled with good cement mortar, and not a word against giving plenty by the contractors, there can be no better test given than the test they got last summer before the walls were finished building than from 25 to 30 feet of sludge run in behind them which made no impression upon them.

I also examined daily the putting in of the foundations and building of the culverts and the work was well done, the timber was good, and no such thing as bad timber and

planed so as to fit closely, after the mason work was finished I inspected the building of most of the crib-work in the canal and watched it closely, the timber was good and sound, well framed together and the crib was well filled, the same may be said of all parts of the work ; the material was all good and the work done to my mind satisfactorily.

(Sgd.) ROBERT SCOTT.

CARDINAL, 25th August, 1894.

WM. CRAWFORD, Esq., C.E.,
Sault Ste. Marie, Ont.

DEAR SIR,—Your favour of 21st containing copy of a letter sent by A. McLennan to the honourable the Minister of Railways and Canals was received when on my journey here, hence the delay in answering your request to give you my opinion on his charges from my personal observation and experience. I must say that it does seem to me almost a waste of time to answer charges that are so utterly at variance with the fact, and truth. However, as you have requested it, I will do so as far as I am competent to do it.

1st. Then, *re* the crib-work. That the crib-work has given way in places is an evident fact, but that it was not well filled or that the workmanship was bad, is not so as has been proven in the only way possible, viz.: by sinking test holes to the bottom of the crib in a number of places at the point where the shore has been greatest. Being desirous of profiting by the experience gained in the case, I made a personal examination of these test holes and do assert that in every case they the cribs were well filled and the workmanship is unquestionably good. Had it been defective, then I think a great part of it would have been destroyed under the great pressure brought to bear upon it. If McLennan is, as he asserts, a practical man and had an examination of these cribs in the manner mentioned then, I think he never would have made this charge, for now that the experience has been had the cause of the trouble is plain to be seen.

2nd. As to his charge that 75 to 80 feet has been needlessly excavated, that of course is nonsense and only shows that however practical he may be in something, he is not a practical canal man who would know something had to be made there.

3rd. As to the charge that one half the timber in the lock bottom is rotten and so badly rotten that it could be picked to pieces with the naked hands, no more arrant rot was ever written by any sane man. I witnessed a considerable portion of this timber being put in and did not see any (even one piece) being put there that I would have condemned had I been acting as inspector.

4th. And now we come to what he considers the main charge, viz., the lock walls. I wonder did this practical man ever see a lock wall built before this one. As you are aware, I have seen almost every if not quite every lock wall on the canals from Montreal to the Soo and the greater part of them, under construction as well as completed, and therefore I can speak as an experienced if not as a practical man. Now, I have no hesitation in saying that I have seen no better class of masonry than this on the whole line of the canal, neither did I ever see more care being exercised in its construction than I saw being exercised during the time I was there last fall, but perhaps the strongest proof of the untruthfulness of this charge has been given by the contractors themselves who have puddled behind the walls by flushing in the material with water instead of tamping in the usual manner. Had the wall been built as this man asserts the water would have poured through in torrents and I would not have been surprised to have seen symptoms of a bulge under the strain of a 44 foot head as they had on it whilst it was still green. As it is the only thing to be seen is the natural leakage that comes through the stone walls that have water behind them and are not protected by a heavy coating of Portland cement.

5th, 6th and 7th. All I can say is if McLennan and thousands of others will make oath to the truth of his statement then there are thousands up there that are quite regardless of what they make oath to ; as to his patriotism I would have thought more of that and less of his venom had he adhered somewhere nearly to the truth. I think his P. S.

Sault Ste. Marie Canal Inquiry.

shows clearly that he was making statements that he did not know the truth of, because the crib has not spread as he thought, but was driven to the shape shown by the pressure on the opposite side of the crib: and the natural inference is that he knew quite as little about the other charges.

I remain, respectfully yours,

(Signed) ROBERT MILLER.

SAULT STE MARIE CANAL,
SAULT STE. MARIE, ONT., 27th August, 1894.

COLLINGWOOD SCHREIBER, Esq., C.M.G.,
Chief Engineer, Dept. Railways and Canals, Ottawa.

DEAR SIR,—I am in receipt of your letter of 20th instant, inclosing a copy of a letter from Mr. Alex. McLennan to the Hon. Minister, in which he indulges in such reckless and absurd abuse of every part of this canal and every one connected with it, that his own letter should answer itself. All large public works are liable to some failures, for it is not given to man to foresee every danger that may happen, but I never heard of one that had not some redeeming feature.

Mr. Alex. McLennan seems to be well known here, is, I am told, quite a stump orator and makes himself known. He worked on the lock in Fraser's gang as a labourer mixing mortar, also for a few days in the planing mill, and is now, I believe chopping wood and clearing a bush farm not far from here. On one occasion he called on me and wished to be appointed masonry inspector, but as there was no vacancy, I did not inquire into his qualifications.

His charges are as follows :—

(1) That the crib revetment was built in winter, "filled with all kinds of rubbish and stones of enormous size too large to go between the ties, consequently stuck there, besides there was a large quantity of frozen earth, snow and ice"; that no supports were put between the ties and the workmanship was bad, therefore when the stone wall was built on top of the crib it "squeezed the loose material against the sides of the timbers and caused this so called crib-work to bulge out near the bottom like the rounding of the bottom of a ship."

In this statement he is partially right and partially incorrect. The work was principally done in winter for the best of reasons, and on that account crib-work was used instead of a stone wall, for many engineers doubt if masonry can be built in winter as well as in summer, therefore of course some snow and ice was mixed up with the filling, but not enough to do more than moisten the material when the warm weather arrived. Some frozen clay also went in, for there are clay seams between the beds of rock, and it was quite impossible to separate rock from frozen clay, but as rubbish was put in and the earth overlying the rock was too valuable for other purposes, therefore, it was taken off and banked long before any cribs were built. No unprejudiced person will say that large stones are not quite as good if not better than small ones, provided they do not damage the ties or bottom in being put in. There was no floor and it has been well proved, by the holes made in the cribs and those portions taken down and replaced, that no damage was done to the ties by the few large stones that were put in. These examinations of the crib have also proved, very clearly I think, that the crib-work was well built, well filled and well bedded in the rock. The blocks put in between the ties were quite sufficient to prevent the ties breaking from the weight of wall and material above them, if it had not happened that in some places the material behind the crib, which in winter did not seem very bad, had not turned out in spring to be very wet, and the pressure behind the cribs became too great for the weight in the crib and it was pressed out, as has often happened with stone walls under similar circumstances. As soon as this was noticed, heavy props were put in and the space between them concreted, which prevented further slides and made an excellent substantial job.

(2.) That a width of 75 or 80 feet unnecessary excavation was made "for which the country has to pay a large amount of money almost for nothing" is simply nonsense. The excavation taken out has been solely for the width of channel as originally designed and for foundation of cribs to rock surface.

(3.) That nearly all the mechanical work on the canal is at fault and nearly one-half of the timber in the bottom of the lock is rotten and ought to be culled and so forth.

This statement is absolutely false. There is not a single stick of timber in the foundations of the lock which has one particle of rot in it, and I append a short note from Mr. Wm. White, who saw the timber unloaded, superintended its framing and planing, put it in place, and actually did see every single stick of timber over and over again. Mr. White is a man of some twenty-five years' experience in timber structures, and has quite a record as a good and reliable crib and bridge builder, and has no hesitation in referring to Messrs. A. Cargill, Alex. McNeill and J. S. Rowand, members of parliament, as to the way he has conducted work of this sort in the county of Bruce, and there are others in other parts of the country for whom he has worked. He may not be a patriotic man of Mr. McLennan's stamp, but I know, and I speak advisedly when I say so, that no man could get him to put in a rotten piece of timber in this or any other piece of work, and I also know that if he or anyone else had done so on this work he would not have remained one minute longer on the work after being found out. I feel ashamed, after five or six years' experience of the work done by Messrs. Ryan & Haney, that I shall be called on to defend their honesty, but as this seems to be the case, I state most distinctly that I have not only never seen the slightest inclination to skirk their work or put in bad material, but on the contrary, with or without supervision, they have rejected material or work that had the slightest flaw in it, and they have often supplemented work at their own expense so as to make a more perfect job than was called for by the specifications.

(4.) That the lock walls are built of bad mortar and are full of "rat holes so that the water can run through them like a sieve."

This is put as a climax to Mr. McLennan's objections and indeed a climax, for up to this time we thought the lock masonry was a very excellent job and have been rather proud of it. A large number of engineers from this continent and also from Europe, in consequence of the World's Fair at Chicago, have visited us and examined the lock walls very carefully at different stages of construction, and all agree that it was impossible to build a better lock wall. The cement used was of the very best brands in the market, and was used in abundance, the sand was exceptionally good, and the stone, both for facework and backing, could not be excelled in this or any other country. No better crowd of masons was ever brought together on any public work than on this, as was proved by the hollow cuoins, 45 feet high, which must be absolutely true to suit the gates, requiring so little dressing that the best authorities in lock walls were amazed at the accuracy of the building. Therefore it is rather absurd for the mixer of mortar to condemn these walls and as he says all the other matters are "secondary affair in comparison to the way the lock walls were being built," I think his case is weak.

Yours faithfully,

(Signed)

WILLIAM CRAWFORD,

Resident Engineer.

SAULT STE. MARIE, ONT.

27th August, 1894.

MR. WILLIAM CRAWFORD,

DEAR SIR,—In reply to your communication in reference to inferior workmanship on the Sault Ste. Marie Canal, I have only to state that I had charge of masonry and cut stone during the most important part of its progress, and in no instance was trouble or expense spared to make the walls first class in every respect. I consider the backing stone that was used to be admirably suited for the purpose, it has good level beds, and averages from 4 to 9 tons each stone, laid in good cement mortar and properly grouted,

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the instructions of the inspector in charge were strictly adhered to throughout. The face stone is properly cut, well bonded, and laid in the best quality of imported English cement. I have had 29 years' experience in the building trade, 18 years of which was spent as foreman on important works in England. I was employed for two seasons on the new canal on the American side, and I conscientiously say that I consider the walls on the Canadian lock to be stronger and better than those on the American side, the backing here being so much larger and superior to that used on the American side.

I remain,

Yours respectfully,

(Signed,) HENRY WATSON,
Superintendent of Cut Stone, &c.

SAULT STE. MARIE, 28th August, 1894.

GENTLEMEN,—The Sault Ste. Marie Canal, Ontario, is just about completed. I should have great pleasure in expressing my opinion on its construction. I have had 12 years' experience as foreman on masonry, chiefly on public works. I have been employed on the above canal as foreman since the commencement of building. I have pleasure in stating that Hugh Ryan & Co. had the best staff of foremen that I have come in contact with either in the United States or the Dominion of Canada, and I consider, as an experienced man, that the masonry of this canal is second to none in the Dominion of Canada. No expense has been spared to make it a success and I must say that the inspectors in charge have spared no pains in seeing that the work was done satisfactorily.

I remain, yours truly,

(Sgd.) GEORGE MOORE.

SAULT STE. MARIE, 28th August, 1894.

DEAR SIR,—This is to certify that I was in charge of the gang which mixed practically all the mortar used on the lock wall, and that all the mortar was strictly first class and satisfactory to the inspector in charge.

My orders from Mr. Haney were to make first class mortar always and any cement that was at all damaged to throw it out; these orders I always carried out, no mortar was ever left mixed over night in order that it was always fresh when used. I have seen after a rain pools of water remain on the lock wall for days, which speaks for itself as to the quality of mortar used. To this I am willing at any time to make affidavit if necessary.

(Sgd.) W. J. COLLINS.

SAULT STE. MARIE, 28th August, 1894.

WILLIAM CRAWFORD, Esq.,
Sault Ste. Marie, Ont.

DEAR SIR,—In reply to your inquiry regarding the masonry of the Sault Ste. Marie Canal I say that I have never seen better work of this class. I have been working at my trade as a mason for twenty years, nine years in the Isle of Man and eleven years in this country, six years of which time I was employed on the Welland aqueduct, and on locks 3 and 10 of the Welland canal, also two years on railroad work and about two years on the Niagara Falls tunnel canal. I have been here during the construction of most of the masonry and would say it is first class work. The instructions of the Government inspector were always carried out by me. And the contractors told me over and over to do the best work I could on the wall.

I might say that during my eleven years' experience in this country I have been a foreman for six years.

Yours respectfully,

(Sgd.) ROBERT MYLCHREEST.

SAULT STE. MARIE, 28th August, 1894.

W. CRAWFORD, Esq.,

DEAR SIR,—I hereby certify that I occupied a position as foreman on the construction of the crib-work of this canal from the start to the finish of it, and at no time during that work did I see any but good sound timber go into any part of it. I might also say that I handled a great deal of the timber put in the bottom of the lock, and found it all good sound timber suitable for any work.

I have been doing timber work for ten years, and can say that the timber used on this work was as good, all round, as any I have handled in that time; my instructions from the contractor was always to do good work, and I always endeavoured to carry out those instructions.

Yours truly,
(Sgd.) S. McDONALD.

SAULT STE. MARIE, 29th August, 1894.

W. CRAWFORD, Esq.,

Resident Engineer, Sault Canal.

DEAR SIR,—Having been requested to give you my opinion of the work and material used in the construction of the canal here, I have no hesitation in saying that as far as the branch in which I was particularly connected is concerned both the material and workmanship was of the best—I refer to the timber work—having had charge of that oranch since the first of January; previous to that I handled every stick of timber used in the lock-bottom through the dimension plainer before it was put in; I did this part myself, personally, and can vouch for the good quality of timber used. In the crib-building it was equally good and well built, we slighted nothing, having received particular instructions from Mr. Haney to slight no part of the work and to comply with any requests made by the inspectors which I think they will admit I have always done, and having to pass back and forth over the cribs every day can say they were well filled.

As to the mason work in the lock, I did not have the opportunity of seeing a great deal of it, but what I did, consider it well built; I plumbed and measured all the quoins and walls of lock for the gates and mitre sills, and must say was astonished at the accuracy, for in no place was there a variation of $\frac{1}{4}$ of an inch which I think remarkable, and I think I ought to have a fair knowledge of work of that kind having been engaged on canal works for fourteen years, eight of which I have had charge of all the work for the firm I was engaged with.

You are at liberty to make use of this any way you wish, and I am willing to make affidavit to same any time.

Yours truly,
(Sgd.) H. W. ROSS,
Superintendent Timber Work for H. Ryan & Co., Soo Canal.

EXHIBIT No. 4.

SAULT STE. MARIE, August 9th, 1894.

Hon. JOHN HAGGART.

SIR,—I being a friend and supporter of the Government, I consider it my duty to inform you of some of what has transpired as well as what is transpiring on this canal. The so called crib-work was mostly built in winter and filled with all kinds of rubbish and stones of enormous size too large to go between the ties consequently stuck there besides this there was a large quantity of frozen earth, snow and ice—

When they began to build a stone wall on top of this, the whole thing began to sink, because there was no proper support put under the ties to keep them from breaking, therefore there was not sufficient support to keep up this weight which squeezed out this

Sault Ste. Marie Canal Inquiry.

loose material against the sides of the timbers and caused this so called crib-work to bulge out near the bottom like the rounding of the bottom of a ship. The excavation made to make room for all this rubbish including the space taken up by the braces are no less than 35 to 40 feet on each side of the canal—making in all from 75 to 80 feet of excavation all along the canal for which this country has to pay a large amount of money almost for nothing. Being a practical man I am certain that the sinking of this crib-work was caused by bad workmanship, but it is not only the crib-work that is at fault but nearly all the mechanical work on the canal, nearly one half the timber in the bottom of the lock is rotten and ought to be culled, a person could take a great part of the sticks apart with his hands before they were put in the lock; no one can see the quality of timber now as they kept the best sides outside. But all this is a secondary affair in comparison to the way the lock walls were being built, I had the opportunity to observe while the men were at work mixing the mortar the water run through it as it would go through pure sand and run into the numerous rat holes as it would go through a sieve—stones thrown on top of stones without any bedding whatever.

Neither contractor nor foreman would pay any attention to inspector or any one else, they seemed to do pretty much as they pleased.

I may say that I and others were eye witnesses to all I have stated here and we are prepared to prove it all on oath. I have no hesitation in saying that I and thousands of others do believe that this canal work is one of the most gigantic frauds that ever was carried on in Canada if not in North America.

I do not write this through any ill-will but from a pure spirit of patriotism as I consider this work would be a disgrace to any country even to a semi-civilized country.

The government may find out when it is too late that they made a mistake in allowing so important national work as this to be controlled by Irish Americans, and some of them could be proved even by Government officials to be common vagabonds.

I may state that if there is no immediate steps taken by the Government to rectify some of this wrong doing, I and a great many others shall deem it our duty to write all this and a great deal more to the public press.

P. S.

DEAR SIR,—In case you may have occasion to find out my address, I may say that it is impossible for properly constructed crib-work to spread without the ties breaking or being cut.

(Sgd.) A. McL.

ALEX. McLENNAN,
Sault Ste. Marie, Ont.

OTTAWA, 5th September, 1894.

(Memorandum of Instructions.)

Unfavourable reports as to the character of the work of construction of the Sault Ste. Marie Canal having reached the Honourable Minister of Railways and Canals, he desires before any further payments are made on account of this work, that a thorough examination of the work be made by three engineers of undoubted high repute in the profession, who it is desired shall at once proceed to Sault Ste. Marie to make a thorough inspection of the works, exercising their own judgement as to the mode of procedure and report to him.

It is important that no delay shall arise in making the examination as the water cannot be let into the canal so as to enable the dams to be cut away until the examination is completed. It is the desire of the Government that there shall be no hindrance to the work being proceeded with to completion so as to enable the canal to be opened for traffic this season.

By order,

(Sgd.) COLLINGWOOD SCHREIBER,

Deputy Minister.

THOMAS KEEFER, Esq., C.M.G., C.E.

CHARLES GREGORY, Esq., C.E.

JOSEPH HOBSON, Esq., C.E.

SAULT STE. MARIE, 17th September, 1894.

Honourable JOHN HAGGART,

Minister of Railways and Canals, Ottawa.

SIR,—We, the undersigned having, in accordance with instructions from your department, inspected the works of construction of the Sault Ste. Marie Canal, beg leave to submit the following interim report pending further information now being obtained by Mr. Keefer.

The lock-walls are completed and backed up with earth to their full height, so that nothing is visible except the face and copings of the masonry. This masonry is massive and appears to be of the most excellent character, both as regards materials and workmanship, and fully up to the requirements of the plans and specifications. The walls are in such perfect line and plane that we have no doubt that they have been substantially and properly put together throughout, since any defect, even in the interior of the masonry, would be pretty sure by this time to have exhibited itself in some way upon the surface. Our opinion of the good quality of the lock masonry is fully confirmed by the statements of the Government officers and others who were competent of judging, and who had opportunities of seeing the work while under construction.

The earth filling behind the masonry was, we are informed, flushed in with water, and this severe test of the stability of the work caused no indication of any defect in it; we think, therefore, that the character of the masonry of the lock, in all its parts, is beyond question.

The lock gates are, in our opinion, of excellent material and workmanship.

A matter which appeared to us of great moment was, the inspection and, if possible, the testing of the efficiency of the anchoring bolts, by which the wooden filling culverts, in the lock, are secured to the rock upon which they are built, so as to guard against their floating or being displaced by hydrostatic pressure from below their floor.

Owing to the anchoring bolts of these culverts being now inaccessible we were unable to test any of them; we could therefore only make diligent inquiries as to the supervision which had been exercised over the work of sinking the holes in the rock, and of securing the bolts therein. We had no evidence to lead us to suppose that the inspection was not sufficiently rigorous; we have however been impressed with the idea that, when the work was in progress, there was a feeling among all engaged upon it that, the only force which had to be guarded against was the floatage power of the timber. In this opinion we hesitate to concur as there is a danger, we are inclined to believe, that a pressure may exist under the floor of culverts tending to lift it, due probably to the head of water in the upper part of the lock; we consider that steps should be taken to guard against the possible injury to the culverts which might arise from this. That there is water under the floor we know from openings which we caused to be made.

All the timber used in the construction of the culverts at the bottom of the lock, so far as we could see it, was of good quality; and from the information obtained from trustworthy persons employed upon these culverts, when they were being built, we feel warranted in believing that no bad material was used in them.

Some portions of the crib-work upon the sides of the prism of the canal bulged, but the defects have been remedied by some of these parts of the work having been taken down and rebuilt by the orders, and under the supervision, of your engineers, and by other parts being supported by inclined struts extending from the rock in the bed of the canal to the face of the cribwork, a few feet below the top. The spaces between these braces, and between them and the face of the crib-work and of the rock beneath it, were filled with concrete so as to present a smooth, plane surface.

The crib-work was of such a design that its stability and efficiency as a retaining wall were dependent largely upon the manner in which the stone filling was done. The specification for this work contained a clause in the words following:—"The crib-work shall be well and solidly filled with stone from bottom to top, which shall be carefully packed around and between the ties and properly levelled off at the top."

The construction of the crib-work and the filling of it with stone, and also the filling in the earth at the back of it, were, we understand, carried on during the winter last past, as was also the excavation of the rock in the canal prism in front of it.

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We can very readily appreciate the force of what has been represented to us that during the winter it was almost impossible to detect the thin strata of clay which existed between the beds of the rock, and which adhered to the stone used for filling, and that in consequence some soft material found its way into the cribs. We attribute the bulging of the cribs partly to this mixture of clay in the filling, and partly to the rock below them being insufficient for their support, after the excavation for the canal prism had been taken out to its full width and close to the face of the crib-work; the movement in the cribs may therefore, to a considerable extent, be attributed to the prosecution of the work during the winter, whereby not only was the capacity of the cribs to resist the thrust of the earth behind them reduced, but the tendency of this earth to slide when the spring came was increased by reason of the thawing and subsequent liquefaction of the frozen material which had been used for filling the cribs and for making up the ground at the back of them. The defects which the cribwork has exhibited may therefore be largely ascribed to the work having been carried on during the winter. The methods adopted by your engineers for overcoming the difficulties encountered are perhaps the best that could have been devised under the circumstances, as the struts afford support to the cribs, and the concrete filling between these struts and in front of the rock underlying the cribs, prevents its further disintegration, supposing no movement had occurred in the cribwork the protection of the rock would have been a necessity.

We have the honour to be, sir,
Your obedient servants,

(Sgd.) JOSEPH HOBSON,
“ CHARLES C. GREGORY.

OTTAWA, 27th September, 1894.

To the Honourable JOHN HAGGART,
Minister of Railways and Canals.

SIR,—I have the honour to acknowledge the receipt of your instructions of the 5th instant, directing me in consequence of unfavourable reports having reached you as to the character of the work of the Sault Ste. Marie Canal, to proceed with Messrs. Hobson and Gregory, C. E.'s. to that canal, and make a thorough examination and inspection of the work before the water was let in, and before any payments were made to the contractors.

Messrs. Hobson and Gregory reached the Sault on the 12th, and I arrived there on the 13th. On the 14th we went over the work together. They completed examination and returned on the 18th, and I left them on the 19th after making arrangements for certain information to be forwarded to me from the office of the resident engineer, which I received on the 24th. Before leaving the Sault, my colleagues read to me an interim report upon which they had agreed, to which I was unable to subscribe.

The unfavourable reports referred to in our instructions were chiefly contained in a letter written from Sault Ste. Marie in August last by a former employe of the contractors named McLennan. As we learned that he was near the Sault, we sent for and heard him.

The three charges made by him were :—

1. The masonry of the lock was not solid.
2. The timber in the filling culverts of the lock was unsound.
3. The cribs for foundation of walls of canal banks were not properly filled.

McLennan informed us that he had been employed as a mixer of mortar on the lock walls and therefore knew that sufficient cement and mortar had not been used.

Asked when he saw this he replied :—“In June, 1893.”

When asked why he (who wrote, as he states in his letter, as a friend of the Government and from patriotic motives) had waited until August, 1894, and until the lock walls were completed, before he reported this defective work, his answer was that he had not had time before. Questioned as to the culvert timber which he had said could

be pulled apart with the hands, he said he had not so tested it because when he saw it it was frozen.

All the timber in sight—and the most of it was yet in sight—we found to be of excellent quality, and as to the masonry of the lock walls wherever visible, nothing could be finer. We were convinced from what is to be seen, and from the statements of engineers and inspectors—as well as from information obtained from the American side (where similar work is going on) that there is nothing whatever in the charges as to the quality of the masonry and timber. It is inconceivable that, in so public a place with the works open to all—surrounded by experts on both sides of the river, visited by tourists, foreign engineers and contractors, bad masonry and timber could have been put in the work, without its having been brought to the knowledge of the press and of the Government.

As to the crib filling, the fact that some of the crib-work failed, gave colour to the charge against the filling, which could not now be seen. For the greater part of its length, these cribs were seated on the rock in pits excavated for them before the earth and rock excavation of the canal prism in front of them was taken out, and were filled and backed up from the excavation as it progressed. Some of them were moved by the pressure behind them before they were filled up and reconstructed.

The extent of this crib-work is over 2,000 feet in length upon each side of the canal, and I learn from the resident engineer that seventy per cent of that upon the north side and eighty-four per cent of that upon the south side withstood the pressure. Of the remainder—about ten per cent of the whole length was rebuilt— $4\frac{1}{2}$ per cent of it as crib-work and 6 per cent as wall; this last being where the rock base for crib-work had been too much shattered by the blasting.

About $12\frac{1}{2}$ per cent of the whole, which showed signs of yielding to the pressure, was secured by struts or shoring from the solid rock bottom of the canal, and this system has been carried throughout, not only supporting the crib-work, but for the purpose of concreting the ragged face of the rock excavation, and thus retaining in situ the loose and friable strata. This was under the circumstances necessary, and the course adopted will, I believe prove effectual. It serves the double purpose of securing the crib foundations of the masonry walls upon each side of the canal and of protecting passing craft.

This crib-work is now secure and with the water in will be more so, especially if any spoil bank behind it and near enough to affect it is removed before the water is with drawn, and thus relieve a saturated bank in rear of the crib from this additional weight. The specification, I believe, provides that no spoil bank higher than 10 feet shall be within 90 feet of the face of the wall—and none shall be within 50 feet of that face.

As we were instructed that further payments to the contractors would await our report, I think it proper to state, that I do not believe that there is anything in the present condition of this great work which makes it necessary or reasonable to withhold the usual estimates.

To avoid misconception, I deem it necessary to specify the only point upon which I differ with my colleagues in their interim report. This is with reference to the necessity of giving relief to any water which may find its way either from the rock below or elsewhere—to the underside of the flooring of the filling culverts in the lock bottom. This floor rests upon timbers across the lock bottom which are bedded in concrete, with *spaces* of only six inches between them.

The greatest *head* to be apprehended would be when the lock is pumped out and the Lake Superior level resting against the guard gate. I do not think that Lake Superior pressure can be transmitted to these culvert foundations under the mitre sills and breast walls: and if it could, the span between the timbers, exposed to such pressure, is so narrow that spiking or tree-nailing is sufficient to resist it. If there be any doubt upon this point, I think the true remedy is to increase the plank fastenings.

The question raises that of the efficiency of the anchorage of the culverts themselves, which we were unable to reach or test, we therefore made the only test practicable of the holding power of similar anchorage bolts at the foundation of the movable dam. A pair of hydraulic jacks of 15 and 20 tons respectively were applied to two of

Sault Ste. Marie Canal Inquiry.

these bolts. In one case the bolt was broken off, in the other it was neither broken nor withdrawn.

There was no gauge by which the exact strain could be ascertained, but it was known to exceed ten tons upon each bolt.

Ten tons is the limit of the strain called for by the contract for the rock bolting at the lock upon the American side.

I have the honour to be, sir,
Your obedient servant,

(Sgd) THOMAS C. KEEFER.

HAMILTON, ONT., October 1st, 1894.

To the Honourable JOHN HAGGART,
Minister of Railways and Canals, Ottawa.

SIR,—I have the honour to acknowledge the receipt of a copy of Mr. T. C. Keefer's report, dated the 27th ult., upon the character of the work of construction of the Sault Ste. Marie Canal, and having carefully considered it, I beg to say that, from the inspection of the work which I made in company with him and Mr. C. C. Gregory, I fully agree with him that, there is nothing "in the present condition of this great work which makes it necessary or reasonable to withhold the usual estimates" from the contractors. In our interim report, dated the 17th ult., Mr. Gregory and I stated our favourable opinion of the work, and I find that there is nothing in Mr. Keefer's report which conflicts with what we therein said about it.

As to the only subject upon which there was any difference of opinion between Mr. Keefer and Mr. Gregory and myself—the anchorage of timber culverts in the bottom of the lock; Mr. Gregory and I referred to the question of the anchorage, being impressed with the idea that there was a possibility of its being insufficient, but since we made our report I have learned that the water has been let into the lock, with the most satisfactory results: This, of course, settles the question.

I have the honour to be, Sir,
Your obedient servant,

(Signed) JOSEPH HOBSON.

20, MANNING ARCADE,
TORONTO, March 16th, 1895.

To the Honourable JOHN HAGGART,
Minister of Railways and Canals.

SIR,—As the report signed by Mr. Hobson and myself in the matter of the Sault Ste. Marie Canal was an interim report, and as Mr. Keefer, C.M.G., made a separate and later report, the adoption of which by Mr. Hobson and myself would render it unnecessary that any formal joint and final report should be made, I beg hereby to express my concurrence in Mr. Keefer's report, saving only my maintenance of the opinion expressed in Mr. Hobson's and my provisional report, that it might have been well, by providing an outlet for any water that might become impounded below the flooring of the filling culverts to guard against any hydrostatic pressure from any connection with water at a higher level. Mr. Keefer appears to think that we spoke of such outlet or relief as a necessity, whereas we only recommended it as a precaution, so that after all there is no issue between us. I was, and am, far from saying that there was any necessity and therefore do not differ from Mr. Keefer. The satisfactory filling of the lock goes far to support Mr. Keefer's opinion that there was no necessity for what we recommended as a precaution.

I have the honour to be, Sir,
Your obedient servant,

(Signed) CHAS. C. GREGORY.

EXHIBITS Nos. 5 AND 6.

Photograph of the lock and entrance to the Sault Ste. Marie Canal. (*Not reproduced here.*)

EXHIBITS Nos. 7 AND 8.

Plans of upper and lower entrances, showing obstacles met during recent sweeping. (*Not reproduced here.*)

EXHIBIT No. 9.

(*Engineer's report accompanying plans of upper and lower entrances of Sault Ste. Marie Canal showing obstacles met during recent sweeping.*)

SAULT STE. MARIE CANAL,
SAULT STE. MARIE, ONT., June 7, 1895.

COLLINGWOOD SCHREIBER, Esq., C.M.G.,
Chief Engineer Dept. Rys. and Canals,
Ottawa.

DEAR SIR,—I have been delayed writing you about the results of the recent sweeping of the entrance channels in order to send you plans of the depths found which will give you a much better idea of the position of the obstacles met and the depth of water obtainable than a description. Where no sounding is shown the sweep met with no obstacle when down to 20 feet. Every care was taken to cover every portion of the ground, which is a very difficult thing to do, therefore the lines overlapped each other considerably and the same boulder may appear in two lines. Some boulders were found at the eastern end of the lower channel where the original cross-sections showed no dredging required, therefore nothing was expected and this part of the channel was not laid out, but in a few days I will have this properly laid out and swept. The dredge is again going over the whole channel and the derrick scow is picking up the larger boulders at the lower entrance and a dredge and drill are working at the upper dam.

I am sir, your obedient servant,

WILLIAM CRAWFORD,
Engineer in Charge.

58 Victoria

Appendix (No. 2.)

A. 1895

REPORT

OF

PUBLIC ACCOUNTS COMMITTEE

WITH REFERENCE TO THE

TOBIQUE VALLEY RAILWAY

TOGETHER WITH

EVIDENCE ADDUCED BEFORE SAID COMMITTEE AND EXHIBIT
IN CONNECTION THEREWITH

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

PRINTED BY S. E. DAWSON, PRINTER TO THE QUEEN'S MOST
EXCELLENT MAJESTY

1895

Tobique Valley Railway Inquiry.

REPORT

COMMITTEE ROOM,

FRIDAY, 12th July, 1895.

The Select Standing Committee on Public Accounts beg leave to present the following as their Fifth Report :—

Your Committee have had under consideration the item “Tobique Valley Railway, \$19,341.54,” as set out under the heading “Railway subsidies paid in 1893-94,” on page Q—148 of the Auditor General’s Report, on Appropriation Accounts for the fiscal year ended 30th June, 1894, and in connection therewith have heard a statement under oath by the Hon. the Minister of Marine and Fisheries, and for the information of the House report herewith the said statement and the evidence given by the said Minister, and the exhibit filed in connection thereto ; and the Committee recommend that the said statement, evidence and exhibit be printed.

All which is respectfully submitted.

GEO. B. BAKER,
Chairman.

Tobique Valley Railway Inquiry.

MINUTES OF EVIDENCE.

COMMITTEE ROOM,

HOUSE OF COMMONS, 9th July, 1895.

The Committee met.

Hon. Mr. COSTIGAN appeared before the committee and said : Mr. Chairman, I wish an opportunity of making a statement—a short statement—in connection with the construction of the Tobique Valley Railway, the subsidies voted for it, and in connection with the interest that I have in properties along that line ; and in order to do so in a manner that will challenge, I think, the fair opinion and decision of the public, I ask to be sworn and to make that statement under oath, and I would further ask that my statement be taken down as I make it, by the shorthand writers.

The oath having been administered, Mr. Costigan said : As a representative of my constituency, Victoria, New Brunswick, I assume whatever responsibility may fairly be attached to me for getting the necessary aid, coupled with provincial aid, to complete the construction of a portion of a projected line of railway, called the Tobique Valley Railway. That constituency more than any other constituency, in our province at least, felt the necessity of railway construction, it being an interior county, the furthest removed from navigation with the St. Lawrence or the Bay of Fundy. A Mr. Stewart, of Andover, was an enthusiast on the subject of railway communication on the Tobique River. After the policy of the Government was adopted of affording aid to provincial railways, I felt a strong hope that something might be done for my constituency in that line. At that time a charter was obtained through the Provincial Legislature of New Brunswick for the construction of this line—not merely this line of 28 miles, but a line projected from Perth to connect with a road, a proposed road, from Campbellton. A subsidy was promised by the Blair Government, but not voted. My first application—I do not mean by that such an application as would come from a company or promoters, but I am speaking of the effort I made in this connection—was when the question of subsidies in the different provinces was considered, to lend my legitimate influence, as I considered it, to secure a subsidy for a portion of this work. While it was the policy of the Government to encourage the construction of roads deemed to be of importance, especially by the Provincial Legislature, it will be easily understood that the subsidy for the construction of the whole line in all cases could not well be granted. A subsidy of \$3,200 a mile was granted for 28 miles of this railway. I can give the date of that, I think, in June, 1886. I want to state that up to that time in 1886, when that subsidy was granted, I did not own one foot of land in that section of the country at all. I held no mining leases covering any property there or near it, or anywhere else. When that first subsidy was voted the only interest I had—and I state it positively—was the interest that I believe I felt in my constituents and the development of this section of the country. The first 14 miles of this road will be admitted by all engineers to be of such a character as to be impossible of construction for the usual estimate made for railways. The Blair Government found itself in a position then, that it could not carry out what I have stated I believed to have been the promise of a subsidy to be made in conjunction with the Dominion subsidy, on account of the fact that there were so many other claims for railways, and the finances would not admit of opening the door. That is the statement made to me. The subsidy as voted was, therefore, perfectly useless. It would not secure the construction of the

road. At the next session—the session, at any rate, of 1887—the subsidy applied to the 28 miles was made applicable to the first 14 miles that were considered doubly expensive at least.

By Mr. Lister :

Q. That would be \$6,400 a mile, would it?—A. Yes, it was just doubled up. Yes, that is, in effect, the same thing. That was voted under chapter 50, 51 Victoria, and it was on the 23rd June, 1887, when that was done. I want to state when that took place, and when that money was voted I owned no land, controlled no leases, had no interest to the extent of one dollar along that line, nor had I up to that time, nor since that time, one cent's worth of interest directly or indirectly in any stock or other way that a man could be interested financially or personally in an enterprise of that kind. The subsidy was voted in this way for the first 14 miles. Bear in mind I have told you this charter was granted by the Legislature of New Brunswick under a Liberal Administration.

Q. Coalition, Mr. Costigan?—A. Yes. Well, coalition with a strongly Liberal leader.

Q. Well, not strongly?—A. I am not going to diverge, but intend to confine myself to a statement of the bare facts without discussing anything outside of that. Our people were anxious for the construction of that road. The men who held the charter I concluded, rightly or wrongly, were delaying pushing on the work in face of the exceptional circumstances of the subsidy given to promote this work. It came to my knowledge that several meetings had taken place between these charter members—the men holding the charter—and railway constructors, but with no evidence that they would agree. The impression left upon my mind, to put it mildly, was that they were trying to see what bargain they could make; to sell out their charter to some one who would undertake to construct the work. To my knowledge several responsible parties had offered to take the road over, pay the expenses incurred and proceed immediately with the work. This resulted in nothing. When in New Brunswick I called upon these gentlemen to meet me at the Barker House Hotel, Fredericton, to discuss this subject. I met them frankly and fairly. I said: "Gentlemen, you are very slow about getting to work to construct that work. You must understand my interest is to see the work constructed. The money has been voted to start that road the first 14 miles which are the most difficult. We want that constructed. That will overcome the most difficult part of the navigation of the river and will be of great benefit though not of the benefit we expect the road to be when it is extended." They took the ground that they had the charter and that they were the best judges as to when they would proceed with the construction of the road. I then made this statement to them: "Gentlemen, I don't want to do anything that is unfair. This is a business transaction so far as you are concerned. I don't care if you make millions out of it. It is none of my business. But my county wants the road and wants it constructed without delay, and unless you go to work under your charter and take advantage of that subsidy and prosecute your work, some one will introduce a bill, very likely in Parliament, asking for a new charter to construct the work." They said: "You would not surely entertain the proposition that the Dominion Parliament would agree to grant a charter to another company which would be virtually covering the same ground?" I said: "I think Parliament would under certain circumstances. I think if the case were put before Parliament in this way, that they had voted a liberal subsidy for the construction of this work and that you held the charter, and gave no evidence of proceeding in good faith, I think that Parliament under those conditions, unless you could show cause why they should not do it, would grant a charter, but they would only be asked to grant it, I tell you this, with the condition that it should not interfere, even after its passage, with your chartered rights. If you even then went to work and prosecuted the construction you would be all right, because a clause could be put in as is often done in a bill, that this bill should only take effect at some day. I forget the date now, say, six or eight months, so as to give an opportunity to the chartered company to go on and carry the work out under their charter."

The Committee adjourned.

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HOUSE OF COMMONS, 10th July, 1895.

The Committee met.

Hon. JOHN COSTIGAN continued his statement under oath as follows:—I think I was referring yesterday when the Committee rose, to legislation of the Dominion Parliament. A charter was asked for from this Parliament. The men holding the charter from the New Brunswick Legislature made their objections as I expected and I was called upon to give reasons why this Parliament should grant that charter. I gave the reasons and they were acceptable to the House. There was no division, no objections were taken, and the Bill passed, but it contained a clause as I stated, that the measure should not go into operation until a certain date—it is now on the statute-book—that it should not go into operation until a certain date, so as to allow that time to the original charter holders to enter upon the work under their charter, and that if they did commence the work in good faith that that bill was to have no effect. It had the result that I expected. The men made arrangements with some other parties, some St. John men—and it is not necessary to go into the details of what I remember about it—and the contract was entered into and construction was commenced. What is known as the Tobique Valley Railway Company pushed on their work, large advances having been made by Simeon R. Jones, of St. John. Before they completed their contract for that 14 miles they got into difficulties and suspended work. Debts remained unpaid and matters were in a very unsatisfactory condition. The New Brunswick Government had—I forget whether it was just at that time—renewed their promise of assistance to this road, and the reasons given to their Legislature for subsidizing this road were that these 28 miles would lead to the immense deposits of gypsum which the Provincial Government owned, being Crown lands principally. A few grants had been made, but the bulk of the lands were held by the Crown, and the Provincial Government gave as a reason to justify them for granting a subsidy to this road, that it would bring them a revenue by obtaining a royalty on every ton that was to be taken out of the mines. Now, this property that was owned by the Provincial Government was that which would be expected to be the terminus of these 28 miles which it was important should be constructed first. A man by the name of Arbuckle owned a hundred acre lot about three miles below that.

By Mr. Mulock :

Q. Do you mean beyond the 28 mile point?—A. No.

Q. Within 28 miles from Perth Centre?—A. About 25 miles from Perth Centre. He owned and had been developing that property, I suppose, for the last thirty years, speaking from memory; that is developing it by taking out the raw article and selling it principally to the people in the United States, where it is handy, and who came across to draw it from his mine. Arbuckle never would sell or dispose of his property before that, because he considered it a valuable property—that the construction of a railway would develop it—and he thought, of course, he had a very valuable property. After the financial difficulties with this company had gone on for some months evidently he became discouraged, because he offered his property for sale, and this Mr. Stewart whose name I have mentioned, wired me that I could have the property for \$2,500. I wired him back, to buy the property immediately for me, and that if he could a deed of the property given him delivered to the Bank in Woodstock that the money would be there to pay Mr. Arbuckle on executing the deed. Mr. Arbuckle went with Mr. Stewart to Woodstock, I believe. They prepared a deed, they placed it—carrying out these conditions—in the hands of the bank, and the bank on my authority, paid over to him \$2,500. This is the deed, dated, I think, 1890 :

“This indenture made this 12th day of May, in the year of our Lord one thousand eight hundred and ninety, between John W. Arbuckle, of the Parish of Gordon, in the County of Victoria and Province of New Brunswick, farmer, and Catherine, his wife, of the first part; and John Costigan, of the City of Ottawa, Minister of Inland Revenue, of the other part.

“Witnesseth, that the said John W. Arbuckle and Catharine, his wife, for and in consideration of the sum of two thousand five hundred dollars of lawful money of Canada to the said John W. Arbuckle and Catherine, his wife, in hand well and truly paid, at or before the ensembling and delivery of these presents, by the said John Costigan, the receipt whereof is hereby acknowledged, have granted, bargained, sold, aliened, released, conveyed, and confirmed; and by these presents doth grant, bargain, sell, alien, release, convey and confirm unto the said John Costigan, his heirs and assigns, all that certain lot, piece or parcel of land and premises situate, lying and being in the ‘Parish of Perth, County of Carleton,’ now in the Parish of Gordon, in the County of Victoria, and Province of New Brunswick, and bounded as follows, namely: Commencing at a stake placed on the east bank or shore of the Tobique River, east from the head of Island No. 6, being the first island above the mouth of the River Wapskahegan, thence south 67 degrees east 82 chains, thence south 23 degrees west 18 chains to the north bank or shore of the Wapskahegan stream, thence down said stream and up the Tobique to the place of beginning, known as lot “G,” containing 140 acres more or less, being the same property deeded by one Georgiana Wilson to the said John W. Arbuckle by deed dated May 29th, A.D. 1870, and recorded in Book “F” on pages 700 and 701 on the 5th August, 1871.

“Together with all houses, outhouses, barns, buildings, edifices, fences, improvements, profits, privileges, and appurtenances to the same belonging, or in any manner appertaining; and the reversion and reversions remainder, and remainders, rents, issues, and profits thereof. And also all the estate, right, title, dower and title to dower, interest, use, possession, property, claim, and demand, either at law or in equity of the said John W. Arbuckle and Catherine his wife, of, in, to or out of the same and every part and parcel thereof with the appurtenances to have and to hold the said described lot, piece or parcel of land and premises hereby granted, bargained, and sold or meant, mentioned or intended so to be, and every part and parcel thereof, with the appurtenances unto the said John Costigan, his heirs and assigns to the only proper use, benefit and behoof of the said John Costigan, his heirs and assigns, for ever.

“In witness whereof the said John W. Arbuckle and Catherine, his wife, have hereunto set their hands and seals the day and year first herein written.

“JOHN W. ARBUCKLE.

“CATHERINE ARBUCKLE.

“Signed, Sealed and

“Delivered in the presence of

“J. C. McCCLUSKY.”

By Mr. Mulock:

Q. What was the date and the year?

The CHAIRMAN—12th May, 1890.

Mr. COSTIGAN—Now, I stated before, following up the history of this transaction, that when the first subsidy was granted, when the subsidy was re-arranged, and in fact up to that date—up to the date of the purchase of the property under that deed—I stated, and I repeat, that I had no interest in one foot of land either as a freehold or leasehold, as a mining privilege, or in any other way in that section of the country. I bought that property, I am sorry to say, not with my own money. I discounted a note, raised the money on it, sent it down and bought the property in that way; private property that passed out of the Crown in 1837 by grant to one Eccles. Yes, July, 1837. That was the first time I became interested in any property in that section of the country. That I state as an explanation. I have no excuse to offer for buying a piece of private property along that line of railway or in any other part of the country. The Government lands still remained where they were, with this exception, that the Government of New Brunswick had given a lease of all their gypsum lands to another company. I forget the names, but there were some of them that were friends of the Government; some of them members of the Local Legislature. They gave a lease of their lands to a company, in which I had no interest, of course consistent with the policy laid down by

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that Government that they would still in handing over the lease, get their royalty and revenue that would justify the payment of the subsidy. Negotiations took place then after I became the purchaser of this property between the holders of the lease of the Government property and myself, and the Tobique Valley Railway Company, who were interested in this company that held the lease.

The offer was made and I was asked to put in my property, this Arbuckle property, with the property that they had. 100 acres was freehold, they having bought out the property of Mr. Edgar, and the balance of their property was on a lease from the Provincial Government for a long term of years to mine and work all the Government property. That was theirs. I had simply this 100 acres one mile below. I considered my property more valuable in proportion, first because it was three miles shorter haul, second because it was represented as being the best mine, and thirdly because there was a sufficient supply there to meet the demand for years without going a mile above it. I was disposed to make any arrangement that could be made to put my property into a company to work it out. I did not know much about forming companies myself, and I did not want to have anything to do with it. The proposition was made that the company holding the lease from the Government and the large property above, and the Tobique Valley Railway Company being interested in the lands at the terminus of the road, that these two interests and my property should be amalgamated, and that we should not only put my property and the upper leased grounds into one property, but that the Tobique Valley Railway Company should become part of the one company. To make myself plain, I mean that the road itself, with all the mining property, the gypsum properties there, should become one property, in order to work the mines successfully, and run the road in connection with the working of these mines. I said, "I am quite willing to put in my property at whatever may be considered a fair valuation, and make one gypsum company of it, and I can understand that it should be of great advantage that you should make one company including the railway too, but the moment you consider that, I must drop out, because while I have a perfect right to own 100 acres of land, and do as I please with it, and I would be perfectly justified in putting that into your company to work out the mineral lands, I could not for a moment entertain the proposition of putting it into a company where a railway subsidized by the Government would be a portion of the assets, I suppose you call them." They saw the objection at once. It was reasonable, because I would be placed in a false position if I became a member of a company which had my property and a piece of railway subsidized by the government, and while I intended to remain the member for my county and as the member to advocate further subsidies. That negotiation ended. The owners of the mine asked me not to put my property in the market because they were in negotiation with some capitalists in New York. I thought it was rather like asking me to make a sacrifice in their interests, especially as they gave the answer frankly and fairly that if I put this property on the market it would interfere with the negotiations pending. I thought it was worth its value, so I agreed to their request and I never tried to sell or dispose of it for over 12 months. Other changes were made. Mr. Kitchen undertook the contract to build that 14 miles of railway and he carried out his contract. In 1890 I will show you that I got this property. I told you that I discounted a note to purchase this property. When the note became due, I had not sufficient means to meet it. I could have had it renewed, I presume, or had a friend to endorse it for me, or managed the way men often manage when they have not all the money they want, and their good faith is not doubted. Instead of that I got Mr. Connor, Mr. John Connor of St. John, to advance the money to pay the purchase money and interest. He advanced the money and as security took this mortgage:—

"This Indenture made this Thirteenth day of September in the year of Our Lord one thousand eight hundred and ninety, between the Honourable John Costigan of the City of Ottawa, in the Province of Ontario, Minister of Inland Revenue, of the first part, and John Connor of the City of Saint John, rope manufacturer, of the second part, witnesseth that the said John Costigan, for and in consideration of the sum of three thousand dollars of lawful money of Canada to him in hand well and truly paid at or before the ensembling and delivery of these presents by the said John Connor, the receipt whereof is hereby acknowledged, hath granted, bargained, sold, aliened,

released, conveyed and confirmed and by these presents doth grant, bargain, sell, alien, release, convey and confirm unto the said John Connor, his heirs and assigns, all that certain lot, piece or parcel of land and premises situate, lying and being in the Parish of Gordon, in the County of Victoria, and Province of New Brunswick, and bounded as follows: Commencing at a stake placed on the east bank or shore of the Tobique River east from the head of Island number six, being the first Island above the mouth of the River Wapskehegan, thence south sixty-seven degrees east eighty-two chains, thence south twenty-three degrees west eighteen chains to the north bank or shore of the Wapskehegan stream, thence down said stream and up the Tobique to the place of beginning, known as Lot G containing one hundred and forty acres more or less, being the property deeded by John W. Arbuckle and wife to the said John Costigan by deed dated the twelfth day of May, one thousand eight hundred and ninety, and recorded in Book N of Records in the County of Victoria, pages 751 and 752, together with all houses, out-houses, barns, buildings, edifices, fences, improvements, profits, privileges and appurtenances to the same belonging or in any manner appertaining and the reversion and reversions, remainder and remainders, rents, issues and profits thereof; and also all the estate, right, title, interest, use, possession, claim and demand at law or in equity of the said John Costigan of, in, to or out of the same and every part and parcel thereof with the appurtenances to have and to hold the said lot of land and premises hereby granted, bargained, and sold or intended so to be and every part and parcel thereof with the appurtenances unto the said John Connor, his heirs and assigns, to the only proper use, benefit and behoof of the said John Connor, his heirs and assigns, for ever—Provided always that if the said John Costigan, his heirs, executors, administrators and assigns, shall well and truly pay or cause to be paid to the said John Connor, his executors, administrators or assigns, on the thirteenth day of September which will be in the year of Our Lord one thousand eight hundred and ninety-one, the said principal sum of three thousand dollars with interest thereon and shall also pay all rates, taxes or other charges which may be imposed on the said John Connor by reason hereof, then this Indenture shall be void; otherwise the same shall remain in full force, virtue and effect.

“In witness whereof the said the Honourable John Costigan hath hereunto set his hand and seal the day and year first above written.

“Signed, sealed and delivered } JOHN COSTIGAN.
 “in presence of }
 “(Sgd.) JAMES STRATON.

“The amount secured by the above document has been fully paid, liquidated and satisfied and the same is hereby cancelled and made void and delivered up to the above named Hon. John Costigan.

“Dated this 2nd September, 1892.

“Witness, JOHN CONNOR.
 “JOHN C. ARBUCKLE.”

That is one part of the transaction. The Committee will please remember that I am speaking just from memory and not from any written statement. I am not at all doubtful as to the facts, but I may not be consecutive, still I want all the facts to appear. Perhaps one may be stated before the other and they may not appear in their proper order, but I want them all to be given.

By Mr. Coatsworth :

Q. You mean you may not give them in chronological order?—A. Yes.

Then I was advised—and when I say I was advised, I was seeking and inquiring what was best to be done with this property. A young man of the name of Lynch, well known here, who was considered a very reliable man, and had some experience, inter-

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viewed several parties to know whether they would be willing to take stock and form a company to work this property. Mr. Brophy, of this city, went down and visited the property, and on the representation he made, it resulted, to cut it short, in a company being formed to work that property. Though the property was mine, I did not do much canvassing to get stock. I believed the property was a thoroughly valuable property, and that the investment was a safe one, but I felt a delicacy in asking anybody to take stock less they should think I was doing it more for my own sake and asking them to risk their money in my interest. The gentlemen who took stock either took it from their own personal knowledge, or took it from information derived from statements by the Hon. H. A. Connell, of Woodstock, Mr. George P. Brophy, of Ottawa, who had visited the property and examined it, and Mr. E. R. Burpee, of St. John. The company was formed. I put the property in at a valuation of \$20,000, on condition that I was to hold my stock as paid-up stock. If it turned out a success, my profits would come out of that paid-up stock. If it was a failure, I would get nothing, but the condition was that the \$3,000, the amount of this mortgage, was to be paid out of the funds of the company, and I was to transfer the property over to the company.

By Mr. Mulock :

Q. What was the name of that company?—A. The company was formed under the name of the Tobique Valley Gypsum Mining and Manufacturing Company. They were incorporated under letters patent.

On the 20th of September, 1893, I handed over this property on that agreement to the company by this conveyance:—

“This indenture made in duplicate this 20th day of September, in the year of our Lord, one thousand eight hundred and ninety-three, between the Honourable John Costigan, of the City of Ottawa, in the Province of Ontario, Secretary of State of Canada, and Harriet Costigan, his wife, of the same place, of the first part; and ‘The Tobique Valley Gypsum Mining and Manufacturing Company (Limited),’ and hereinafter called ‘The Company,’ of the second part.

“Witnesseth that the said John Costigan and Harriet Costigan, his wife, for and in consideration of the sum of \$20,000 of lawful money of Canada to the said John Costigan and Harriet Costigan, his wife, well and truly paid, the receipt whereof is hereby acknowledged, have granted, bargained, sold, aliened, released, conveyed and confirmed, and by these presents do grant, bargain, sell, alien, release, convey and confirm unto the said ‘the Company,’ their successors and assigns, all that certain lot, piece or parcel of land and premises situate, lying and being in the Parish of Perth, County of Carleton, now in the Parish of Gordon, in the County of Victoria, in the Province of New Brunswick, and bounded as follows, viz: Commencing at a stake placed on the east bank or shore of the Tobique River east from the head of Island Number Six, being the first island above the mouth of the River Wapskahegan, thence south sixty-seven degrees east eighty-two chains, thence south twenty-three degrees west eighteen chains to the north bank or shore of the Wapskahegan stream, thence down said stream and up the Tobique to the place of beginning, known as Lot G, containing one hundred and forty acres, more or less, being the same property deeded by one Georgiana Wilson to one John W. Arbuckle by deed bearing date the 29th day of May, A.D. 1870.

“Together with all houses, outhouses, barns, buildings, edifices, fences, improvements, profits, privileges and appurtenances to the same belonging or in any manner appertaining and the reversion and reversions, remainder and remainders, rents, issues and profits thereof, and also all the estate, right, title, dower and title to dower, interest, use, possession, property, claim and demand, either at law or in equity, of the said John Costigan and Harriet Costigan, his wife, of, in, to or out of the same and every part and parcel thereof with the appurtenances; to have and to hold the said described lot, piece or parcel of land and premises hereby granted, bargained and sold, or intended so to be, and every part and parcel thereof with the appurtenances unto the said ‘the Company,’ their successors and assigns, to the only, proper use, benefit and behoof of the said ‘the Company,’ their successors and assigns for ever.

"In witness whereof the said John Costigan and Harriet Costigan, his wife, have hereunto set their hands and seals the day and year first herein written.

"Signed, sealed and delivered }
 "in the presence of } (Signed) JOHN COSTIGAN,
 "(Sgd.) MATTHEW F. WALSH. do HARRIET COSTIGAN."

"Canada, Province of Ontario, } I, Matthew F. Walsh, of the City of Ottawa, in the
 "County of Carleton. } Province of Ontario, Esquire, make oath and say :
 "To Wit :

"1. That I was personally present and did see John Costigan and Harriet Costigan, two of the parties hereto duly sign, seal and execute the within instrument and duplicate.

"2. That the said instrument and duplicate were executed at the City of Ottawa, aforesaid.

"3. That I know the said John Costigan and Harriet Costigan.

"4. That I am a subscribing witness to the said instrument and duplicate.

"Sworn before me at the City of Ottawa, } (Sgd) MATTHEW F. WALSH."
 "County of Carleton, this Fifth day }
 "of December, A.D., 1893.
 "(Sgd.) W. E. HODGINS,

"A Commissioner, &c., and a Notary Public, &c."

"New Brunswick, County of Victoria, S.S. No. 7544, recorded in Book "Q" of Records, on pages 285 and 286 on the 9th day of December, A.D. 1893.

"(Signed) HARRY H. TIBBITS,
 "Registrar."

There we arrive at the stage where the company has been formed to develop this property, and the property passed out of my hands, the mortgage being discharged, and it becomes the property of the company on the conditions I have stated. There has been some talk about transferring a lease. I would like you to listen to this point. Reference is made in the newspapers, not only in one article but in several, of my transferring a lease at some time to this company or to a company.

It appeared to me the most serious part of the accusations against me although not openly stated was that although I had no lands at the time this road was started, I was shrewd and was looking forward to all these minerals being there, and that was the principal reason for pressing and getting a subsidy so as to develop the property I intended to get hold of. And to any one not knowing the geography of the country, a conclusion might reasonably be arrived at that I had secured in some way these valuable properties after the road had been started and the money voted. It is true that when I assigned a property that I bought and paid for to this company I had to assign a mining lease. Now, I want the committee just to understand why that had to be done. I bought my property—private property that had passed out of the possession of the Crown in 1837—and I paid for it, got the deed from Mr. Arbuckle, registered in the Registry Office, and the property was mine to all intents and purposes. Shortly afterwards I was notified that another party, one of the men interested in the other mineral lands—in fact one of the Tobique Valley Railway Company—had actually been to the Crown Lands Office in Fredericton and filed an application, which they contend under the law he had a right to do, for a right to mine over a little larger section, but taking in the hundred acres I had bought and paid for, principally for the value of this deposit. No one would imagine that in that country where land is cheap, I would pay \$2,500 for 100 acres of land unless for this gypsum deposit that it contained. I protested at once to the Local Government that surely they could not intend to grant a license to mine upon my private property. I was informed then that their law gave them power to grant a license to mine on private property, but that the pre-

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ference was always given to the owner, and that it had been represented to them that this application had been made on my behalf. I told them at once that I had never given such authority; I might be very good natured, but I would not after I bought a property allow a person to take a license to work the whole thing. The government of New Brunswick stopped it at once seeing it was a very unfair thing to do and wrote me the form I should make, and I complied under protest under the interpretation of their Act. Sound lawyers will say they had no right to exercise any control over gypsum, although they had over certain minerals named under their Act. However I had to pay \$50 to mine over my own land that I bought and paid for. I paid that under protest. Rather than raise any conflict I paid \$50 and took out this right. It is a permit to mine; therefore, when I sold my property to this company I transferred that lease and they will have to renew it unless they test the law or the law is changed. But let me tell the committee this, that that is only an incident and does not affect the question at all. It would be more difficult for me to explain if that lease covered the Crown lands containing this valuable deposit that the province looked to for obtaining a revenue to indemnify itself for voting a subsidy. The lease in question was only a lease to mine upon my own lands and it was taken out for a certain area at a cost of \$50. The application that was put in by Mr. Stratton, I think, and for which I got a lease—covered more than my own land, but it was still more than two miles away from the Government lands above. The mining lease gives the right to mine on this land that I paid for and perhaps a few acres outside—a little square block—and does not constitute my property and never did. My property has a clear title and is a piece of real estate that I bought and paid for. That was handed over, and in giving this explanation I do not think it is very important except in so far as to prevent the conclusion that might be drawn, that I had actually leased the Government lands too, and acquired the right to mine them. The local Government did give a subsidy to that road. It carried out its promise afterwards and as I said when it voted that subsidy, it gave as a justification that it was one of the most reasonable subsidies to give, because while the province could expect no direct return except through the development of the country, and the Dominion Government generally got most of the benefit through the development—out of this road they would receive a direct return in the shape of the royalty for every ton of gypsum that was mined. A further subsidy was then granted. The subsidies that I explained before, secured the construction of the first 14 miles. Then of course, it was necessary to build another 14 miles to reach the mine. The subsidy for 11 miles further was granted. I may explain that, because the time it was granted the government of New Brunswick—or rather Mr. Blair himself—called attention to the fact, and the lease-holders of the other mine called my attention to the fact, that an 11 mile subsidy would only take the road to this property that I had acquired and if it did not go beyond that why of course, it would be giving my mine all the advantage. I saw that at once. If I had been doing it as a sharp piece of business, it would have been a very nice thing to do. If I could manage it, to get the road just to come to the property I had recently bought and go no further, it is very plain the advantage would lie with me or the owners of that property. But at the same time Mr. Blair pointed out that if that were the intention it would take away from him any justification for granting the subsidy because he might naturally say, "The subsidy from this province is not to develop a mine for you. It is to develop provincial mines." Some of the friends here in connection with the Tobique Valley Railway called my attention to the fact. Well, I said: "I will explain that to you in five minutes. We have a certain amount. We can give a certain amount of aid to railways in New Brunswick. We have a certain number of roads that deserve encouragement and we have to give a portion this year, and a portion next year, just according to the resources at our disposal." To make up a fair proportion in that district we could not get more than eight or ten miles, or twelve miles perhaps at the very outside. To get the whole fourteen miles would have been more than the proportion, and some other road would have to go a few miles short. As they were still under contract for the first fourteen miles, and that would take a year to complete, they could not require either the subsidy for eleven miles or fourteen miles, nor the subsidy they were getting from the Local Government for another year, and I stated to Mr. Blair and

to the other friends that I hoped they would not think there was any intention on my part to do what I would call such a dishonourable thing as to use my position to get a subsidy just for my own advantage and block out the others. That would place me in a very awkward position. They accepted that in very good faith. Immediately afterwards at the next session out of the other subsidy that was voted, we got a subsidy for the other three miles. It was in plenty of time, because the original fourteen miles could not be completed, nor the last fourteen miles could not be commenced that year. So that the additional remaining three miles was voted quite early enough not to interfere with or delay the construction of that road, and it did not. The fourteen-mile road was completed.

I do not know from memory that I need state anything more. These are the facts. The company was formed to work out this mine. I hold still some \$14,000 of that stock. I received no money out of the company except the money to pay off the liability on the property when I handed it over. I thought the stock was very valuable. I think it is good stock yet. A mill has been built, a very fine mill. It is not running just now—the market is limited—but there is a fair prospect of doing a paying business on a reasonable scale. It may develop in years.

To resume, the subsidies granted to the Tobique Valley Railway were granted for the construction of a public work. As a representative of my county, I say on my oath I had no other object in pressing for the granting of that subsidy and the construction of that road than the discharge of a duty that I believed I owed to my constituents honestly and fairly. The subsidy was granted in the same way as to other roads. The road is an important road.

Now, I may mention one more point, because that question has been raised, and I will be done. Attention has been called to the fact that the road is not operated, and it has been argued that if it was a sufficiently important section of country to put a road through, there is therefore the more reason why it should be operated. I will give you a few facts with regard to that. I want to place the committee in possession of all the facts that I know, though it will perhaps be more convenient for members to ask further questions in order to get any information they require. The reason the road has not been operated begins in this way. I told you of the financial difficulties of the company. They made a contract with Mr. Kitchen to complete the last fourteen miles of the twenty-eight. He executed his contract. They were embarrassed, they could not operate the road, and they delayed. My constituents complained. In the fall of the year the lumber interest had arranged to carry their supplies by contract with men with teams over the 28 miles, but they were expecting to get their supplies round by the Canadian Pacific Railway and then by this branch, which would be a great advantage to them. This stoppage of the road was a great inconvenience to these lumbermen generally and to the settlers on both sides of the river. In the meantime an arrangement had been made for the leasing of this road to the Canadian Pacific Railway Company, and it was confirmed, as I stated, by an Act of Parliament. The lease provided that the Canadian Pacific Railway should take that road over and run and operate it, and on their part they were to deliver the road in good running order. The terms will appear in the Act. The first fourteen miles that was constructed they used during the construction of the last fourteen miles, and some years had elapsed. Naturally the first fourteen miles, which, as I stated before, was very expensive to construct, and more expensive to keep up than the other, has got out of repair and out of order considerably. The Canadian Pacific Railway sent their engineer over the road before they would consent to take it over. He reported that it would take about \$7,000 to put it in order. I think \$7,000 was what the Canadian Pacific Railway offered to take in cash instead of obliging the Tobique Valley Railway Company to put it in repair. They said: "It is not in a condition to be taken over, and we are under no obligation to put it in repair. Either put it in repair and hand it over to us, or if you cannot, we will do the necessary work, and you shall give us \$7,000." The Tobique Valley Railway Company did not raise the \$7,000. The delay went on and I felt it was a very awkward position for my constituents and myself that this road should not be operated after it had been constructed. I applied for information to the Railway Department, and got the information necessary to know what steps should be taken. I put the machinery of the law into operation,

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and the Tobique Valley Railway Company were summoned before the Exchequer Court to give reasons why they were not operating the road. They came here, and they then got a delay of a certain time to complete their arrangements under that lease with the Canadian Pacific Railway.

The Canadian Pacific Railway modified its demand to a payment of \$2,000, or \$3,000 cash and a pledge from the Tobique Valley Railway Company that they should be allowed to recoup themselves for the balance of the \$7,000 out of the percentage of the earnings that under the lease they were to give to the Tobique Valley Railway Company. That arrangement was agreed to, and everything was satisfactory as I thought. They had to get the authority of the company to hold that payment. The Canadian Pacific Railway then reported that all the titles for right of way were not placed in their hands, that the Tobique Valley Railway Company had not secured titles though they might have satisfied the claim. They were then asked to secure titles for the right of way. The last was from the Indian Department, the line crosses a piece of their reserve. That was about a month ago, and I was informed that everything had been complied with, the lease would be executed, and the Canadian Pacific Railway would engage to run the road. I have no doubt at all that when the lease is completed—and it ought to be ready for completion now—that the Canadian Pacific Railway will do as it does with its branches generally, operate that road, because it is in such an important section of the country. That is the reason of the delay, a delay as unpleasant to me as to any person in the country, a delay most unsatisfactory to me and to my constituents, for we are most interested in the road. I give you that explanation of the delay.

I do not think it necessary to make any statement now other than that I have made. I have made that statement frankly and honestly, believing it to be true in every respect, and if the committee or any member of the committee wish to ask any question on any point as to which he is in doubt, or for any other reason, I will be most happy to give him any further information that I can on the subject.

By Mr. Lister :

Q. There are one or two questions as to which I should like to have a little further information. Perhaps I did not understand them thoroughly in the course of your narrative. What is the total length of this Tobique Valley Railway?—A. Do you mean already constructed?

Q. Not the total length constructed, but the total length authorized to be constructed?—A. You are speaking now of the charter under which it was constructed.

Q. It was chartered by the Nova Scotia Parliament?—A. By the New Brunswick Parliament. It was chartered for the construction of a road from Tobique to connect with the proposed road—that was the intention, I do not know whether it is the exact wording or not—that would run from Campbelltown across to Grand Falls.

Q. What would be the length?—A. That would involve the construction in all as near as I can judge of about 90 or 100 miles or perhaps 80 to 100 miles.

Q. Then there was a subsidy granted, as I understand it, of \$3,200 a mile for 28 miles?—A. 28 miles, yes.

Q. It was found that owing to the difficulties of construction the amount of the Dominion subsidy was not sufficient?—A. Yes.

Q. The authority was then taken to apply the total subsidy of \$3,200 a mile to the construction of the first 14 miles?—A. What does the hon. gentleman mean by authority?

Q. Statute, I suppose?—A. Yes, parliamentary authority.

Q. Parliamentary authority?—A. The subsidy was voted by Parliament.

Q. Instead of for the whole 28 miles it was allowed to apply to the first 14 miles? That was the way it was done?—A. Yes.

Q. Then the 14 miles I suppose were constructed?—A. There were undertaken and construction was commenced, but as I have stated the company got into financial difficulties before they completed their contract.

Q. Before the first 14 miles?—A. Before the first 14 miles.

Q. Did the New Brunswick Government also grant a subsidy for those 14 miles?—
A. Afterwards.

Q. And before their completion?—A. I would not be sure whether it was before
its completion. They entered into the obligation. I don't know when it was paid. I
would not be certain about it.

Q. It is no consequence. Whatever the subsidy of the New Brunswick Govern-
ment was it was to apply to the first 14 miles?—A. No, I think not, and that I do not
care about discussing, because it is a question of policy of the New Brunswick Govern-
ment. I tell the hon. gentleman this from memory that I think there was a block sum
granted by the Provincial Government, and it was a question that I heard discussed by
the company and some of the friends of the Government as to how that should be
applied; whether it should be applied to the upper portion of the road that was not
commenced or whether it should be divided in a certain proportion between the first
14 miles and the last 14 miles.

Q. How much was it?—A. I don't know that either, because we had no control
over that. It was a local subsidy that was dealt with between the company and the
local government.

Q. Now you found, or it was necessary as a matter of fact to come back to the
Dominion Parliament and to ask for a further subsidy for the Tobique Valley Railway?
—A. Yes.

Q. You remember when that was, Mr. Costigan?—A. It was at the next—

Q. I think it was in May, 1890?—A. For a further subsidy?

Q. A total subsidy of \$35,200?—A. A bulk sum.

Q. A bulk sum?—A. What would that cover?

Q. I do not know?—A. That would be about 11 miles, I suppose?

Q. About 11 miles?—A. Yes.

Q. When that subsidy was voted in May, 1890, had any portion of the Tobique
Valley Railway been completed?—A. In 1890?

Q. In May, 1890?—A. I think it was about completed, I would not be sure.

Q. That would be the 11 miles?—A. No.

Q. Then you think that when the subsidy of May, 1890, was granted, the first 14
miles would be about completed?—A. No. They had had that financial break and I
think about that time Kitchen took the contract to complete their contract and was
going on with it.

Q. Their work would be about 14 miles?—A. Originally the contract was 14 miles
and the first contractors failed to complete it, and Kitchen was the second contractor
that undertook and did execute the work, but it was not executed at the time this
subsidy for 11 miles was granted.

Q. No. Then did that \$35,200 apply to the first 11 miles or was it to be applied
to the rest of the road?—A. That \$35,000? The Dominion had no further right nor
could it be asked to grant any more to the first 14 miles.

By Mr. Davies :

Q. You got a double subsidy on the first portion?—A. Yes.

By Mr. Lister :

Q. A double subsidy on the first 14 miles and \$35,000 in addition?—A. No, not
all on the first 14 miles. The first 28 miles had \$3,200 a mile. At the next session of
Parliament that subsidy was changed so as to make the subsidy for the 28 miles appli-
cable to the first 14 solely.

Q. Yes, exactly?—A. Or giving a double mileage rate. That left nothing for the
other 14 miles. Then the \$35,000 bulk sum was to aid the construction of the upper
14 miles to the extent of 11 miles of the next 14.

Q. That is what I wanted to get at. Then the \$35,000 was for the next 14 miles?
—A. For 11 miles of the next 14.

Q. And I suppose the grant of that \$35,000 it was understood would have the
effect of securing the completion of the 28 miles?—A. No.

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Q. Well what?—A. It would tend towards it. It was a recognition of the road. It was getting a portion of the subsidy, and as I stated before, if there was a contract entered into I do not know what position we would be in with regard to the other 14 miles or the balance remaining to be constructed under our first scheme as the principal portion of the undertaking originally.

Q. Well, as a matter of fact, the road was constructed for 28 miles?—A. Finally.

Q. Finally?—A. Yes.

Q. That would include the \$35,200, the subsidy of \$6,400 and whatever was received from the New Brunswick Government?—A. Yes, that is it.

Q. These and whatever private funds were put into the enterprise to construct it?—A. Yes.

By Mr. Davies :

Q. Were there any private funds that you know of?—A. Yes, I think I mentioned Mr. Simeon R. Jones. I think he advanced very largely on bonds or something.

Q. On bonds?—A. He holds bonds, I think.

By Mr. Lister :

Q. Now, that subsidy of \$35,200 was asked for in the House on the 12th May, 1890, Mr. Costigan?—A. Perhaps so.

Q. It appears by the records?—A. I do not dispute that.

Q. I suppose that is correct? Then on the 13th May, the Government asked Parliament to grant \$35,200 to this railway, one day after you had become the purchaser of the property, as I understand it. Will you look and see?—A. 12th May, 1890, that is the date of the deed.

Q. The conveyance to you of this particular property was made on the 12th May, 1890? You became the purchaser of it at the price of \$2,500?—A. Yes.

Q. Then on the 13th May, 1890, the Government asked Parliament to grant a further subsidy to the road of \$35,200. That is correct?—A. Yes.

Q. One day after your purchase?—A. You are reading from the records, I suppose, I have no reason to doubt that.

Q. Yes, I am taking the Parliamentary record. Of course you, as a member of the Government, knew at the time you made the purchase of the failure of the company to construct the road, on account, I suppose, of the inadequacy of the bonuses? You knew, I say, that the Government had decided to grant a further subsidy of \$35,200?—A. No. I would like to answer every question that my friend puts, but I would like him not to put the question in such a way that an affirmative answer would be misleading.

Q. Well, I would put it in this way, Mr. Costigan.—A. I will give my own answer.

Q. Give your own answer. I do not want to embarrass you. Did you know prior to the 13th May, the day when Parliament was asked for the grant of this bonus, that the bonus was to be granted?—A. I took it for granted, of course, like any other item in the estimates proposed to Parliament which would likely be voted. There is not much doubt about that.

Q. So that at that time, of course, you were aware that the road was to get a further bonus?—A. What I did not like, Mr. Lister, was this, that you coupled it with the inquiry: "Did not you know at this time just when you became purchaser of this property, that Parliament was to be asked for a subsidy, and you knew that the road could not be built on account of the inadequacy of the aid they were getting, and that this \$35,000 was to end it all." I did not know anything of the sort. I knew I had purchased the property. I knew that Parliament would be asked for, and would likely vote, that \$35,000 for 11 miles, at the upper end of the 28 miles. I knew also that Mr. Kitchen was completing his contract, and would complete it under the subsidies granted, as they were perfectly adequate, and that this \$35,000 was just exactly in line with the policy before adopted, that this Parliament had subsidized 28 miles out of the whole lot. That

subsidy was changed because it would not secure the construction of one mile, and they put the subsidy on the first 14 miles. That went on, and they went on and got the 11 miles constructed, because it could be constructed under the ordinary subsidy, being the ordinary class of work.

Q. The point is this, that the day before the Government asked Parliament to vote this \$35,200, you became the purchaser of the Arbuckle property?—A. I became the purchaser of the Arbuckle property on the 12th of May.

Q. And the Arbuckle property was a property that had been owned by Mr. Arbuckle for 30 years?—A. I do not know. He had worked it for 30 years, and I suppose he must have owned it.

Q. Which of the property had been leased by the Government to a company?—A. You mean the Crown lands?

Q. It was leased to a company?—A. Yes.

Q. Then do I understand from your statement that the only part of the gypsum property in that section not controlled by this company was the property purchased by you from Arbuckle?—A. You are speaking of the other gypsum company that had the lease.

Q. That had the lease?—A. Not the railway company.

Q. Not the railway company?—A. They controlled all the Crown lands. They controlled also what was known as the Edgar lot, that had been mined for gypsum too, which was private property, right at the terminus of the road, where the government property lay. I think there were four lots above that, gypsum lots held by private individuals above the terminus of the road.

Q. Above the terminus of the road?—A. Yes.

Q. But the question I am asking you is whether all the property in the vicinity of the road, with the exception of the Arbuckle lot had been leased by the Government to this company, that is the question, with the exception of the Arbuckle lot?—A. No, there were two or three lots they could not lease.

Q. Beyond the road?—A. Beyond the road.

Q. You said four miles beyond the terminus of the road, did you not?—A. No, I did not say four miles. All these lots lay close together near the government lots. They have sold one or two at the upper end, and they have leased the rest.

Q. Then with the exception of one or two which the government sold, the company held the bulk of the land?—A. Yes, that was my statement.

Q. Then how much did this Tobique Valley Railway Company receive altogether in bonuses from the Dominion Government?—A. Well, I have never figured it up. I have not disputed the figures there. \$130,000 may be correct or it may not. I did not look into it. That could easily be ascertained. They received \$3,200 a mile for the whole 28 miles, and they received \$3,200 additional for the first 14 miles. That would be 28 times \$3,200 and 14 times \$3,200 added together.

By Mr. Mulock :

Q. \$134,000?—A. I suppose that is correct.

Q. At the time you submitted the proposition to government, you represented, of course, that the construction of the road would develop the plaster deposits in that section of the country?—A. When the first application was made?

Q. Yes, when the first application was made?—A. Yes, when the first application was made that was stated in the petitions that came to parliament, and in the applications to the New Brunswick legislature.

Q. It was stated here by you?—A. Yes, and in the petitions. I referred to the petitions.

Q. The petitions were also submitted?—A. Yes.

Q. Were any statements made about it when the further subsidy was asked for?—A. I do not remember.

Q. You do not remember that?—A. If it was necessary to give any reasons, very likely that reason would be given, because that was one of the largest items of traffic.

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Q. Well now, on the 25th September, 1891, you asked for the renewal of the original subsidy of \$89,600. That would be in 1891?—A. In 1891.

Q. Yes, the 25th September, 1891?—A. What do you mean by the renewal of the \$89,600.

Q. \$80,600. It had lapsed?—A. I suppose it had simply lapsed, and it was to keep it from expiring. The road was under construction.

Q. That was after you purchased the property?—A. Yes.

Q. The subsidy had lapsed, application was made to Parliament for a renewal of the subsidy, and you were asked by Mr. Mulock "Who are the owners of the plaster deposits." Do you remember that, Mr. Costigan?—A. I do not recollect.

Q. It will be found on page 6139 of Hansard of that year?—A. I have no doubt of it.

Q. And in answer to that question you say this: "The New Brunswick Government are the principal owners, and that is the reason the local subsidy was granted. I believe some private persons have one or two lots"?—A. That is strictly correct. I would consider that strictly correct from my memory.

Q. One of the one or two private persons that owned some of the lots was yourself?—A. Evidently, according to the dates given.

Q. Then the property was purchased by you, you say, for \$2,500. That was the original purchase price?—A. Yes.

Q. And afterwards a joint stock company was formed in which you were to receive \$20,000 worth of the stock?—A. \$20,000.

Q. You were to get \$20,000 worth of the stock?—A. For the property.

Q. And the company was to assume payment of the mortgage which you had given?—A. No.

Q. You were to pay the mortgage?—A. They gave me the money and paid the mortgage out of the \$20,000.

Q. So that that would leave you?—A. \$16,500.

Q. For which you hold stock?—A. Yes.

Q. Now can you tell me the total shares in that company? Are 250 shares subscribed?—A. They are \$100 shares. The authorized capital under the charter is \$50,000. There is \$31,900 paid-up stock.

Q. That would include your \$20,000?—A. Yes. There is \$18,100 undistributed stock held by the company.

Q. The total number of shares subscribed is 250?—A. They are \$100 shares.

Q. That would be 250, Mr. Costigan, would it not?—A. Perhaps so. No, 250 would be \$25,000 would it not?

Q. Yes. But in the original application—the original stock list—filed with the Department, the number of shares subscribed for is 250?—A. Oh, that may be, yes.

Q. Fifty per cent of the whole thing?—A. Yes.

Q. And you appear there to have been the holder of 225 of these shares?—A. That may be of course.

Q. This stock list still stands in the same position?—A. I asked the secretary to give me a statement and this is his statement: "Authorized capital \$50,000, paid-up stock, \$31,900; undisposed of stock still held by the company \$18,100; stock held by myself, \$14,500." I have disposed of \$2,000 of the stock. That is held by others, but the statement is correct. What I originally held was \$16,500.

Q. You told us already that Arbuckle became despondent about the road ever being completed?—A. I never saw him, but I suppose that is what I heard.

Q. That is what you heard?—A. That is what I heard.

Q. And when asked as to whether you would give \$2,500 for the land, you completed the purchase?—A. I said so at once.

Q. How long would that be before you got the conveyance?—A. Oh, it would not be many days, because I knew if I did not buy it some one else would.

Q. Well, I suppose the effect of the construction of the road was to enhance the value of these gypsum beds very materially?—A. Yes. I am quite willing to admit that the gypsum deposits there would not be of any very great value unless the road was constructed.

Q. Then, as matters stood at that time, would \$2,500 be a fair price for the property?—A. \$2,500?

Q. And not knowing, of course, that the road was to be finished?—A. \$2,500 would never have been a fair value for the property if you gave any consideration to the deposits of gypsum. Unless you calculated the extra value of this deposit it would not be worth a quarter of that money as farm land or for any other purpose.

Q. Calculating at that time and assuming no road was to be built, would \$2,500 be a fair consideration for the land? Including its value on account of farming as well as gypsum beds?—A. Well, the man might be satisfied to take it or he might ask more. I would not give any more for it.

Q. You considered it was worth that at all events?—A. I considered it was worth more because I had no money to purchase. I was not a speculator and I had no means to invest in that way.

Q. You considered it a bargain?—A. I considered it was a very advantageous offer, and I had just as good a right to take advantage of it as my friend here or any one else.

Q. Assuming the road would be completed?—A. I had no doubt about the road being completed.

Q. You had no doubt about the road being completed at all?—A. No.

Q. Well, then, the completion of the road, I understand you to say, would enhance the value of this property very materially?—A. I can have no doubt about that. No one could pretend that it did not.

Q. Would you consider it increased the value \$20,000?—A. I consider it would increase the value to more than that, but I might be mistaken.

Q. Then what I understand you to say is—A. The road is completed now and I cannot sell that stock for what I could first sell it.

Q. We are talking about things as they were then. The completion of the road meant that the property would at least be worth \$20,000?—A. The completion of the road made the property valuable. I know what the hon. gentleman's meaning is and I am glad to enlighten him. The property would not have had any extraordinary value beyond the minerals that would be perhaps difficult of access, and the completion of the road no matter who owns this land, made it most valuable. As far as the hon. gentleman can connect me with this matter, I tell him the road enhanced the value of the land.

Q. You have already told us you consider the lands after the completion of the road to be worth more than \$20,000?—A. I thought that the lands would be very valuable if properly worked, and I think so still.

Q. The answer you gave, and I only want to know whether you adhere to it or not, was as to how you understood the facts at that time?—A. Yes.

Q. Would the completion of the road make the lands that you purchased for \$2,500 worth more than \$20,000?—A. I could not place any exact value any more than you could, Mr. Lister, upon mining property, but I tell you this, frankly and honestly, if I did not think the road would have been completed, I would never have bought the land; and I tell you honestly I bought the land because I believed the road would have been completed, and I tell you honestly that the value of the land would be very greatly enhanced by the construction of the road. That is as much as I can tell you.

Q. You have told us you thought it was increased more than \$20,000?—A. It is in connection with the price given by the company for it. I thought \$20,000 was a fair value and I accepted it for that.

Q. You thought \$20,000 a fair value?—A. Yes.

Q. And in addition to that you had the large profits you would have as a stockholder in the company?—A. Those were prospective.

Q. If a money offer of \$20,000 had been made to you for the property would you have accepted it at the time?—A. Very likely.

Q. Before the formation of the company?—A. If you had offered me \$10,000 I would have taken it, and thought you were getting a bargain, but you would have had to form a company and to have developed the property.

The Committee adjourned.

Tobique Valley Railway Inquiry.

COMMITTEE ROOM No. 49,

HOUSE OF COMMONS, 11th July, 1895.

The Committee met.

Hon. JOHN COSTIGAN re-called and further examined.

By Mr. Mulock :

Q. Mr. Costigan, the first Government bonus of \$89,600 lapsed, if I remember rightly, and was renewed in 1891?—A. I admit any statement the hon. gentleman makes, presuming he has taken it from the record. There is no point in it.

Q. Wait till I see if I am right on that. The first Government bonus was a bonus of \$89,600, \$6,400 a mile?—A. The first vote was a vote of that amount of \$3,200 a mile for 28 miles.

Q. And they doubled it up, giving the same amount for half the line?—A. On half the line, at the next session of Parliament.

Q. At the next session of Parliament?—A. Yes.

Q. Well, tracing it down historically, I find it does. The first bonus that was availed of was the result of the vote of \$35,200 in 1890, because you will find that in 1891, on the 25th of September, 1891, the House voted \$89,600, which was a revote?—A. Before I answer that I wish to say that I am sorry I cannot place myself in the position that my friend seems to think that he is justified in taking. I cannot plead or argue. I have come here to give my statement of facts.

THE CHAIRMAN.—You have a right to give your statement in the fullest way and with the fullest explanations.

MR. MULOCK.—You can frame your answer as you like.

MR. COSTIGAN.—Yes, but the question you put to me stated as a fact that the subsidy which was first voted for 28 miles was doubled up. Then you say the first subsidy that was availed of was that for the first 14 miles or for the 11.

MR. MULOCK.—Please do not wander away from the question.

MR. COSTIGAN.—I think you will admit that I have a right to make a statement in my own defence. If you judge from the heading in the newspapers, stating that certain things have been proved, it would lead to a very wrong impression. The argument, if there is anything in it is this, that all the other subsidies had expired and died, and the first subsidy availed of was this which was granted, as you say, one day after I purchased the Arbuckle property.

MR. MULOCK.—We shall not get on by argument. Please answer the question.

MR. COSTIGAN.—But you will admit that I have a right to make an explanation. My answer is that that was not the first subsidy availed of, that though the subsidy alluded to expired, as several other subsidies had expired, that they were renewed—I suppose that is the proper term.

MR. MULOCK.—Revoted.

MR. COSTIGAN.—That they were revoted by Parliament, and that long before this subsidy you allude to was granted this road was under contract.

MR. MULOCK.—These are all matters of explanation and argument. I am not wanting to misrepresent you. I am just wanting to take it historically, and you can add any explanation you like.

MR. COSTIGAN.—That is my answer.

By Mr. Mulock :

Q. The first question, I put to you, is this. What was the first money derived by this railway from a vote of Parliament? For your recollection I would say the original vote of \$89,600 lapsed. Admitting, of course, that the work was under contract at the time, and that Parliament was simply formally revoting the subsidy, it had lapsed?—A. Yes.

Q. And historically—I am just taking it chronologically now.—A. Well, now, I will answer your question.

Q. I find the first vote that went into the treasury of this company was this \$35,200 vote in 1890?—A. I think that must be wrong. I will tell you the reason. I have had nothing to do with the payments. I did not follow the payments. My impression is that must be wrong, because the road was under contract and the first few miles begun.

Q. Have you got “Hansard” for 1891?—A. If the hon. gentleman does not mind me depending on my memory, my impression is that it was not the first contract, that the road was under contract, partly constructed, and completed afterwards on the vote of that \$89,600, that that must have been the first money used to pay for the construction of the first 14 miles, and that the first 14 miles was constructed and completed before the second 14 miles was in a position to claim any portion of the second vote.

Q. On the 25th September, 1891, if the “Hansard” was here you would find it as I state, the House voted \$89,600, being in lieu of the previous subsidy of that amount?—A. Yes.

Q. Now, there was only one previous subsidy of that amount?—A. That is all—I beg your pardon.

Q. There had been one previous subsidy prior to September, 1891?—A. You have that in my statement and your own. As I said before, there was only one subsidy of \$3,200 per mile for 28 miles, but at the next session of Parliament that grant was made applicable to the first 14 miles.

Q. And that subsidy of \$6,400 per mile amounted to \$89,600?—A. Of course.

Q. And there was only one such vote? That one lapsed and the other took its place?—A. Yes.

Q. Then the vote of 1891 of \$89,600 was the only \$89,600 voted to the company?—A. There was no other money. It was confirming or extending or continuing the same amount of money, only it was to be paid on that shorter distance.

Q. We will admit that the enterprise was under way at the time?—A. Yes.

Q. Then I want to go back to it historically. The first vote that did not lapse, that went into the treasury of the company, was the vote of \$35,200 in May, 1890?—A. Yes.

Q. And the then current vote of \$89,600 having lapsed in 1891 was revoted in September, 1891. Is that what you understand?—A. I would not object to that statement as being contrary to the fact. It is very likely, because it means this: It means that the original vote was first changed to a vote of the same amount to be distributed on half the distance.

Q. I will let you have the “Hansard,” and then you will see whether I am in error. I only want to be just historically?—A. I think I understand the question that the hon. gentleman is asking.

Q. See here is the resolution on page 6139 of the “Hansard” of 1891:

“To the Tobique Valley Railway Company, for 14 miles of their railway, from Perth Centre Station towards Plaister Rock Island, in lieu of the subsidy for a like amount granted by the Act passed in the session held in the 50th and 51st years of Her Majesty’s reign, chapter 24, a subsidy not exceeding \$6,400 per mile, nor exceeding in the whole \$89,600.”

That was the resolution under which that \$89,600 was paid to the company?—A. Yes, I suppose it was paid under that resolution.

Q. And then what was the third grant or bonus?—A. The third grant—three miles further.

Q. \$3,200 a mile?—A. Yes.

Q. What year was that voted?—A. It must have been next year I suppose.

Q. It is immaterial?—A. It was the next year that any subsidies were voted, I know that.

Q. Well, Mr. Costigan, only one question more. I asked you here at the time this subsidy was voted, on the 25th day of September, 1891, when Parliament was being asked to make that revote—you spoke in support of the resolution as appears in “Hansard”, page 6140, and here are your remarks:

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"I can, perhaps, give some information in regard to this railway. The subsidy was originally granted for the construction of 28 miles from Perth Centre Station to what was known as the Plaister Rock Island, where there is an inexhaustible deposit of gypsum. A memorial was sent in favour of it from people in the Province of Quebec as well as people in the Province of New Brunswick. So that the road is not a purely local road, and it was on this ground that the subsidy was granted. It runs through an excellent agricultural country, though the great object is, of course, to develop these immense deposits of gypsum. The Legislature of New Brunswick has granted \$70,000 to this railway. Fourteen miles have been put under contract, and the contract is about completed, so that nearly all the subsidy has been earned."

That is the explanation you made to accompany this revote?—A. I am satisfied that statement was made in good faith.

Q. No doubt. Mr. Mills, of Bothwell, asked: "Is this called the McAllister subsidy?"

"Mr. Costigan—I never heard that name applied to it."

"Mr. Mulock—Who are the owners of this plaster deposit?"

"Mr. Costigan—The New Brunswick Government are the principal owners, and that is the reason the local subsidy was granted. I believe some private persons have one or two lots."

Now, were you not one of the private persons who had one or two lots?—A. By the statement made the other day, and the facts brought out, that on a certain date, the day before the discussion in the House, I was constituted the owner by deed and by telegraph. I must have been one of the owners. That statement was perfectly true.

Q. Then why did you not give your name to the House at that time?—A. If I was the owner, and I don't dispute it from what the honourable gentleman has said,—

Q. It is not from what I said, it is from what you know?—A. I would not have known it until you called my attention to it.

Q. But this is a year afterwards. Remember this is not May, 1890. This is in September, 1891, I asked you the question. You bought the property in May, 1890?—A. Yes.

Q. And in September, 1891, you advocated the granting of a bonus or the revote?—A. Yes.

Q. And in support of that application you told Parliament that the principal owners were the Province of New Brunswick and one or two private persons owned land?—A. And the answer was absolutely correct.

Q. Yes, but do you not think when you are advising Parliament and you being one of these two persons owning land, you should in candour have given that answer? A. I stated under my oath that I did not then, nor do I see any reason now why I should volunteer the statement that I was the owner by an honest purchase of a piece of private property that I had a right to buy independent of the existence of the hon. gentleman and Parliament itself.

Q. Nobody is questioning your right to buy the property?—A. If you had gone further, Mr. Mulock, when you made that statement and asked me "do you know who the owners are? Are you one of the owners? Can you tell who the owners are?" Then if I were an owner I would say, Mr. Mulock, I own one of those lots."

Q. When you were asked who the owners of the property are, you did not give your own name as one?—A. No, I did not volunteer that.

Q. No, you did not volunteer that, and yet you were, as a member of the government, advising Parliament to support that vote?—A. Does the hon. gentleman himself think I had any unworthy reasons for withholding it?

Q. It may have been an accident. I think you should have given the answer to Parliament?—A. I do not plead it was an accident at all.

Q. When you were asked who were the owners of that plaster deposit you did not say you owned part of that property and there is the responsibility I attach to you. You ought in candour to have stated it, and it is a matter of comment?—A. I am very sorry if I have been the means of leaving my hon. friend in a position to shake his confidence. I still adhere strictly speaking to the truth. I feel no conscientious scruples for having made that statement, as it appears there. I feel that I was not withholding any

truth, I was shirking no responsibility, and I still adhere to the statement that that statement was made in good faith.

Q. Of course, it might be an accident or an oversight?—A. I do not plead it was any accident. I want the facts to be brought out for whatever they are worth. I am responsible to the fullest extent for any fair interpretation that may be put upon my actions.

Q. There is nothing gained by our arguing?—A. There is nothing, and I do not want to argue. Let other people argue for me if they can.

Q. The facts are, that at that time you were the owner of one of the properties?—A. Evidently I was the owner of 100 acres of land not at the terminus of the road, not of the principal deposit at all, as has been indicated. I have explained that before that the Government deposits, with the exception of a couple of lots, were at this Plaster Island. The Government of New Brunswick controlled the whole of it, either themselves or had let it to New Brunswick gentlemen on lease.

Q. We have had that all before.—A. I hope the honourable gentleman will not complain I ask no favours from the honourable gentleman, but I ask the treatment of a gentleman.

Q. I am examining you as a witness. You can lecture me some other time.—A. No, I am trying to state this as a witness, and I will try and be careful not to state anything that would not be considered binding upon me as a sworn witness. I will call the attention of the honourable gentleman to the fact that I am sworn, and I hope he will not forget that. He is not sworn, and in putting his questions, or as to any inference he may draw in putting them, I hope he will treat me fairly.

Q. I am anxious to do this with absolute fairness and it is a very great disappointment and surprise with respect to a matter to which I attached a great deal of importance, to learn through these newspaper articles—that was my first intimation—that you had an interest in this property and had not given that answer to me when I asked you, because as a member of the Government, asking Parliament, in the public interest, to grant money, it seems to me Parliament should know the exact position that such a gentleman is in. He has a right to have a private interest, but in that case it would be better if Parliament knew it, so as to understand how far to be governed by the advice given. That is a matter of comment.—A. That is a matter of comment. Mr. Chairman, I am a voluntary witness, making a statement here. I told you I would not extend that statement further than was necessary. At this stage I must make a short statement. I am sorry my honourable friend was surprised I did not volunteer this information.

Q. No, you were asked it.—A. If you will excuse me, now I will make my statement very short. I am sorry my friend is surprised and disappointed I did not make that statement at the time. There might be an impression created outside that does not exist now, that I came to Parliament a member of the Government having recently purchased 100 acres of this mining land, the value of which would be increased by the construction of this road, and having so purchased that land I came before the House and pleaded for a subsidy for that road. The policy of the subsidy for that road, as I have shown you, was decided when the whole 28 miles were subsidized. The policy of the building of that road was fixed when that subsidy was changed so as to insure the construction of the first 14 miles. The policy was insured and justified by the province when they gave provincial aid, and in a further statement that I make under oath I say that that did not influence me one iota in my advocacy for a subsidy, and if I did not own one inch of land there I would have advocated that subsidy, as I felt bound to advocate as a private member or otherwise representing the county, the further subsidy, and my constituents know it. I wish to make the further statement in contradiction to an impression that has been created on account of the answer I gave the other day, that I got this property because there was no hope of any one knowing he could get it at a low price and the moment I got it, then I got a vote that would secure the construction of the road. I stated the owner of the property seemed to be discouraged at the delay, but there was not a man, even my opponents in the constituency, that had any doubt of the construction of the road. I think that is all I need to say on those few points.

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Q. Can you say why the road is not in operation?—A. Did the hon. gentleman hear my explanation on that point, because I volunteered that too.

Q. You have covered that?—A. If you want any further information I will give it to you.

Q. I was not present?—A. I covered it just from memory. If the hon. gentleman wants any further information I will answer him on that point.

Q. One other question. What part did you take in getting the third subsidy?—A. Do you call the last three miles the third subsidy?

Q. Yes.—A. The subsidy for the last three miles was given as a matter of good faith. The Government was pledged to it, because the subsidy for the eleven miles was given by them, knowing that it would not complete the second fourteen miles. The amount was so small that year that all subsidies had to be given in proportion to the claims made, but the granting of that eleven miles implied, and assurances were given, that the other three miles would be given whenever subsidies were again voted by Parliament. That pledge was given, and the subsidy for the three miles was granted when the other subsidies were voted.

Q. I am asking you what part you took in promoting that grant of \$3,200 for the last three miles?—A. I cannot remember the last movement or the last argument, but I will admit that I took the fullest part that a representative of that constituency, interested in that part of the country, could take and from that motive, entirely independent of any money considerations or money interest.

By Mr. Sproule :

Q. That was your own constituency?—A. Yes.

By Mr. Mulock :

Q. When that vote was asked from Parliament, did you at that time inform Parliament that you were interested in the property?—A. Not unless I was asked.

Q. There is no record of it.—A. I do not pretend that I volunteered the information. I do not think it was the business of Parliament and I do not think it was yours.

Q. Did you inform your colleagues in Council?—A. I do not think I informed them, because it was none of their business any more than it was yours.

By Mr. Lister :

Q. You told us the other day that the New Brunswick Government had granted a lease to a company of all the plaster deposits that had not been sold or granted by the Government to private individuals?—A. That is my impression. That is my conviction.

Q. And you have also told us that the plaster deposits granted by the Government, or rather leased by the Government to a company—that the railway company was interested in these leases, the Tobique Valley Railway Company?—A. Will my friend Mr. Lister allow me to make one statement, and it will assist him in putting questions so as not to cause confusion. In the first place, there was the Tobique Valley Railway Company controlling and pushing on that work, and dealing with the Government for subsidies to aid them in the construction of the road. Then, besides that, there was a company—I suppose they were organized, I do not know—but there were several gentlemen banded together, either by charter or letters patent, I do not know which; at any rate, there were several individuals interested by a lease they had obtained from the Local Government for the privilege of working these gypsum lands. That covered the Government lands, I think all that they controlled. Now, that may be called another company.

Q. What was the name of that company?—A. I do not know, unless it would be a mining or gypsum company. I do not know. Then when you speak of the Tobique Valley Gypsum and Mining Company, that is the company, the last company formed, that purchased my private property. Now these three are distinct.

Q. I understand that, Mr. Costigan?—A. Now another point. I want to show you where the connection is, but I do not want any confusion. The Tobique Valley Rail-

way Company were the company constructing and owning and controlling that road. The second company that I alluded to were the holders of a lease from the local Government of the Crown lands.

By the Chairman:

Q. At the terminus?—A. At the terminus. Some members of the Tobique Valley Railway Company took shares or bought stock of this leased Government property. Therefore some of the members of the Tobique Valley Railway Company—there is no reason why I should not mention the names—Mr. John Connor, for instance, bought out somebody's share in this other company or organization. I had nothing to do with any of these movements at the time.

By Mr. Lister:

Q. I am not charging that you ever had?—A. But the honourable gentleman will see that it is important that the public should understand the position of these three different companies, because otherwise they might come to a wrong conclusion. He has hinted that the interests of the Tobique Valley Railway Company and the Tobique Valley Gypsum and Mining Company might have been connected. I say there was no connection at all. The Tobique Valley Gypsum and Mining Company was a company to develop the deposits on the Arbuckle property about three miles below the gypsum property leased from the Government by the gentlemen I have spoken of.

Q. Your statement is this, that there was a railway company, an incorporated company?—A. Yes.

Q. And there was a plaster company, whether incorporated or not you do not undertake to say, but some people who were interested in the railway company were interested in the plaster company?—A. One or two.

Q. Then there was the Tobique Valley Gypsum and Mining Company formed for the purpose of developing the Arbuckle property?—A. Yes, and the other company was interested in the Government property and the private land they bought above.

Q. I understand you. I understood you to say the other day that the company holding the land leased from the Government went to New York for the purpose of offering the stock of the company, as I understood, or selling the property, which?—A. If you change the words "went to New York" to "had negotiations."

Q. With people in New York?—A. Yes.

Q. Well, which was it, to sell the property, or to have it stocked?—A. My impression was that it was to get some one to form a strong company and take the railway and their lands over together. The reason I remember that is because I was willing to put my land in until I found I could not put it in, if they put the railway in, for the reasons I gave you the other day.

Q. You told us also that some arrangements were made between you and these parties who were desirous of having this company stocked, that you would not offer your property for sale until they had had an opportunity of carrying out their scheme?—A. If the question is important, I will answer the question very frankly. I did state the other day that a proposition was made for me to join the company, and I refused and said I could not join that company with my property, for the reasons that I gave, because a portion of the assets would be that railway that would be coming for subsidies here. Then negotiations had been going on, as I understood, between these gentlemen and the Tobique Valley Railway Company and other capitalists for the sale of the railway and the other deposits. You asked if I agreed not to offer my property for sale then. I did. I was asked to do so, and I said at the time they expected me to be very generous to refuse an opportunity of selling my property. Their argument was: "If you sell your property now, it is three miles shorter haul, it may jeopardize our chances of selling, and an arrangement might be made whereby we could put these two properties in with the railway and the gypsum company." I say on oath that I think in doing that I was acting very generously and that I was not looking very closely to my own interest or trying to take advantage of any profit I could make out of this land.

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Q. Was the arrangement with this company that you and your property should be taken in when this company was formed?—A. No.

Q. Then it was not contemplated that there should be a conveyance from you to the company under any circumstances?—No.

Q. There was no arrangement they would buy your property?—A. Only the arrangement I have already stated. I saw at once, and they admitted themselves when I raised that point, that it would be impossible for me honourably to put this property in, if the railway was put in as one of the assets.

Q. I thought you said there was some arrangement that they were to buy your property previously to this?—A. No, they were talking with me about putting in the gypsum property, my gypsum property. Not the Tobique Valley Railway Company, remember. I was quite ready to do that.

Q. What arrangement was there? Was your property put in, as proposed?—A. There was no proposition fixed, no arrangement made. There was only a discussion and when we met to take a practical step, I found they wanted to put the railway in, and I said, "No, we cannot do that," and there was no arrangement because they admitted it could not be done.

Q. There appears to have been a mortgage on this property when you appear to have sold it to the company, the Tobique Gypsum Company?—A. Yes.

Q. There was a mortgage on the property of \$3,000, I think?—A. The mortgage speaks for itself. I bought the property for \$2,500, and there was some interest. It would be under \$3,000.

Q. That mortgage was given to whom?—A. John Connor.

Q. Is John Connor a member of the Cordage Company of Halifax?—He is a member of a good many corporations. I don't know whether he is a member of the Cordage Company of Halifax. I know he is engaged in the cordage business and has been ever since he was 14 years old.

Q. There are one or two more questions. The \$86,500 lapsed and was revoted in September, 1891?—A. I daresay it is correct. It was revoted, yes.

Q. So that no part of the original vote of \$89,600, as a matter of fact, had been used in the construction of the road up to September, 1891?—A. That seems to be very evident. If it was only revoted it could not have been used.

Q. Then the portion that was used would be the \$35,200 voted on the 30th May, 1890?—A. No, I cannot say that. I am not speaking from memory or a knowledge of the facts, but I say this, that I cannot understand that that would hold. The hon. gentleman wants me to say—

Q. I don't want you to say anything, Mr. Costigan, that you do not want to say. I do not expect you to say anything that you are not perfectly willing to say. I am just getting at the facts. I see here by the records that on the 30th May, 1890, there were \$35,200 of a new vote?—A. Yes.

Q. A year and four months afterwards, namely, on the 25th September, 1891, there was a revote of the old subsidy of \$89,600; that is to say, the revote was a year and four months after the vote of \$35,200. The subsidy originally granted, \$89,600, that was revoted in September, 1891?—A. I do not recollect that it was revoted, because it had not expired.

Q. The \$35,200 voted in May, 1890, was not the first money actually used in the construction of the road?—A. I do not know how the payments were made. I do not doubt the dates or the figures of the hon. gentleman. I suppose he is speaking from the records and they can be easily traced. The first subsidy having expired was renewed, certainly.

Q. It was renewed after the second subsidy was voted?—A. Because it did not expire until the first subsidy was voted. They were all subsidies for the same road. Let us speak plain about this. The first subsidy, the hon. gentleman says, expired and was revoted.

Q. In September, 1891?—A. After another subsidy had been voted. Certainly, because it had not expired until a further subsidy given for the next 14 miles had been voted.

Q. That may be so, I am not disputing it?—A. But it is a fact, and that is what I want to state. It was voted after the second subsidy, because only after the second subsidy was voted did the original subsidy expire.

Q. Well, what I want to get at is, the subsidy of \$89,600 revoked in September, 1891, had never been earned or paid?—A. It had been partly earned, I don't know whether it was all paid. The question of payments need not be a question between us at all. The payments are very easily got at, and the dates I do not dispute. It is the conclusions.

Q. Well, the conclusions are matters of argument, Mr. Costigan?—A. They are matters of argument, but the conclusions drawn hastily from outside depend greatly upon the impression sought to be given by gentlemen who are not always fair.

Q. Well, that is a matter of argument too?—A. Oh, it is a matter of argument.

Q. Now, Mr. Costigan, do not let us discuss this matter?—A. We do not want to discuss it. Not at all. I will be as patient as I can.

Q. All I want to find out is the simple fact that the subsidy of \$89,600 was revoked in September, 1891. You say that is so?—A. I say, I admit that presumably you are quoting from the records.

Q. That being so, the railway company had no right whatever to any portion of that \$89,600?—A. If Parliament went back on its policy and took advantage of the expiration of the time for which it was voted they could not collect and could not demand it, I suppose.

Q. Without a further Act, and the Act was passed at that time. Then in May, 1890, a new subsidy of \$35,200 was granted. Now, you have told us that Mr. Arbuckle became discouraged about this road being ever constructed?—A. I never saw Mr. Arbuckle. I admitted what Mr. Stewart informed me was, that he was rather discouraged and wanted to leave and would sell the property.

Q. He was discouraged, and wanted to leave and wanted to sell the property, you were so informed?—A. Yes.

Q. Were you informed that by letter or by telegram?—A. I think by letter. It might be by telegram, but I think by letter. If the hon. gentleman thinks that is important I will tell him that I closed the transaction by telegram myself. I can have no doubt about that.

Q. At all events this information was conveyed to you by letter or telegram?—A. Yes.

Q. It may have been by letter, but it is certain the matter was closed by telegram?—A. Yes.

Q. And that, as before stated, was on the 12th day of May, 1890. You knew at that time, Mr. Costigan, that the government had determined to grant a subsidy—a further subsidy of \$35,200 to this road?—A. I knew all the facts about the subsidies having been voted and the dates they were voted.

Q. Well, the public knew nothing about it at that date?—A. The public must think I was very innocent if I did not know the amount voted by Parliament. The gentleman is quoting.

Q. No, the amount voted by Parliament, I am quoting, had not been voted on the 12th May, it was voted on the 13th May. It was submitted to Parliament on the 13th May. The question I ask you is, "Whether you did not know before Parliament and the country were informed of the fact that the government had determined to further subsidize this road to the extent of \$35,200?"—A. I had perfect knowledge as far as perfect confidence would give that knowledge, that that subsidy would be voted, and that the policy previously adopted would be carried out. As I told the hon. gentleman, not only my friends but my opponents in the constituency and the province had not the slightest doubt that that vote would be given to carry on the work.

Q. It is not a question of confidence, but of knowledge?—A. You will take my answer just as I give it to you and you will get no more—at least not to questions of that sort.

Q. I will just simply ask it. Did you know, Mr. Costigan, on the 12th of May that the Government had determined to give \$35,200 more to the Tobique Valley Railway Company?—A. I have already answered the hon. gentleman that I knew, and there

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seemed to be no doubt anywhere in the minds of those who took any interest in the construction of the road, that that subsidy would be voted. Personally—as the hon. gentleman wants to be very particular—personally I had not the slightest doubt. You can drop out the word “confidence” that I used before, if you like. I had not the slightest reason to doubt that the subsidy would be paid and the promise of the Government fulfilled, and the policy already adopted carried out.

Q. Were you equally confident that the vote of \$89,600 would be revoted if it lapsed?—A. If possible more confident.

Q. You were more confident of that?—A. Yes.

Q. So that you had the greatest possible confidence that in case the \$89,600 subsidy lapsed it would be revoted?—A. I had not any doubt about that.

Q. And you had an absolute knowledge that the other subsidy of \$35,200 would be granted?—A. Certainly.

Q. Did Arbuckle know it?—A. I do not know that he did. He would have known if he had asked me. I would have given him my opinion.

Q. He was not in Ottawa, I suppose, where you were? He was living in New Brunswick?—A. That is so.

Q. You do not know, Mr. Costigan, whether your agent informed him or not?—A. Whom do you call my agent?

Q. The gentleman who telegraphed for you?—A. I suppose that so far as that goes he did act the part of a friend or agent.

Q. For that matter I do not suppose he knew either?—A. He had every reason to believe the vote would be given. He was the original promoter of the road, and devoted his time to it and got nothing for it.

Q. You do not know whether he told Arbuckle that the old subsidy was sure to be revoted and that there would be a further subsidy of \$35,200 voted?—A. My friend might be so conscientiously scrupulous as to mention that when he accepted. I could not say whether he did or not.

Q. You have already told us that if there was no railway constructed the price you were paying for it of \$2,500 was a fair price?—A. I did not quite say that, if I remember. I stated that outside of the value of the gypsum in the land, as a farming lot it would not be worth anything like that sum, that I myself would not buy it, and I had not money to spare, unless it is for the exceptional value given it by this deposit. But a man of means might consider it an opportunity for investment in a place most likely for a railway to be constructed in, and he might think it worth while to buy it for more than \$2,500.

Q. Did you tell me that in view of the plaster deposit and other circumstances, that you considered \$2,500 a fair price for the property if no railway would be constructed?—A. I would not have given that for it, if the hon. gentleman wants to establish that, unless I thought that a railway would be constructed there and there would be some means of getting it out. There is no doubt about that.

Q. You told me also on that examination that you considered that if the railway was constructed the property would be worth more than \$20,000 or \$25,000, I do not remember which was the answer, but it was more than \$20,000 at all events?—A. I cannot deny that. I want to be particular and state that I had no means of putting any exact value upon it. I am quite willing to tell the hon. gentleman that when I bought the property I thought I was getting it at a very low price, and that I could by a fair transaction get a fair profit out of it. I think that the property to-day, although the stock is not paying and is not worth par, I think it is well worth \$20,000.

Q. So that the construction of the road had the effect of bringing the property that was not worth more than \$2,500 up to \$20,000?—A. I dare say that is a fair conclusion to draw, but I want the hon. gentleman to go further and say that it had at least the same effect on the government lands out of which the local government is to be indemnified partially for the subsidy they gave. The increase would be proportionate.

Q. But while the hon. gentleman knew that the subsidy of \$89,600 would be revoted and he knew that a further subsidy of \$35,000 was to be voted, and he knew that the effect of that would be the securing of the construction of this road, he will

not undertake to say that Arbuckle knew that?—A. I do not pretend to undertake to say. If the hon. gentleman says he did not know, I am quite prepared to admit that he did not know it.

Q. And you, Mr. Costigan, say here that occupying the advantageous position you occupied, knowing all that you knew, having all the power that you had to forward a grant from the Government, you say that you and Arbuckle were dealing on terms of equality?—A. That is a singular question, Mr. Chairman.

Q. No, it is not a singular question?—A. Will you allow me to put it as you have put it?

Q. Yes, certainly?—A. You say here that I have all this knowledge and the other man having none of it—I never said any such thing.

Q. I did not say that you said so?—A. But that is the question you put to me.

Q. I will repeat the question, and you will see. You have already admitted you were satisfied the Government would revoke the old subsidy after it expired?—A. Yes.

Q. You have already admitted that you knew that the Government intended to vote \$35,200?—A. Yes.

Q. You have already stated that you were satisfied this would secure the construction of the road?—A. Yes.

Q. So that on these three points you were perfectly satisfied?—A. Perfectly.

Q. You have told us that Mr. Arbuckle was discouraged?—A. I told you that that was reported to me and I had no doubt of it.

Q. That he wanted to sell the property and leave?—A. Yes.

Q. And that you did not know that he had this information?—A. And that I might as well have bought it as anybody else.

Q. Well, the simple question I asked you was, in view of all these facts, do you pretend to say that Arbuckle and you were dealing on terms of equality?—A. I have stated the information I had, I have admitted the position you place him in, and I have no reason to state I had any undue advantage over the man. He had offered this property for \$2,500. If I had not bought it by telegram, there were twenty others who would have bought it. The man Stewart who telegraphed to me had an option on it before, but he had not the money, and that is the reason he telegraphed to me to buy it. I told him I would buy it, and I would give him an interest in it if he wanted. I think I promised to give him an interest because he had the option first. I bought it because he could not pay the money.

By Mr. Haggart :

Q. You say that the man Stewart had an option when you purchased?—A. He held the option for over a year.

By Mr. Lister :

Q. For how much, Mr. Costigan?—A. I cannot tell the price, but not any greater price. Mr. Stewart now claims—I make this statement voluntarily—that he has an interest in the property although it was bought by me. It was transferred to me, I paid the money, paid the interest, and he never paid a dollar on it; but in view of the fact that he had the option, that he went and paid over the money and got the deed I told him I would give him whatever he thought was a reasonable interest in that property, in consideration of the fact that he had the option, and that if he had the money he might have bought the property before me.

Mr. MULOCK—I have here a letter from Mr. Costigan addressed to the Hon. M. Bowell, acting Minister of Railways, which I wish to hand in as an exhibit.

By Mr. Lister :

Q. There were three miles necessary to get the road up to your deposits, were there?—A. No, sir.

Q. How many?—A. Not one mile of the three.

Tobique Valley Railway Inquiry.

Q. Well, there were three miles additional at all events to get to some deposits?—

A. Yes. I will put the honourable gentleman right. He is a little on the wrong track there. There were not three miles necessary to get the road up to my deposits as he calls it. There were three miles necessary to complete the road as originally subsidized and promised, and the three miles additional were to complete the last 14 miles and to bring the road up to the Government deposits, so that makes a little difference.

By Mr. Sproule :

Q. Would that be beyond yours?—A. Beyond mine, of course.

By Mr. Lister :

Q. So that the road would pass your land before commencing the three miles?—

A. About the three miles, perhaps.

Q. It would go up to about your land?—A. It would hardly reach it, but would be very close to it though.

Q. And it was for that reason that the Government extended it or made a grant for the completion of the three miles?—A. Extended the three miles?

Q. Yes.—A. As I have already stated the grant for 11 miles was given the session before, and the only reason why it was not 14, instead of 11, was that the subsidies had to be proportionate and as the subsidies could not be used that year 11 miles were put in, on the ground as I stated here, that it did not matter much whether it was 11 or 8, but that would do for that year with the understanding that the balance, whatever it might be, would be forthcoming whenever the subsidies were voted at the next session or whenever they were voted again, and that was carried out. In the meantime the subsidy for that three miles was voted in sufficient time not to delay the construction of the work.

By Mr. Haggart :

Q. Was this road under contract when you purchased this lot?—A. The road was under contract long before I purchased the property.

Q. Was any portion of it completed?—A. I think the first 14 miles were completed as near as I can remember. I am speaking from memory. I did not look over the dates because my statement here in answer to questions put by my honourable friend here is subject to the records themselves. If he quotes the date of a subsidy I will not dispute the year. As to the question the Minister puts to me whether the contract was completed or not, I say I believe it was. It was under contract for several years.

Q. And part of it completed?—A. Well on to completion, if not completed.

Q. Can you tell me what portion of that \$89,000 that was revoted was earned before it was revoted?—A. Oh, yes, it was earned.

Q. What portion was earned before it was revoted?—A. It was earned, I suppose, by advances made to these men as in any other way, but they could not draw money, of course, until a certain portion of the work was done.

Q. Then the party living on the land there must have been as cognizant of the amount of the road that was under contract and completed as you were?—A. He lived right there the whole time, knew all the facts.

Q. This man had given an option to another person who had the right of purchasing his property for a year, and he was unable to sell it at that price?—A. I stated that is the information Mr. Stewart gave me. Of course I cannot on oath state this man had done so, but long before I telegraphed, before I got this communication, Mr. Stewart told me that he had an option and would buy this property. Then, when I got his letter or communication that this man was willing to take the \$2,500 if he could get it—that he wanted to move away—I immediately said: "Close with him."

Q. The last vote, that is for the three miles, was not for the purpose of taking the road up to this property but away past it?—A. Taking it past it to the Provincial Government property.

The CHAIRMAN—The letter put in shows that conclusively.

By Mr. Lister :

Q. The road was under construction, and it had been for some years, had it not?—
A. Under construction?

Q. Yes, in course of construction.—A. Excuse me, it had been for some years before what?

Q. Before the revote.—A. Yes.

Q. And before the subsidy of \$35,200 the contractors had failed?—A. No; the contractors got embarrassed.

Q. They got embarrassed?—A. The company, I suppose, usually gives the contract to the contractors.

Q. Yes?—A. The contractors failed.

Q. Yes?—A. Got embarrassed at any rate and could not pay their claims for a while. Then Mr. Kitchen & Bros., I think, or Son, contractors in Fredericton, came forward and made arrangements with the company and completed this work that other contractors had failed to carry out.

Q. How much have they failed to carry out?—A. Oh, I could not speak with regard to that at all. I did not follow the financial arrangement of their accounts. That would appear of course, it is a matter of record.

Q. How long after the contractors failed in their work before Kitchen took hold of it?—A. I have not the dates of that, but I would be quite sure they were in difficulties for several months before they could make their arrangements and go to work.

Q. Then can you give me any idea as to when this work commenced—when the contractors commenced the construction of the road?—A. I could not give you the dates, no.

Q. Nor the year?—A. Nor I could not give the year off hand.

Q. Would it be back as far as 1884?—A. I could not say when it was.

Q. At all events it was some years?—A. Some years from when?

Q. From the time of commencement to the time the contractors failed or suspended or did not pay up?—A. I think after the vote, after the subsidy was given, there was a delay for the reasons that I stated before. The charter was in the hands of men who did not seem inclined to go on. That caused the greatest portion of the delay. I am not going to repeat the steps I took to force them to come to terms or to secure the construction of the road.

Q. Well, the result of the whole thing as far as Arbuckle was concerned, was that he became discouraged and wanted to sell out and leave the place?—A. As I never saw the gentleman to get his opinions upon it, the prosecutor in the case must draw his own conclusions.

Q. Now tell me this question: Was the work in a state of suspension or in active progress at the time that you bought the Arbuckle property?—A. The road, I think, at that time was in hand, was under contract to Kitchen & Bros., reliable contractors, and there could be no doubt about their ability and intention to build that road.

Q. Was the work going on at the time you bought this property?—A. I cannot exactly tell you whether it was going on. I was not trotting up and down to see whether they put their men on. My own impression was that the road was under contract—under reliable and solvent contractors and that the completion of the road was thereby insured, and I only hesitated to give the answer because my impression is that they were at work on the road, but I did not want to say that without being positive. It is very easy to ask a question off-hand about something that occurred three or four years ago with which I had no connection whatever except in one capacity.

Q. All you need say is that you do not remember, you are not positive?—A. Well, I say my impression is they were at work.

Q. You will not undertake to say they were?—A. I will not undertake to say anything that I am not positive about.

Q. You are undertaking to say something?—A. I will undertake to say a great deal more than I am saying now under my oath.

Q. Then so far as the actual progress of the work was concerned, you do not undertake to say with positiveness that the work was in progress at the time you bought the Arbuckle property.

Tobique Valley Railway Inquiry.

THE CHAIRMAN—Mr. Costigan has stated already to the best of his recollection.

By Mr. Haggart :

Q. This fact is clear, that for a year before you bought the property another man had the option?—A. I think it was a year before that Mr. Stewart told me he had the option from Arbuckle.

Q. And he had been trying to sell it?—A. He did not say he was trying to sell it.

Q. He had the option?—A. Yes, if Stewart had the money he would have bought it at once. If he had gone to Mr. Baird at Andover, a Senator here now, and offered it to him he would have bought it. That is my belief. He might say that he would not but my impression is that he would be willing to give him \$2,500 for it that day himself. It was a chance of buying a piece of private property that the Provincial Government had not any claim upon, that was granted by patent in 1867. You may talk about “squeeze.”

By Mr. McMullen :

Q. Was Mr. Arbuckle one of your constituents?—A. He was one of my supporters.

Q. And whose interests you should defend?—A. Whose interests I would defend better than you.

Q. Do you think you treated him fairly in buying this property at the price you paid for it?—A. I cannot state that I treated him as fairly as you might have treated him, but I state that I treated him as fairly as I believe you would have treated him.

Q. Then your opinion of my treatment of him is of a very low order?—A. If you will look at my answers you will see that that does not necessarily follow. I stated that I treated him as fairly as I believe you would have treated him.

THE CHAIRMAN—Let us get at the facts.

By Mr. McMullen :

Q. It is evident your opinion of my treatment is of a very low order?—A. No, it may be that your intelligence does not grasp the meaning of my reply.

By Mr. Boyle :

Q. As far as I understand the increase in the value of the land does not depend on the voting of the subsidies but on the construction of the road?—A. It depended entirely on the construction of the railway, and the construction of the railway was ensured years before.

Q. So as soon as the construction of the railway was assured, it was not contingent or collateral but it had already occurred?—A. Yes.

Q. So it is a matter of fact that at the time you bought the land it was well understood that the railway was going through and would be finished?—A. Yes, it was generally understood.

By Mr. McMullen :

Q. Do you know of any of the members of the Local Government who took advantage of the circumstances and bought any of the property there?—A. Does the honourable gentleman wish to question me upon my knowledge of the actions of the Local Government, his Liberal friends? I am under oath. Go on. I have made no statement in connection with the Liberal Government of New Brunswick. Question me if you dare about the Liberal party.

Mr. McMULLEN—I don't want to get you mad.

Mr. COSTIGAN—You are getting me mad, and it would be quite a mistake for some of you to get me too mad. I trust I am not hasty or imprudent, but I have the feelings of a man. I like an enemy, but I despise a sneak, or a stabber-behind, a man that will insinuate what he knows is only an insinuation to injure a man when he can-

not charge him with anything wrong. I will continue under my oath and say this: I won't ask a vote of a committee to clear me of this charge. I won't ask a committee of the House to clear me before the public of the slightest suspicion of fraud or dishonest action in this matter. I will say that you cannot find ten gentlemen on the Liberal side who will stand up and say "John Costigan, you have acted dishonourably in the slightest degree from the beginning to the end of this matter." Is there anything further gentlemen?

THE CHAIRMAN—No, that is all, Mr. Costigan.

The Committee adjourned.

Tobique Valley Railway Inquiry.

EXHIBIT REFERRED TO IN MINUTES OF EVIDENCE.

EXHIBIT.

OTTAWA, 4th August, 1891.

MY DEAR BOWELL,—The application of the Tobique Valley Railway Company for a subsidy of \$3,200 per mile for the three last miles of the twenty-eight originally subsidized is, I think, entitled to your most favourable consideration.

The original subsidy granted by the Dominion was for \$3,200 per mile for twenty-eight miles, the distance between Perth Station, on the New Brunswick Railway, and Plaster Rock, on the T. V. R., the principal object being to reach said Plaster Rock, where an inexhaustible supply of gypsum is to be found. The Local Government having failed to provide a provincial subsidy, the Dominion subsidy for the twenty-eight miles was made applicable to the first fourteen miles, and a contract was entered into covering that distance. Last session the ordinary subsidy of \$3,200 per mile was asked for the upper fourteen miles, and was granted to the extent of eleven miles, leaving the last three miles unprovided for. The first fourteen miles are now nearly completed. The New Brunswick Government, at last session, voted \$70,000 to secure the completion of the road to Plaster Rock, but of course will not give any portion of that subsidy unless the road be completed to the Rock, as originally intended.

You will, therefore, easily see how important it is that the Dominion should grant the subsidy for the last three miles, as without this the local subsidy of \$70,000 will not be available, and the fourteen miles, constructed at considerable cost, will be of little or no value, while the granting of the small subsidy will ensure the completion of the whole twenty-eight miles, and make that immense gypsum deposit accessible, which was the original object in subsidizing that railway.

Yours very truly,

JOHN COSTIGAN.

Hon. M. BOWELL,
Acting Minister of Railways,
Ottawa.

59 Victoria.

Appendix (No. 3.)

A. 1896

REPORT

OF THE

SELECT STANDING COMMITTEE

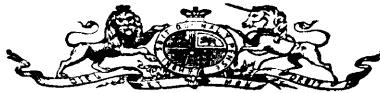
ON

AGRICULTURE AND COLONIZATION

FIFTH SESSION, SEVENTH PARLIAMENT

1895

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

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1895

Agriculture and Colonization.

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THE COMMITTEE.

(THOMAS S. SPROULE, Esq., *Chairman*.)

Messieurs :

Bain (<i>Soulanges</i>),	Ingram,
Bain (<i>Wentworth</i>),	Innes,
Beith,	Jeannotte,
Bergeron,	Joncas,
Bernier,	La Rivière,
Blanchard,	Leclair,
Boston,	Leduc,
Bowers,	Legris,
Bowman,	Lépine,
Boyd,	Lippé,
Brodeur,	Livingston,
Burnham,	Macdonald (<i>Huron</i>),
Calvin,	Macdonald (<i>King's</i>),
Cameron,	Macdowall,
Campbell,	McDonald (<i>Assiniboia</i>),
Cargill,	McGregor,
Carignan,	McLean (<i>King's</i>),
Carling, Sir John,	McLennan,
Carpenter,	McMillan,
Casey,	McNeill,
Choquette,	Mara,
Christie,	Marshall,
Cleveland,	Metcalfe,
Cochrane,	Mignault,
Corbould,	Miller,
Daly,	Montague,
Davin,	O'Brien,
Davis,	Paterson (<i>Brant</i>),
Dawson,	Patterson (<i>Colchester</i>),
Desaulniers,	Perry,
Dugas,	Pope,
Dupont,	Pridham,
Dyer,	Proulx,
Earle,	Putman,
Edwards,	Reid,
Fairbairn,	Rinfret,
Fauvel,	Robillard,
Featherston,	Roome,
Ferguson (<i>Leeds & Grenville</i>),	Rosamond,
Ferguson (<i>Renfrew</i>),	Ross (<i>Dundas</i>),
Forbes,	Ross (<i>Lisgar</i>),
Fréchette,	Rowand,
Gibson,	Sanborn,
Gillies,	Semple,
Gilmour,	Smith (<i>Ontario</i>),
Girouard (<i>Two Mountains</i>),	Sproule,
Godbout,	Sutherland,
Grieve,	Taylor,
Guay,	Turcotte,
Harwood,	Tyrwhitt,
Henderson,	Wilmot,
Hodgins,	Wilson,
Hughes,	Wood (<i>Westmoreland</i>)
Hutchins,	

Agriculture and Colonization.

REPORT.

The Select Standing Committee on Agriculture and Colonization have the honour to present their third and final report.

The investigations made by the committee at its sittings during the session have embraced the subjects of Agriculture in its several divisions; the question of branding cheese, and immigration.

On the subject of agriculture the several officers of the Central Experimental Farm were examined, and a report of the information obtained from them is herewith annexed and submitted for the consideration of the House.

It will be found to contain information not only of interest to the farmers of Canada but of economic value to all who are interested in the welfare of the Dominion, considered in relation to agricultural development. Much new matter will be found in this report and evidence, while many facts, which were before known, are presented in a new and striking light.

ORGANIZATION OF THE DOMINION EXPERIMENTAL FARMS.

Mr. William Saunders, the director of the experimental farms, was first examined (7th May). He stated that in all the operations which have been carried on, the lines prescribed by the Experimental Farms Act had been closely followed. The work of clearing, cleaning and fencing the land was begun at the central farm in 1887; that on the farm in the Maritime Provinces was commenced in the following year, as was also that on the farms at Brandon and Indian Head, and that on the Agassiz farm in 1889. The director stated that it required three or four years to complete the effective organization of the farms. It is, therefore, yet early to estimate all the advantages for the farmers of the Dominion which may be reasonably expected to flow from them.

EXPERIMENTAL OPERATIONS.

The nature of the work carried out includes experimental tests with the grains, root crops, vegetables, fruits, trees and plants, in particulars which are of interest and great importance to farmers. The number of varieties of farm crops, he said, on which experiments had been made is upwards of 500, and the number of varieties of large and small fruits much greater, including, at Brandon, 200 varieties of the hardiest sorts of Russian apples, and the same at Indian Head. So far, however, only one variety of Siberian crab has proved entirely hardy at Brandon and Indian Head.

At the experimental farm at Agassiz there now exists in very successful operation one of the largest test orchards in the world. As many as 1,800 different varieties of fruits are under test, of which upwards of 1,200 are large fruits, and it is believed that valuable results will be obtained.

DISTRIBUTION OF SEED GRAIN.

The distribution of samples of seed grain in three-pound bags was actively continued during the past year. It was reported to the committee last session that 88,501 of these samples had been distributed to 44,181 farmers, from the commencement. This year, between the 11th of February and the 6th of May, 19,040 three-pound samples had been sent out to about 19,000 farmers, while there were at the date mentioned, about 8,320 applications which could not be supplied. These facts show the very great interest of farmers in this sample distribution. The practical results have been highly satisfactory in improving some of the grain crops of the country. From a sample of three pounds, carefully sown one year, a farmer can obtain a good supply of seed for the next, and afterwards have enough for the improvement of his neighbourhood. This makes an appreciable accretion to the wealth of the country.

There has been a new feature in the grain distribution of the present year, namely of one-pound packages of some of the new cross-bred wheats and hybrid barleys which have been produced at the central farm. The trial of these in many parts of the Dominion may be looked forward to with much interest. As many as 1,150 of the one-pound samples of cross-bred wheats and the same number of one-pound samples of hybrid barleys have been distributed.

In explaining the several crosses tried at the farm, the director pointed out that he hoped to succeed to produce a variety of wheat having the qualities of the Red Fife, but ripening a few days earlier. If such a result could be obtained it would be one of very great importance for the whole of the Canadian North-west.

The director of the experimental farms gave much practical information in his evidence relating to experiments with barnyard manure and some of the artificial fertilizers, showing the results obtained by applications to the different crops. The practical details afforded being of most interest in the information given; the farmer is referred to the report annexed.

The information given with regard to hedge and tree planting, including shelter belts, at different points of the Dominion, is interesting, and the farmer is referred to the details.

The director gave an account of the trouble which had been found in connection with the disease of tuberculosis among the herds of the experimental farms and the methods taken for its extirpation.

DEVELOPMENT OF THE DAIRY INDUSTRY, AS A WHOLE AND BY PROVINCES.

The dairy commissioner, Mr. James W. Robertson, of the experimental farms, next gave evidence before the Committee, and the information he furnished had relation to what had been already achieved, and what was hoped to be, by the operations carried on by him under the administration of the Minister of Agriculture. The information he furnished was divided into four heads, namely (1) Dairying in connection with the various experimental dairy stations established in the different provinces of the Dominion; (2) The action taken under the direction of the Minister to help the butter trade by means of shipments to the United Kingdom; (3) The cold

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storage service and accommodation proposed to assist in the development of this trade; and (4) The outlook of the cheese market for the current year. The dairying progress which has been made under the operations which have been carried out, can only be described as remarkable.

In Prince Edward Island, in 1892, there was only one dairy station on that island. It was put up by the farmers and the Department loaned the machinery to fit up the factory. Some other factories were built and fitted up at the expense of joint stock companies of farmers. In 1893 the dairy division of the Department of Agriculture managed eleven dairy stations, patronized by 1,187 farmers, turning out cheese to the value of over \$48,000. The actual cost to the government in bringing about this result was \$2,500 for the year, including the salary of Mr. Dillon, the dairy superintendent. In 1894 there were 16 cheese factories and 2 creameries, and, at the end of that year, the value of the cheese and butter turned out was over \$90,000, of which amount \$11,830 was in butter. The quality of cheese made in Prince Edward Island was the highest, and sold for half a cent a pound above the average price of Ontario cheese. The growing of corn ensilage and winter butter-making are gaining a decided footing on the Island, and it is clear that very soon no further assistance will be required from the Department, the whole cost of which to the Dominion, to the end of 1894, was \$4,800. A wealth making progress of importance has thus been set in motion at a trifling money cost, the effects of which will be permanent.

The dairy commissioner showed that in the provinces of Nova Scotia and New Brunswick similar operations have been carried on, with promise of much success, in addition to that already obtained. In 1894, 16 new factories were built in Nova Scotia, and 39 were in operation. The farmers are commencing to make butter in winter and cheese during the summer in that province. During the present year (1895) the commissioner believed that there would be 49 cheese and butter factories in operation, and Nova Scotia will this year become an exporter of cheese. The methods pursued in New Brunswick are similar in kind. The travelling dairy in New Brunswick visited 68 places in the province, and the farmers were shown how to avoid making losses, and how, instead, to make gains.

The dairy commissioner pointed out that the presence of His Excellency the Governor General at very large dairy meetings in the Maritime Provinces, during the past year, had the effect of quickening the interest and exciting enthusiasm among the farmers; as many as from three to ten thousand people being at each of these gatherings, together with Lieutenant-Governors and provincial Premiers. There was also present ex-Governor Hoard, of Wisconsin, a very high authority in dairy matters; and he published in his paper,—*Hoard's Dairyman*—the most widely circulated dairy paper, after his return, the statement: "They make the finest cheese there (Prince Edward Island), that I ever saw. . . . You would never know that all that cheese was not made by one man, on account of its uniformity. Every single cheese maker had been trained to a given standard." This is very satisfactory testimony from very high expert authority.

In the province of Quebec very active work has been done under the supervision of the assistant dairy commissioner, Mr. J. C. Chapais, who, during the past year, addressed nine meetings in Prince Edward Island, one in New Bruns-

wick, eight in Ontario and eighty-two in Quebec, besides delivering thirty-four lectures to the students at the dairy school at St. Hyacinthe. The dairy school at St. Hyacinthe receives \$1,000 a year from the Dairymen's Association of Quebec, and the Department of Agriculture meets other expenses. The work of teaching and spreading information, as to the best methods of dairy practice, appears to be very active in that province. The total number of cheese factories in Quebec is 1,192, and of butter factories, 262. The dairy commissioner expressed the opinion that this year the province of Quebec will produce about half of the total amount of cheese exportable from Canada.

In the province of Ontario, the dairy commissioner stated that in 1894 the plant used for butter making which had been loaned by the Department to companies of farmers was sold to them, and, last winter, they commenced to manage the business for themselves. It is believed that the teaching assistance may, in the future, be withdrawn from that province. The operations of winter butter-making, with the assistance of a vote of Parliament, under the direction of Dairy Commissioner Robertson, were commenced at Woodstock and Mount Elgin in 1892; and from these points have since extended all over Canada. Last winter there were in operation about 100 butter-making factories in Ontario. The dairy commissioner particularly described the starting of a large factory at Renfrew, a joint stock company putting up the buildings and entirely furnishing them. The department carried on the butter-making, so that the factory might have the advantage of the good name which had been gained. He said he had information that this factory would make a ton of butter a day, after it had got well in operation in June.

In Manitoba and the North-west Territories the operations have been actively carried on. Travelling dairies were started in the province and Territories last year, the procedure followed being somewhat similar to that in New Brunswick. Sixty-three places were visited. The work done appears to be approved by the people interested in Manitoba and the North-west, the fact having been expressed by resolution of the Manitoba Dairymen's Association. Butter factories have commenced in the North-west, and there is reason to hope for success.

In concluding this part of his evidence, the dairy commissioner expressed the opinion that the vote for dairy service in educational work in the provinces may soon be very much reduced, with a view to discontinuance.

DAIRY PRODUCTION AND EXPORTS.

The second division of the information which the dairy commissioner furnished to the committee, namely, the promotion of the shipment of butter, to foster the butter trade, is cognate with the third division of his classification, namely, cold storage, and both contain matter calling for serious consideration in the interest of dairy farmers. And both these points have again important bearing on his fourth division, namely, the cheese market in the United Kingdom. He stated that we now send to England 60 per cent of the total amount of cheese which is imported into that country; and he contended that, if the Canadian dairy farmers kept on extending the cheese trade only, at the same time enlarging the flow of milk per cow and lengthening the milking season, the result would probably be congestion of the market, and

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consequent placing of the cheese trade in a very bad condition. He, therefore, held that safety would seem to lie in the direction of turning milk in larger quantities into butter instead of continuing to enlarge the making of cheese. He said that in this would be found to rest the only hope to escape from an era of low prices which would arise therefrom. At present the influence of Canadian butter on the ruling prices of the British market was hardly appreciable, because we sent less than two pounds out of every 100 which were imported. The whole of the dairy commissioner's remarks on this subject are worthy of the careful consideration of the farmers, for the guidance of their operations. There is ample evidence that Canadian butter, if shipped in good condition, will command a high, if not the highest price on the English market.

THE IMPORTANCE OF STATE ASSISTANCE TO EXPORT OF DAIRY PRODUCTS.

He held the position that the same principle of departmental aid in dairying which had led to the results shown, increasing the exports of cheese from a figure of \$6,774,626.00 in 1886, to the very considerable total of \$15,448,191.00 last year, might, with great advantage, be applied to the stimulation of increase in the trade of butter. This very large increase of output was obtained at a comparatively small expense by the system pursued. The dairy commissioner held that the same principle applied to the shipping trade in butter, by providing cold storage in Canada on shipboard, also, on the other side of the Atlantic, would lead to similar results. What has been done, the dairy commissioner stated, has already saved financial distress in many respects, and there cannot be a doubt that the reasonable prospect of success which is offered by the proposals to promote butter export should receive the support of government and parliament. The dairy commissioner pointed out that Denmark offered for Canada a very striking example. Denmark had been even more inert in regard to butter-making than the Canadians have been; but, from the judicious guidance and assistance afforded by the government, that Kingdom had become one of the most prosperous, in the agricultural industries, in the world.

The information furnished by the dairy commissioner, as to methods of butter-making, may well be commended to the careful consideration of farmers.

COMPULSORY BRANDING OF CHEESE.

The second division of the information obtained by the committee, during its sittings, had relation to the branding of cheese. There was much conflict of opinion, the weight of evidence seeming to be against the branding which had been advocated; and the views of farmers, so far as obtained, are on the affirmative side. The opinions of both sides and the reasons on which they are based are sufficiently clearly stated in the evidence appended.

Mr. Craig, the horticulturist; Mr. Shutt, the chemist; Mr. Fletcher, the entomologist; and Mr. Gilbert, the poultry manager, all furnished the committee information relating to their respective divisions of the experimental farm, of much interest to the farming community. Each narrated the principal incidents of their operations during the year.

ASSISTANCE TO EXPORT OF FRUIT BY COLD STORAGE.

The horticulturist dealt with the question of cold storage as a means of preserving the more delicate of the Canadian fruits sufficiently long to enable shipments to be made to the markets of the United Kingdom, where indubitably a large demand would be found to arise, if the fruits could be safely carried there. The establishing of a cold storage system seems to be feasible in connection with that now being carried into effect for the preservation of dairy products. This proposal so far met the approval of the committee as to lead to the passing of a resolution, on motion of Mr. Carpenter, seconded by Mr. Roome, commending it to the attention of the Minister of Agriculture, and recommending active assistance in the carrying out of the project.

The information furnished by the entomologist contained matter of much practical interest to farmers, as did also that of the chemist of the farm. The relations of chemistry to farming are now so clearly elucidated that advanced farmers everywhere are beginning to avail themselves of them. These will find matter of interest in the statements of Mr. Shutt appended to this report; and almost similar remarks may be made with respect to the information furnished by the entomologist. The damages which have been inflicted in the past by injurious insects, parasites and fungoids, have been so great as to make the means which may be employed to arrest the destruction they cause, of very great interest to farmers. The poultry manager gave many interesting details in his evidence as to the advantages and economies of poultry keeping, which is a matter of sufficient interest to call for the increasing attention of farmers and others.

THE IMMIGRATION AND SETTLEMENT OF LAST YEAR.

On the subject of Immigration, Mr. A. M. Burgess, the Deputy Minister of the Interior, was examined. He informed committee that there had been a decline in the immigration to Canada and that he did not see any distinct evidences of revival. He stated the whole number of arrivals of the immigrant class, at the ports of Quebec, Halifax and Montreal, during the year 1894, was 27,911, as compared with 63,447 during the previous year, and that of the 27,911 mentioned, 20,680 declared their intention of becoming residents of the Dominion, being over 8,000 less than the previous year. These statistics, however, only refer to the Atlantic maritime ports, no attempt being made to obtain statistics from the interior ports.

Mr. Burgess gave a specific account of the homesteading which had taken place, there having been a particular movement in that direction from the western United States. He mentioned that the reduction of the vote by Parliament from \$200,000 to \$130,000 for the present year, would necessarily make a reduction of effort in immigration propagandism by the department; but, he hoped that in the present state of things, such would not materially affect the movement to the country.

JUVENILE IMMIGRATION

Mr. Burgess communicated to the committee a letter from Mr. Alfred B. Owen, the manager of Dr. Barnardo's homes in Toronto, in which he described the system on which the homes are conducted in Great Britain, where the children are first taken in charge. He particularly disclaimed the prevalent impression that these child-

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dren are gathered in promiscuously from among the vagrant class, known in England as "street arabs," and, he asserted, on the contrary, that Dr. Barnardo's homes come to the rescue of children of honest parents, who have succumbed in the struggle of life, and, in consequence of which, the parental home became broken up. He showed that these children were carefully trained in the homes in the Mother Country in which they are gathered, and where they are furnished with such education as to fit them to gain livelihoods. He said those selected for this country are particularly trained; and that the exceptions to the rule of moral and physical well-being on the part of these young immigrants are very small. Mr. Owen claims that the following points have been established by the actual facts as respects the juvenile immigration which has been conducted for some years past under the auspices of Dr. Barnardo's homes:—(a) That the system rescues from a life of street adventure the children from homes broken up by the misfortune of sickness or the death of parents; (b) That less than one per cent of these immigrant children has been convicted of offences; (c) That the bulk of those placed in the Dominion have experienced remarkable immunity from disease, the death rate and health statistics in relation to them comparing favourably with those of any other class in the Dominion; (d) That as a rule the domestic relationships which have grown up between the children from the homes and those who have taken them in, have been mutually satisfactory; (e) and that at least 85 per cent of those children who have come to Canada and arrived at adult age are now permanently established on farms managed or owned by themselves.

The question of the advantage of these juvenile immigrants has been for many years past variously discussed before this committee, it having been always maintained by the officers of the Immigration Department that the adverse opinions had invariably rested on the cases of a very fractional number of exceptions, while the great bulk of those who had done well and proved of great advantage to the country were not taken into account. It is, therefore, to be pointed out that a sweeping generalization should not be made on the fact of a fractional exception.

RECOMMENDATION.

The committee recommend that a suitable building be erected at the central experimental farm in which excursionists and parties visiting the farm might be accommodated as a place of shelter and lunch taking, with a good supply of water, by fountain or otherwise, and other necessary conveniences for their comfort.

It is also recommended that at least fifty copies of the report of the committee be supplied to each member representing a rural constituency, in addition to those usually supplied.

The annexed report of the sub-committee is submitted herewith as a part of this report, together with the evidence herewith.

The whole respectfully submitted.

T. S. SPROULE,
Chairman.

REPORT OF SUB-COMMITTEE.

(Adopted as a part of the preceding report.)

The sub-committee appointed to examine into and report upon the present methods of distribution of the official reports on agriculture, with a view to suggest improvements in such distribution, if found practicable, beg to submit the following report for consideration of the whole committee:—

1. That in view of the fact that there are not likely to be any additional number of reports to those already ordered from the experimental farm available in time for distribution in the current year, no immediate change is recommended.

2. We recommend that the director of the experimental farms take such means as he can for the present to correct the distribution lists to be used for the current year.

3. That the permanent mailing lists at the central experimental farm be divided into electoral ridings so that each member can be supplied with the names of parties in his constituency receiving reports, with a view to a revision of said lists from year to year.

4. We recommend also for the future that in addition to the number of reports provided for supply of the permanent mailing lists at the central experimental farm, a quantity be provided to the number of 250 copies of each of the Experimental Farm Report and the Dairy Report, to every such member of the House of Commons as represents a rural constituency, for his personal distribution.

Respectfully submitted.

T. S. SPROULE,

Chairman of Sub-Committee.

Committee Room 46,
15th July, 1895.

THE EVIDENCE

PART I

AGRICULTURE

Agriculture and Colonization.

COMMITTEE ROOM No. 46,

HOUSE OF COMMONS,

TUESDAY, 7th May, 1895.

The Select Standing Committee on Agriculture and Colonization met this day at 10.30 a.m. Mr. Sproule, Chairman, presiding.

Mr. Saunders, Director of the Dominion Experimental Farms, was present by invitation and addressed the Committee as follows:—

Mr. CHAIRMAN AND GENTLEMEN,—I thank you for this opportunity of again appearing before the Committee with the object of giving explanations regarding the progress of the work for which the Experimental Farms were established. In carrying out this work I have endeavoured, as far as possible, to follow the course prescribed by

THE EXPERIMENTAL FARMS ACT OF 1886.

This Act defines the nature of the work to be carried on, very clearly. The objects, as set forth in the Act, were, in brief, first, to test the merits, hardiness, and adaptability of new or untried varieties of cereals and other field crops, of grasses, forage plants, fruits, vegetables, plants and trees, and to disseminate among persons engaged in farming, gardening or fruit-growing, upon such conditions as may be prescribed by the Minister, samples of the surplus of such products as are considered to be specially worthy of introduction. These were among the main objects for which the Experimental Farms were established, and they have from the outset claimed much of our attention.

The Act also prescribed that we were to test the relative value for all purposes, of different breeds of stock and their adaptability to the varying climatic or other conditions which prevail in the several provinces of the Dominion and in the North-west Territories. Further, that we were to examine into the economic conditions involved in the production of butter and cheese. As this work is carried on by the Dairy Commissioner, and as he is to appear before the committee, I will leave that branch for him to discuss. Another duty prescribed was to analyse fertilizers, whether natural or artificial and to conduct experiments with such fertilizers in order to test their comparative value as applied to crops of different kinds.

We were to examine into the composition and digestibility of foods for domestic animals; to conduct experiments in the planting of trees for timber and shelter; to examine into the diseases to which cultivated plants and trees are subject; also into the ravages of destructive insects and to ascertain and test the most useful preventives and remedies to be used in each case.

We were to investigate the diseases to which domestic animals are subject; to ascertain the vitality and purity of agricultural seeds and to conduct any other experiments and researches bearing upon the agricultural industry of Canada, which are approved by the Minister.

These were the avowed objects for which the experimental farms were established, and I have thought that it would be well on this occasion to bring before you some facts to show how far these different lines of work which the Act has prescribed, have been undertaken and carried out. The Act giving the Government of Canada power to establish five experimental farms in the Dominion, for the purposes specified, was passed in the spring of 1886, but no action was taken until October 16th of that year, when I was appointed director.

LOCATION AND PURCHASE OF EXPERIMENTAL FARM SITES.

The day following my appointment I left for the Maritime Provinces to enter on a systematic inquiry into the conditions of agriculture in all the settled portions of the Dominion from the Atlantic to the Pacific, for the purpose of ascertaining where the Experimental Farms could be best located so as to confer the greatest benefit on the farmers of the Dominion. Since it was provided in the Act that the Central Experimental Farm should be located near the city of Ottawa, no great difficulty attended the selection of a site here. Acting on instruction of the Honourable the Minister of Agriculture, I had spent several weeks prior to my appointment in inspecting lands in the vicinity of Ottawa, a work which resulted in the selection of the present site.

The clearing, cleaning and fencing of the land was begun on the Central Farm in the spring of 1887, eight years ago, but the important work of gaining the information necessary to a correct judgment as to the most desirable locations for the four branch farms occupied nearly two years.

The farm for the Maritime Provinces was purchased during the winter of 1887, and work begun on it in the spring of 1888. Possession of the farm at Indian Head, North-west Territories, was had on the 24th April, 1888, and work begun at once. Work on the Brandon Farm was begun in July, 1888, and on the farm at Agassiz, B.C., on the 19th of September, 1889.

OFFICIAL STAFF AT THE CENTRAL FARM.

The present officers who share in the responsibility of carrying on this work were appointed as follows:—

Mr. James Fletcher, entomologist and botanist, early in 1887.

Mr. T. Shutt, chemist, July, 1887.

Prof. J. W. Robertson, February, 1890.

John Craig, horticulturist, 7th January, 1888.

A. G. Gilbert, poultry manager, in May, 1888.

It will thus be seen that the organization as it now stands required three or four years to complete so that the Experimental Farms have only been in effective operation a part of the eight years since the work was begun.

We may now consider briefly how far the work contemplated when the act was framed has been overtaken by the Experimental Farms. Your chairman informs me that it is your intention to call before you, as was done last year, the different members of the staff in succession, hence I shall not need to refer in detail to those parts of the work specially covered by these several officers.

THE TESTING OF CEREALS,—NEW VARIETIES DEVELOPED.

Leaving grasses out of the question, which will be dealt with by Mr. Fletcher, I shall refer, first, to the testing of the relative merits, hardiness and adaptability of the more important farm, field crops and forage plants. In these classes of products, as well as in most other departments, new and desirable varieties have been searched for in all parts of the world where similar climates to these found in the Dominion prevail. I cannot give you the exact number of varieties of different sorts of farm crops which have thus been brought together, tested and compared, but I know they would number considerably more than 500 different sorts. Besides this, between 500 and 600 additional new sorts have been originated in this group at the Experimental Farms, and many of these are still under test and some of them are of much promise. The seeding for this season is not yet complete, but I may inform the committee that we have already in the ground 334 varieties of wheat, barley, oats and pease. By the time we have completed sowing the various field crops for test this season, the number will exceed 500 different sorts. Each of these experimental plots is carefully watched, the quantity of

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seed sown accurately recorded, the products harvested and threshed separately and the yields ascertained. Careful notes are also taken at different periods of the seasons with reference to the character of the growth, earliness of ripening and freedom from disease, in the case of grain, etc., so that we may be in possession of the fullest records to give to the public from year to year, as to the relative merits of these different sorts of products under test. Several years ago the system of uniform comparative test plots was arranged on the Experimental Farms, by which the same variety of wheat, barley, oats and other products could be tested at each farm under similar conditions, the only varying factor in the case being the climate. We have found these comparative test plots of great value in enabling us to form a judgment as to what we should recommend as the best sorts, for the different provinces. These test plots are so arranged as to include all the more promising varieties of grain and other field crops.

As arranged for this year, these plots include: oats, 48 varieties; wheat, 33; barley, 37 varieties; pease, 12 varieties; turnips, 12 varieties; mangels, 12 varieties; carrots, 12 varieties; corn, 17 varieties, and potatoes 66 varieties, making a total of 249 varieties of the best and leading sorts of these agricultural products, of which there are now at each experimental farm, plots of about the same size, and treated exactly in the same way, as to planting and subsequent care. Thus the same varieties will be tested under the different climatic conditions which prevail in those districts where the farms are located.

Since this work began more than 400 varieties of potatoes have been carefully and comparatively tested.

EXPERIMENTAL ORCHARDS—VARIETIES OF FRUITS TESTED—NEW PRODUCTIONS.

The cultivation of fruit was another important item in the requirements of the Act. In the testing of fruits much has been already done, and the work in progress in this line is a most extensive one.

The fruit testing at the Central Farm will be reported on more fully by the Horticulturist, Mr. John Craig. Mr. Craig informs me that the total number of varieties of large fruits under test, there, at the present time, is about 850, and of small fruits about 700, making a total of 1,550 varieties. At the Nappan Farm, including the varieties planted this season, the large fruits number 272 varieties, the smaller fruits number from 50 to 60 varieties. At Brandon, about 200 varieties of the hardiest sorts of Russian apples have been tested, and about an equal number at Indian Head, with smaller proportions of other fruits. The small fruits have succeeded remarkably well, but the tests with apples, there, have not yet been successful, except with one variety of crab, a very small one, known as *Pyrus baccata* or the "berried crab," which was obtained from the northern part of Siberia. This wild variety has proved entirely hardy at Brandon, and, I believe, equally so at Indian Head. The buds have come out at the tips of the branches each year for several years in succession. This wild variety was crossed last year with the Duchess, Yellow Transparent and several other very good and hardy varieties of apples and with some of the larger crabs. These experiments have been very successful, the seeds have germinated, and the young trees are now coming into second leaf. From these we shall have about 200 new varieties for test, among which we hope to find some useful forms of improved quality which will be hardy enough to stand the very cold weather and the trying conditions to which they will be exposed in the climates in the North-west.

At the Experimental Farm at Agassiz, where fruit-growing is more successful, there are now the largest test orchards of fruits to be found anywhere in the world. There are about 1,800 different varieties, of which more than 1,200 are large fruits, that is, apples, pears, plums, cherries, peaches, apricots, nectarines, quinces, &c. These have been collected from all parts of the world and form a most interesting and useful group. It is not to be supposed that any very large proportion of these varieties will be found worthy to be classed among the best sorts for general cultivation, but unless we covered the whole field very thoroughly, we should be very likely to leave out, in our tests, vari-

eties which would be extremely useful. For that reason it has been thought best to test all the varieties obtainable, side by side. The less valuable ones will be gradually discarded, and the experience gained as to the varieties which are most valuable to the settler and most suitable to the climate, will be available to all. Orchards have been planted in the valley of the Fraser, and others at different heights on the bench lands on the sides of the mountains at heights of 100, 500 and 800 feet, and a new orchard is being planted this year 1,000 feet above the valley. As far as the experience there has gone, the trees in the higher orchards have been earlier in leaf and healthier in growth than the same varieties planted in the valley. The usefulness of this sort of land for fruit-growing, which cannot be used for ordinary agricultural purposes and of which there is an almost unlimited quantity in that country, is being demonstrated in a most convincing way, by these experiments carried on at Agassiz, by the superintendent, Mr. Thomas A. Sharpe.

The testing of vegetables was another line of work prescribed by the Act. Mr. Craig will be able to tell you how thoroughly this useful work has been carried on at the Central Farm, and the details given in the annual reports of similar work conducted at the branch farms, afford convincing testimony as to the thorough manner in which this branch of the work has been prosecuted at each farm.

CLIMATIC TESTS OF TREES, SHRUBS AND ORNAMENTAL PLANTS.

The testing of plants and trees comes next in order in the lines of work laid down in the Act. This branch of the work could not be so soon undertaken as some others, nor did it seem so important and pressing at the outset, but now that the land has been got into good order at all the farms, this work is being pushed rapidly forward. Large collections of useful and ornamental trees and plants have been and are being supplied to each of the branch farms so that their hardiness and adaptability to the several climates may be tested. As yet, the largest number is to be found in the arboretum at the Central Farm, where there are now accumulated over 800 varieties of trees and shrubs and a large number of ornamental plants.

The plan usually adopted has been to either grow these from seed or procure them as small specimens from some of the large nurseries in France, Holland or Great Britain, where they can be obtained very cheaply, and plant them out in nursery rows at the Central Farm where they are grown and propagated and gradually distributed to the branch farms. In this manner, with a comparatively small annual outlay, the farms are being gradually stocked with fine collections embracing all the newer and more promising introductions. These have added very much to the attractiveness and general usefulness of the experimental farms.

FREE DISTRIBUTION OF CEREALS TO FARMERS, FOR PURPOSES OF TEST.

Another duty prescribed by the Act was the distribution of samples of such surplus products of the farms as may be considered specially worthy of general introduction, by sending them to farmers, gardeners and others for testing. When I had the honour of appearing before the committee last year, I gave some details relating to this branch of the work and showed that from the date of the establishment of the farms up to the period when my evidence was given, 88,501 three-pound samples had been distributed to 44,181 farmers.

The distribution this year, 1895, began on the 11th of February, and up to last evening, the 6th May instant, 19,040 three-pound samples had been sent out to about 19,000 farmers. I might also say, while on this part of the work, that the applications for samples, this year, have been unprecedentedly large and up to date we have about 8,320 applications still unsupplied. It would be quite impossible to overtake all these in time for seeding, but we are doing the very best we can, and shall nearly finish the distribution of such material as we have, by the end of next week. The applications are filled

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in the order in which they have been received and as soon as we have done all that we can do, towards meeting the wishes of the applicants, the parties who have not received samples will be informed as to the reason why we have not been able to meet their wishes, and their names will be entered on our books so that if a distribution is made another year, these names will be the first considered.

A new feature in the distribution, this year, has been the sending out for test, to a limited number of farmers selected from among those who have been the most careful in reporting on samples already received, one pound packages of some of the new cross-bred wheats and hybrid barleys which have been produced at the Central Farm, for trial in different sections of the Dominion. In all, there has been distributed in this way, in addition to the three-pound samples already mentioned, 1,150 one-pound samples of cross-bred wheats and 1,150 one-pound samples of hybrid barleys.

The interest which farmers are everywhere taking in this useful branch of the work of the farms is evident from the number of letters received at the Central Farm. During March and April, the number received was 17,576, almost double the number received in the corresponding months of 1894.

A large proportion of these, were applications for samples of grain, and the largest number of letters received on any one day was 820. It is quite impossible with the limited staff provided at the Central Farm to answer all these letters promptly, but the work is being overtaken as rapidly as is practicable.

THE STOCK AND DAIRY DEPARTMENT.

You will hear from Mr. Robertson, particulars regarding the testing of stock and the economic conditions involved in the production of butter and cheese, branches of the work which have been carried on by him with great efficiency and much advantage to the country at large.

THE CHEMICAL BRANCH AT THE CENTRAL FARM.

In the chemical department much work has been done in connection with fertilizers, composition of foods, and in the solution of other chemical problems relating to agriculture, fuller particulars of which will be given you by the chemist, Mr. F. T. Shutt.

RESULTS OBTAINED FROM VARIED APPLICATIONS OF MANURES.

The practical tests of different fertilizers applied to crops have been continued and the details of the results will be found in the forthcoming report of the Experimental Farms. Again, barnyard manure has given better results than any of the artificial fertilizers. Although good results have been had from a complete fertilizer consisting of superphosphate of lime, nitrate of soda and wood ashes. The well rotted manure, weight for weight, has given a better crop of spring wheat than the fresh manure, by $2\frac{1}{2}$ bushels to the acre, one being 25 bushels, and the other about $22\frac{1}{2}$ bushels.

But the fresh manure has given the best crop of barley by nearly 7 bushels—38 bushels 16 pounds from fresh manure, against 31 bushels 32 pounds to the acre of rotted manure. The best crop of oats has been given by the use of fresh manure, by 3 bushels 8 pounds to the acre.

The rotted manure has given the best results with Indian corn for ensilage by $2\frac{1}{2}$ tons per acre and the best results with mangels by nearly 2 tons per acre. The advantage is also slightly on the side of the rotted manure in the case of turnips, by 320 pounds per acre, but with carrots the yield from the fresh manure was the largest by over six tons per acre,—whilst with potatoes the yield was practically the same from both.

Setting all these different crops, the one against the other, I think the average of last year's results will be found a little in favour of fresh manure. Certainly, when you add last year's results to the results of the previous six years during which these experiments have been carried on, as shown in the annual report, it will be found that the fresh manure is at least equal in effect to that which is well rotted; and when we consider that the manure, during the process of rotting, loses fully 40 per cent of its weight, and there is the additional labour of twice moving it, besides the turning, it shows that this question in regard to the best method of using barnyard manure is one of very great importance to the farming community.

By Mr Smith (Ontario):

Q. When was the manure used?—A. It was taken fresh from the barnyard and put on the ground at once.

By Mr. McMillan:

Q. Is it spread over the land?—A. It is spread over the land at once. It is carried out fresh and spread over the plot, and by this method, the full benefit is got from the liquid portions of the manure, which are very much more valuable than the solid portions. During the process of fermentation the valuable constituents contained in the liquids are largely lost by decomposition and evaporation.

By Mr. Wilson:

Q. Do you draw it out during the winter just the same?—A. During the winter we draw it out as far as is practicable, and where it cannot be conveniently spread, it is put in small heaps of one or two loads each. We have found by careful analysis of dried manure, that the mere drying of it does not materially affect its quality—that it simply loses water. So that the drying which it gets when exposed by spreading or by being placed in small piles, is no great disadvantage. These small heaps do not ferment to that degree which the large heaps do.

Q. Do you spread it regularly in the snow?—A. If the snow is deep we prefer to put it in larger piles, but where the conditions are not favourable for spreading the manure fresh, every farmer must use his own judgment in the management of this valuable material. When we understand thoroughly the principles which should guide us and know that it is more economical to apply the fresh manure at once, to the land, the farmer should do this wherever it is practicable, and, when it is not practicable, then he must use his own judgment as to what course it is best for him to adopt.

By Mr. McMillan:

Q. Does not the character of the soil affect the results where fresh manure is applied?—A. Some soils would be greatly improved in mechanical condition by the application of fresh manure. This result often occurs where the soil is heavy and tenacious, while land of a light and open texture would not receive the same benefit. There is no doubt, however, that barnyard manure, fresh, contains fertilizing ingredients which make it equal in value, when applied at once to the soil, to the same weight of barnyard manure, rotted.

By the Chairman:

Q. Is there not a danger of sowing weed seeds, by using fresh manure?—A. There is always this danger in applying fresh manure. Fresh manure should not be applied to any but roots or crops which can be cultivated, then the question of a few weeds is not of much consequence.

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By Mr. McMillan :

Q. Heavy soils want as much manure as possible, fresh from the stable, and light land requires manure well rotted?—A. These experiments which I have referred to, have been carried out on the same land every year for six or seven years past. The corn plots are on a light sandy soil, the other plots are on heavier land, but fresh and rotted manure are applied with good results, to both.

Q. While talking of that I may say I happened to be out on the farm one day and came to where the ploughman was ploughing. He was turning the manure right out. If it had been under my direction, I would have cultivated the manure into the surface and not have ploughed it. That is the system we pursue?—A. I do not know of anything of the particular case to which Mr. McMillan refers. With regard to the turning of manure under, this is left largely to the judgment of the farm foreman, who has had long experience. It is not customary, however, for us to plough manure very deeply in the soil. A light ploughing is generally given, to turn it under and the land gets a deeper ploughing later in the season.

The average of the Indian corn plots, taking the seven years' experience, is 15 tons 1,568 lbs. for the rotted manure, and 18 tons 1,466 lbs. for the fresh manure; so that although last year's results have given an advantage in favour of rotted manure, the average of seven years' experience gives results in favour of the fresh manure.

By Mr. Robillard :

Q. On the same soil?—A. Yes. On the same plots.

By Mr. McNeill :

Q. How many plots were there?—A. There are 105 plots of one-tenth acre each, devoted to this special line of work.

Q. I mean as to corn, for example. How many plots had you under cultivation with the rotted manure, and how many with fresh manure in one season?—A. There are 21 corn plots in all, only one of these is treated with rotted manure, and one with fresh manure. Two plots are left unmanured for comparison, while the rest are manured with artificial fertilizers.

By Mr. McMillan :

Q. Before leaving manure. You spoke of turning manure. Do you find it necessary to turn the manure?—A. We find it better to turn it once during the winter.

Q. We never turn our manure. I would say we make our manure in sheds, and if it lies till the end of May or the beginning of June, it suits the purpose?—A. I would like to ask Mr. McMillan what his manure consists of, how much of it is cow manure, and how much horse manure?

Q. We have perhaps 80 head of cattle, and five or six horses.—A. Then your manure being nearly all cow manure would require different treatment from ours. Cow manure is best treated under shelter, but where there is a larger proportion of horse manure, there is less need of shelter or covering.

At the Central Experimental Farm we have 15 or 16 horses and about 50 cows, and we find that this mixed manure is best without any covering. If it is placed under cover, fermentation takes place so rapidly that there is a danger of its becoming "fire fanged," unless it is scratched or watered, and this, I think, is always the case where the manure pile is made up largely of horse manure.

By Mr. Edwards :

Q. What is your opinion when it is well mixed with cow manure and compacted?—A. That, I think, would be good treatment, although I am of opinion that it is more

economical to use the manure fresh, wherever this is practicable, but it is not possible to lay down any rule which will apply equally well to all cases; every man should exercise his own judgment in such matters.

By Mr. McMillan :

Q. You mix the horse and cow manures together?—A. Yes. We mix them thoroughly.

Q. I do not altogether approve the system of keeping the manure at the Central Experimental Farm. Where it has spread over a large surface, with a large quantity of snow or rain there is a greater opportunity of leaching?—A. During the winter, where it cannot always be applied promptly to the land and a large number of animals are kept, it is impossible to avoid some accumulation. In the spring the manure is moved out as early as possible and put on the land. What Mr. McMillan refers to, was probably some frozen manure which was spread over the yard to thaw out.

Q. I always thought you should have a shed at the Experimental Farm for keeping your manure?—A. That would, I believe, be good practice if the manure we had was chiefly cow manure, but with the large proportion of horse manure we have, this has not been found necessary.

By Mr. Edwards :

Q. Supposing you have one hundred cows and one hundred horses, if the manure is drawn together and compacted under cover and kept sufficiently compacted, would it not be preserved in the best way?—A. I have never seen such an experiment tried.

Q. We use it on our farms in that proportion with the best results?—A. I am glad to hear the results of such wide experience. The constant tramping and the watering which the animals would give to such manure, would, no doubt, result in bringing it into good condition.

Q. We keep the steers upon it continually?—A. You have advantages, with a large number of animals, which the ordinary farmer has not. Our experiments are carried on mainly for the benefit of those working smaller farms, as these constitute the greater bulk of the farming community. It is, however, always a great advantage to get the experience of large farmers.

By Mr. Roome :

Q. Do you find that manure compacted in this way is the best for raising crops with?—A. The manure made at the Experimental Farm is not made in this way.

PLANTING OF TIMBER TREES,—HEDGE PLANTING.

The next line of work prescribed by the Act was to conduct experiments with the planting of trees for timber and for shelter. At the Central Farm, this work was begun six years ago, but the planting could not be completed until last autumn. In all about 20,000 trees have been planted here, chiefly of the most valuable sorts of hard woods. These trees form a belt at the rear of the farm along the west boundary, 165 feet in width, and along the north boundary 60 feet in width. In the planting of these trees, the endeavour is being made to solve several problems: First, as to the best distance to plant young trees for timber growing, next, to ascertain whether they will make more rapid growth when planted in clumps of one kind, or when a number of different sorts are mixed together. The growth of the timber trees under these different conditions is being ascertained by annual measurements.

The value of these belts for shelter, also the advantages of hedge planting for the same purpose, are being investigated. As this latter subject has become one of very general interest in the community, a chapter has been devoted to it in the forthcoming report. This is entitled, "Sample Hedges on the Experimental Farm," and instructions

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are given for the planting of hedges, as well as statements of the results which have been obtained by such planting at the Experimental Farm. Illustrations are also given of some of the best of the Russian poplars and willows, from photographs of trees growing at the Central Farm.

At the Experimental Farm at Nappan, N.S., two small shelter belts have been planted and a number of different varieties of trees and shrubs are also being tested in hedges, to determine their value, in this way, for shelter.

At the Experimental Farm at Brandon, Man., where the need of trees for shelter is much greater, there are now growing in shelter belts, hedges and other plantations, 65,274 trees, all of which have been planted there since the farm was established. The main shelter belts are 100 feet wide and are planted along the west boundary of the farm, the north being already sheltered by native bluffs of poplar, &c.

At the Experimental Farm at Indian Head, N.W.T., which at the outset was a bare prairie section, the number of trees and shrubs now growing there is 129,897. The shelter belts are 100 feet wide and extend for nearly two miles along the north and west boundaries, while intervening hedge-rows and forest clumps break the force of the winds, assist in collecting snow during the winter and bring about conditions more favourable to successful agriculture. At the same time the bare prairie is beautified by the lines and belts of trees.

AT AGASSIZ

a shelter belt has been planted along the north-west boundary, but the main part of the work in this branch, there, has been the planting of some of the valuable eastern hard woods, such as hickory, black walnut, elm, ash, oak, &c. These are being planted out on a sufficiently large scale to admit, when grown, of commercial testing. One of the difficulties in planting largely, at Agassiz, has been the expense of transportation. On this account one year old seedlings have been chiefly used, and in the case of the hickory and walnut, a large quantity of the nuts have been planted where the trees are to grow. About 20,000 of these young trees of the most valuable sorts for timber are now growing on patches of arable land on the mountain sides: and already the practicability of growing the most valuable sorts of timber, by planting these small areas of otherwise useless land, is being demonstrated.

SUPPLEMENTING NATIVE WOODS ON THE PACIFIC COAST.

The woods on the Pacific coast are nearly all soft woods, the only exception being that of a maple which seldom exceeds two to three feet in diameter and of which there is no great abundance, and the crab-apple which grows to a good size, the wood of which is used in handles of tools and other similar uses. But for manufacturing purposes where hard woods are required the British Columbian manufacturer must necessarily send east for his material. These hard woods are therefore being planted out on a sufficiently large scale to admit when grown of commercial test, and it is hoped that they will serve a very useful purpose. Three years ago, 800 acres of mountain land which was valueless for agricultural purposes was transferred to the Experimental Farm by the Department of the Interior for this purpose. It is, therefore, on these mountain ledges, which are useless for general agricultural purposes, that these trees are being planted.

Of the nuts of the hickory and walnut which have been planted, it is estimated that about 75 per cent have grown. Already the practicability of growing these valuable sorts of timber on these patches of otherwise useless land is being demonstrated, and much interest is felt in this promising experiment.

DEPARTMENT OF ENTOMOLOGY.

Inquiring into the destructive insects and the diseases to which trees are subject comes within the province of the entomologist, and this will be left to Mr. Fletcher to deal with.

INVESTIGATIONS IN REFERENCE TO CATTLE DISEASE—RESULTS.

Another prescribed course of work was to investigate the diseases to which domestic animals are subject. This line of work has not been carried out as it might have been, had there been a competent veterinary surgeon in direct connection with the farm staff. The only original work attempted has been the investigations regarding tuberculosis at the various farms. When I had the honour of appearing before the committee last year I gave some of the results of the experiments which had been conducted by Mr. Robertson and myself with tuberculin, on the cattle at the Central Experimental Farm, and at that time assured the committee that, during the summer, similar investigations would be carried on at all the branch farms in accordance with instructions I had received from the Minister of Agriculture. The results are given in the forthcoming annual report.

BRANDON.—The Experimental Farm at Brandon was visited 20th July. The cattle composing the herd there numbered 28 animals, 4 of which were grades, and 24 pure bred. These were all carefully tested with tuberculin, and 21 animals were found to be diseased, 19 pure bred and 2 grades. These were destroyed: a post-mortem examination was made in each case, and evidences of the presence of the disease found in every instance.

INDIAN HEAD.—The herd at the Experimental Farm at Indian Head was examined later in July, this consisted of 39 animals, of which 9 were grades and 30 pure bred. Thirteen of these animals (10 pure bred and 3 grades) gave evidence when tested, of the presence of the disease, and were destroyed. On post-mortem examination, tubercle was detected in every instance.

NAPPAN.—During the month of August, I visited the Experimental Farm at Nappan, Nova Scotia. The herd of cattle there consisted of 39 animals, 21 of which were pure bred and 18 grades. Of these, ten were found to be diseased, 5 pure bred and 5 grades. These also were killed, when the post-mortem examination revealed similar evidences of the disease.

AGASSIZ.—On the 13th September, I visited Agassiz, B.C., and tested the cattle there. The herd consisted of 18 head, 16 of which were pure bred and 2 grades. Of these, 5 were found to be diseased and were destroyed. In this instance all the animals were pure bred.

During all these investigations evidences of the presence of the disease were detected in every animal killed. Subsequently the buildings were all thoroughly disinfected, and no indications of any further manifestation of this disease among the remaining cattle have been detected.

By Mr. Smith (Ontario):

Q. Were the pure bred animals milking breeds?—A. Yes, in most instances.

By Mr. McMillan:

Q. Were they mostly bred at the different farms, or were they sent there?—A. At Brandon out of the 21 animals destroyed, 9 were bred in Manitoba and 12 were sent there from Ontario. Of the 13 killed at Indian Head, 4 were bred there and 9 sent from Ontario. At Nappan, Nova Scotia, of the 10 animals destroyed, 9 were bred in the Maritime Provinces, and one was sent there from Ontario, and of the 5 animals killed at Agassiz, B.C., 3 were sent from Ontario and 2 from Manitoba.

By Mr. McNeill:

Q. Is there any evidence to show that the pure breeds are more liable to the disease than the grades?—A. It is not easy to speak positively on that point, but my impression is that they are. We found that so in the Maritime Provinces and also at Indian Head, where the number of grades to pure breeds was proportionately larger.

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By Mr. O'Brien :

Q. Might not that be due to this fact : that where a man has a lot of pure bred cattle, he takes a great deal more care to keep them warm and protected from the weather, and I think it is very largely due to the fact that we are over-housing, and especially with pure bred cattle, keeping them too warm that they are so susceptible to tuberculosis ; ordinary animals are often subject to the other extreme and get too much exposed, but they do not seem to be so liable ?—A. The treatment of all the cattle at Indian Head where there were 13 animals out of the total 39 head affected, is to have them outside all the summer. During the spring and fall they are kept in the barn at night, and during the winter they have to be kept in the barn all the time.

At Brandon the pastures are good enough to leave them out all summer long, and yet there was a larger proportion of animals diseased there, than at any of the other farms.

By Mr. McMillan :

Q. Was there any investigation made as to whether the disease was natural or inherited, or whether from the sire or the dam ?—A. I have been reading the Report of the Royal Commission that has just reported last year in Great Britain, and I see in one locality where there was a thoroughbred male animal brought in, and every herd he had anything to do with was affected with the disease in two years after, and all the young that came from him. I consider that is one of the great means of spreading the disease. I think it would be well, in Canada, if a law was passed that all animals to be sold for breeding purposes, specially males, that the sire and the dam should both be tested, to see that they are clear of tuberculosis.

By Mr. Edwards :

Q. To what extent is this disease contagious, that is from one animal to another ?—A. It is easily spread in that way, but it is believed now by scientific men that the disease is seldom or never transmitted directly from parent to offspring, although some cases have been reported which are difficult to explain, on any other ground. We had one case at the Central Farm, out of 14 young calves which were killed, which were bred from diseased parents, where the farm foreman and the herdsman reported that there were distinct evidences of tuberculosis. I did not see this case myself as I was absent. The others which were killed in my presence gave no evidence whatever of any disease in any of their organs.

By Mr. Roome :

Q. How old were the calves that were killed ?—A. They varied in age from a few weeks up to two months. There is no doubt whatever, that the animals born from diseased parents inherit a strong tendency to the disease, and that they take it whenever exposed to the influence, more readily than those born from healthy parents, and hence there is much force in Mr. McMillan's statement, just now made. As to general results it is not a matter of very much moment, whether you consider it possible for the disease to be carried from parent to offspring, or whether it inherits that tendency so strongly as to take the disease whenever the bacillus is brought into contact with the animal, and the germ is able to effect a lodgment.

By Mr. Edwards :

Q. Kindly answer another question. Supposing you have a perfectly healthy herd and you introduce into that herd a diseased animal, and that those animals are kept in the ordinary way that the farmers' cattle are kept in Canada ; to what extent would that whole herd be endangered, or any portion of it ?—A. The very fact that some animals inherit a tendency to disease while others do not would indicate that, like human beings, some may travel in an atmosphere affected by these bacilli, or live in it a very

considerable length of time without being injured at all, having a strong resisting power to the disease; whereas other weaker animals would succumb in a very short time. To be able to answer this question satisfactorily, which Mr. Edwards has put, would require a knowledge of every individual animal in the herd, and its tendencies, before a satisfactory opinion could be formed.

By the Chairman :

Q. The fact would seem to be that it is contagious and may be communicated in every locality where diseased animals are found?—A. If the sputa of a diseased animal be allowed to drop about on the floors of the passages in the barn, then allowed to dry and be swept up, the bacilli may be disseminated with the dust in the air, and other animals may inhale them in breathing. Then if their tendencies to contracting the disease are strong, a large proportion of the herd might soon be affected; whereas if it was otherwise, it might be years before the disease spread to any considerable extent, just as it is with human beings who are exposed to such influences. The large proportion of us are able to resist them, and although dangers lurk around us at all times, we maintain our health in spite of them.

DISTINCTION BETWEEN TUBERCULOSIS AND PNEUMONIA.

There is one point to which I would like to draw your attention, in connection with this series of investigations, and that is that we find tuberculosis is not essentially a lung disease, and therein it can and should always be distinctly separated from pleuro-pneumonia, which is essentially a lung disease, and one where the course of the disease is very rapid. Out of the 74 cases of post-mortem examinations which have been made in connection with these investigations at the experimental farms, in 20 of them, or more than one-third of the whole, no disease whatever could be detected in the lungs, nor were the functions of the lungs interfered with in any way, the disease in all those cases being confined to some other organs or glands of the body. I think we cannot emphasize that point too strongly, for the reason that it occurs so often that parties writing in the newspapers will confound these two diseases; the one of which is a most deadly and terrible disease, which is not known to exist anywhere in Canada, while the other is a disease which exists wherever cattle are kept in domestication, and I doubt if any country is entirely free from it.

By Mr. O'Brien :

Q. You say that tuberculosis is not a lung disease. Most of us have regarded it as such and, therefore, we have thought that anything like close confinement would tend to produce it. If it is not a lung disease, this would not be so dangerous. That is the point I want to get at.—A. I think my words must have been misunderstood. I said it was not essentially a lung disease, and that out of 74 cases 26 were found where no disease of the lungs could be discovered, but in the larger number the lung disease exists. In the past, before tuberculin was discovered, the only means of detecting the disease was when it existed in the lungs (unless there was a great enlargement of the glands), and this was usually done by the difficulty in breathing. The point to which I desired to draw the attention of the committee, was, that it was not essentially a lung disease and I wished thereby to more strongly impress upon the minds of all, the distinction between tuberculosis and pleuro-pneumonia which is essentially a lung disease.

Q. Is it a disease that is necessarily affected or produced by foul air, as any other lung disease would be?—A. It is a disease that is more likely to be produced in a foul atmosphere than a pure one.

By Mr. McNeill :

Q. Foul air would prepare the cattle for catching the contagion?—A. Yes.

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By the Chairman :

Q. They are predisposed to it?—Yes.

By Mr. McNeill :

Q. Has this injection been tried as a preventive?—A. It has been tried, but has not proved a success as a preventive.

HOSPITAL TREATMENT OF TUBERCULOUS SUBJECTS.

There is one point in this connection, which I have forgotten to speak of. I reported to the committee last year that we had five young heifers which the tuberculin had shown to be affected with this disease, that they were in hospital, and that we proposed to try the effect of some curative agencies on them, to see if anything could be done in the way of curing the disease. These five animals were yearlings at the time the experiment began. For about a year we have treated them faithfully with sulphurous acid, a remedy which was suggested by several physicians. At the end of this period, we tested them again with tuberculin and they gave practically the same reaction as when they were first tested.

We then stopped the administration of sulphurous acid, and for the past two months we have been injecting periodically small quantities of tuberculin into these animals, to see if that would have any curative effect. After giving this a thorough trial, it is probable that we may slaughter one or more of them, and endeavour to ascertain what effect these curative agents have had on the diseased organs.

The animals in the meantime are thriving. Two of them are Durhams and are developing into very fine specimens, such as any butcher would be willing to give a good price for. There appear to be no external symptoms of the disease, but I have no doubt that if they were slaughtered we should find the disease, probably in some of the glands. It is scarcely likely to be in the lungs, as in that case there would probably have arisen, by this time, some symptoms which we could have detected.

By Mr. Roome :

Q. The sulphurous acid may have kept it in abeyance?—A. This is quite possible.

THE TUBERCULIN TEST.—EXCEPTIONAL CASES.

By Mr. McMillan :

Q. Have there been any cases where tuberculin was used as a test where the animals have given indications and, upon being slaughtered, no disease was found?—A. There have been, I believe, several cases in New York State during the past year, where the veterinarians have slaughtered animals and have been unable to find the disease. These, however, have been exceptional, only one now and then out of a total of about 900 animals slaughtered. In a very large proportion of the cases, the disease was detected; and it is probable that in those occasional instances where the disease was not detected, it may have arisen from the veterinarians not being sufficiently careful in getting an accurate idea of the normal temperature of the animals. There are some animals at different periods of the day which will vary considerably in their normal temperature. These are, however, exceptional cases, of which we have had one or two. In our experiments we have always taken the normal temperature of the animals a sufficient number of times so as to avoid errors in diagnosis, and we have had no failures in detecting the disease in the 74 cases of post-mortem we have had, excepting in one young bull, the particulars of which were reported in Bulletin No. 20. This animal had a very bad record, having had a diseased sire and a diseased dam, and he was killed one day when we were disposing of a large number, and the examination was not as thorough

as it might have been. We did not detect any evidence of the presence of the disease in that case, but it is quite probable that the disease was present, although it escaped notice. Some of the organs we did not examine. That was the only instance where we did not find distinct evidence of the existence of the disease in every case where the tuberculin indicated its presence.

TESTING VITALITY AND PURITY OF SEEDS.

Among the other subjects prescribed for the work of the Experimental Farm was that of ascertaining the vitality and the purity of agricultural seeds for farmers. This work has been carried on every year, and during the past spring about 1,900 samples have been tested and reported on. We were also to conduct such other researches bearing upon the agricultural industry of Canada as might be approved by the Minister.

These were the avowed objects contemplated in connection with the establishment of the system of Experimental Farms, which I have endeavoured to present to you in as few words as possible. All of these different branches of work have been carried on as far as the means available will permit, and any one who will visit the Experimental Farms and look carefully over the work which has been done, will, I think, come to the conclusion that the effort has been made to honestly meet the requirements of the Experimental Farms Act, and that no line of work has been undertaken other than those distinctly prescribed by this Act by which the Experimental Farms were created, and to which we must necessarily look for guidance.

CROSS BREEDING OF CEREALS.

PEASE.—Permit me now to call your attention to some samples of cross-bred pease which I have brought here for your inspection. I mentioned in my evidence, last year, that this work had been in progress for some time and that the results in some instances were very promising. These crosses have been made with several of the most esteemed standard varieties. For instance, the Mummy has been crossed with the Multiplier; the Black Marrowfat with the Mummy and the White Marrowfat; and these have been crossed both ways, using a particular variety in some cases as the male, and in other cases as the female.

By Mr. Robillard :

Q. Do they make a distinct variety?—A. Quite distinct.

By Mr. Roome :

Q. Can you detect any evidence of a cross between such varieties as Black Marrowfat and Mummy?—A. Yes. If we take the black-eyed Marrowfat, either as the male or the female, the evidence is shown in the black points on the pea.

Q. It leaves black points?—A. Yes; the black points are quite distinct. Further evidence is given by modifications in the size of the cross-bred pea. Where a small pea is crossed with a large one, the progeny is larger than the female, and vice versa. The best results we have had in the way of crop from any of these cross-bred pease was in the case of a cross between a Mummy and a large White Marrowfat. In this instance, the progeny is larger than the female; we had 635 pease as the result of the first planting of a single pea, and last year we had $17\frac{3}{4}$ pounds of pease as the result of planting the 635 peas.

Another cross gave 14 pounds of pease at the same time; and another $13\frac{3}{4}$ lbs. All the less promising sorts have been discarded so as to lessen the number of varieties under test, planting only the most promising sorts: and we hope in the course of a year or two, to bring the number of those which we are testing down to about a dozen varieties. The first year, we had a hundred and thirty-seven varieties; the next year,

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this was reduced to 75; and this year, to about 50. This line of work is an important one in view of the fact that the pea crop is so useful and so largely grown in many districts of the country.

By Mr. McGregor :

Q. In Western Ontario our pease are terribly affected with the pea bug. What is the best quality of pea for the Western Ontario district?—A. I do not know of any bug-proof pea, and apart from this the question would I presume resolve itself into that of the most productive variety. The Mummy is one of the best varieties, for the reason that it bears the greater part of its crop on the upper part of the plant, where the pods get the benefit of the sun and where the pease ripen in a fairly uniform and even manner. It also bears good crops, and is one of the pease which commands a good price.

By Mr. Roome :

Q. In reference to the pea question, when you cross two varieties, say the Black-eye Marrowfat with the Mummy, and a pea is produced similar to the Mummy, will these in turn produce the black-eyed pease again?—A. We have only experimented on these crosses for two years, and we find that they sport very considerably. We intend to follow up these experiments carefully and harvest the pease which vary from the general crop, separately, so that we may gain further information on this subject. This course is being also followed with the cross-bred wheats and barleys, and some of the varieties have, already, their types fairly well established.

Q. Have you had any success in growing horse beans?—A. In Ottawa, where last year we had good rains all summer, they gave us good crops; but in many parts of Ontario where droughts prevailed the yields were not satisfactory. For the same reason, horse beans did not do well at the branch experimental farms at Brandon and Indian Head, but the yield was very good at the branch farm at Nappan, Nova Scotia.

By Mr. McNeill :

Q. Which of the spring wheats do you find most promising?—A. Our first cross-bred specimens were with Ladoga as the female, and Red Fife as the male. We have two beardless varieties of that cross, and two with White Fife of the same year, which are quite promising. Since then we have had crosses of some of the early Indian wheats with the Red Fife. We are trying to introduce Red Fife blood into all these crosses on account of its high quality and productiveness. If we can produce a variety of wheat equal in every respect to Red Fife, and a few days earlier, it will be a great point gained. Of course, in Ontario, the Red Fife does not hold the same important relative position as in the North-west, and in the east it soon develops into a comparatively soft variety.

Q. Are the Indian wheats early?—A. They are about as early as Ladoga, and one or two of them are slightly earlier. They were obtained from different points in the Himalaya Mountains in India, from 500 to 11,000 feet in height. They were kindly procured for testing at the experimental farms in Canada, through Lord Dufferin, when he was Viceroy of India. He gave instructions to the proper officers to collect the samples and forward them to Canada. We think we have some valuable varieties among the crosses, from this source.

There are many other topics I might have referred to this morning; but I thought that on this occasion it might be well to devote most of the time given me, to showing how far we have endeavoured at the Experimental Farms to conform to the requirements laid down in the Act.

Having examined the preceding transcript of my evidence, I find it correct.

WM. SAUNDERS,

Director of Dominion Experimental Farms

COMMITTEE ROOM No. 43,
HOUSE OF COMMONS,
OTTAWA, 14th May, 1895.

The Select Committee on Agriculture and Colonization met this morning at 10.30, Mr. Sproule, Chairman, presiding.

Mr. JAS. W. ROBERTSON, Dominion Dairy Commissioner, was called and addressed the meeting as follows :—

Mr. Chairman and Gentlemen,—This morning I shall arrange what I have to say under four heads that you may have my work described as clearly as is practicable in the time at my disposal. I shall speak in the first place of the Dairying Service in connection with the various experimental dairy stations established in the different provinces; in the second place, of the action taken by the Department to help the butter trade by shipments of butter to Great Britain; in the third place, of the cold storage service and accommodation through which it is proposed to assist the development of the butter trade this summer; and in the fourth place, of the outlook of the cheese market for the current year. If there be any time at my disposal when I have finished these, and if the committee would like my opinion on the bill now before the House, dealing with the branding of cheese, I shall discuss that.

I shall begin in the far east at Prince Edward Island. In 1892 there was only one dairy station on the Island, at New Perth; it was put up by the farmers themselves. The government loaned the machinery to fit up the factory in Prince Edward Island. All the others there were built and fitted up at the expense of joint stock companies of the farmers themselves. In 1893 we managed 11 dairy stations, patronized by 1187 farmers, turning out cheese to the value of \$48,000. The cost to the Government for taking control of these was about \$2,500 for the year, including the salary of Mr. Dillon, Dairy Superintendent on Prince Edward Island. In 1894 there were 16 cheese factories and two creameries. The new factories were put up without any direct promise of help from us, but they were put up by the people on the expectation that the Government would give them help similar to that afforded to the other factories in 1893. After they were put up I recommended to the Hon. the Minister of Agriculture that we take charge of the manufacturing of cheese and the making of butter in these factories on terms similar to what had been given in 1893. We charged $1\frac{1}{4}$ cents per pound for the manufacturing of cheese, and $3\frac{1}{2}$ cents per pound for the manufacturing of butter, the cost of delivering the milk at the factory being paid by the farmers themselves in both cases. Up to the end of December the value of the total quantity of cheese and butter manufactured in them was over \$90,000.

By Mr. McMillan :

Q. Had you not better give us the cheese and butter separately?—A. We had, from cheese, \$78,370, and in butter \$11,830. We had two creameries which were run all summer and were continued all winter, besides one creamery started at New Perth after the cheese-making was ended there for the season. The value of the butter is estimated in part because some of it was held at Charlottetown to meet the demands of the local markets. It is being sold at 16 and 17 cents. The average price of the whole of the cheese sold from the factories on the Island was a little over $10\frac{1}{2}$ cents per pound in 1893, which I think was the highest price recorded by any single factory in the Dominion for that year. This sufficiently proves that the cheese were fine in quality. Besides that, there is another substantiation of the claim that the cheese produced in Prince Edward Island was of fine quality. In both years, 1893 and 1894, the cheese were sold in a falling market at the top price at the time, and there has not been a

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single complaint in quality from those who bought them. Everybody who has had anything to do with the sale of cheese knows that if there is the least ground of complaint, when the cheese is bought in a falling market, the purchaser is certain to let you know; but in Prince Edward Island we sold over 12,000 boxes and there was not a complaint. Last year out of 12,200 boxes, only 27 cheese were not fit to ship or sell at ordinary prices, which I think was as low a percentage of inferior cheese as any factory can show. The prices realized by the farmers in 1893 ranged from $66\frac{3}{4}$ to $76\frac{1}{4}$ cents per 100 pounds of milk. Last year, 1894, the prices ranged from $64\frac{1}{4}$ to $71\frac{3}{4}$ cents per 100 pounds of milk.

By Mr. Macdonald (Huron):

Q. Is the cheese all sold that was manufactured last year?—A. They were all sold in November, with the exception of those 27 boxes.

By Mr. McMillan:

Q. Is there any truth in the report in the "Globe" of the meeting held at Brockville about the condition of the cheese manufactured in Prince Edward Island not being what it ought to have been?—A. I did not see the report in the "Globe" but I will tell you what did happen at Brockville. Mr. M. K. Everts had said at Mallorytown that the cheese of Prince Edward Island made in 1893 were inferior in quality and insinuated that they were not worth more than $8\frac{3}{4}$ cents per pound. I said that as a matter of fact the cheese were all superior in quality and were sold for half a cent a pound above the average price in Ontario, and for a price higher than was realized from the cheese manufactured in any of his factories.

By Mr. Cochrane:

Q. Where was it sold?—A. It was sold from the warehouse in Charlottetown to a firm of merchants in Montreal. There was not a single iota of foundation for the statement that the cheese were inferior or that the price was one to be ashamed of.

There is one other matter which I think I should bring before the committee in connection with our work in Prince Edward Island. There have been some rumours going about that the government had somehow been bonusing the cheese industry thereby means of payments on account of milk supplied to the factories before the cheese were sold. The fact is that \$36,000 were voted by Parliament to enable me to pay advances of 50 cents per 100 pounds on milk supplied at all the dairy stations in all the provinces. No interest was paid by the government, so that it cost nobody anything and was of decided benefit and advantage to the farmers. The people themselves on the Island, the leading farmers there with whom I have conversed, say that of the \$90,200 worth of cheese and butter last year at least \$50,000 is the amount which they realized from the same farms and cows more than they did before they were acquainted with this method of conducting their business. The whole cost to the treasury last year up to the end of our cheese making season was about \$4,800, so that by the spending of \$4,800, the revenue of the farmers of Prince Edward Island from their natural resources was increased by at least \$50,000 more than it had been or would have been if this work had not been done.

Q. Was this from the same number of farms and cows?—A. Yes, from the same farms, but the farmers are growing more Indian corn to feed to more cows hereafter. It is not that they are drawing more money out of anybody's pockets, but they are making more wealth out of their own resources. The point I wish to impress upon the committee is that the spending by the farmers of the \$50,000 of additional revenue derived by them would more than recoup the treasury for all it cost the Government to start this work, so that instead of the other farmers of Canada contributing of their money for the benefit of those of Prince Edward Island the work there has been more than self-sustaining, and the increased revenue to the Government from taxation has more than balanced the expenditure.

Nobody in any other part of the Dominion is being called upon to sustain the work in that part of Canada. I might sum up the whole of our work in Prince Edward Island in developing the cheese-making industry, by saying: The treasury of the Dominion has been re-imbursed for all it has spent on it; the good name of Canadian cheese has been sustained and improved; because no single province has sent so much fine cheese, out of the quantity it did send, as Prince Edward Island; and the people there have been benefited very much by what has been done for them.

WINTER DAIRYING IN PRINCE EDWARD ISLAND.

Then the winter dairying movement has been commenced in Prince Edward Island in a most satisfactory way. The cheese factory at New Perth was fitted up last fall for the making of butter. It ran the whole winter; and when I was there in March, they made butter once a week, at the rate of over 300 pounds. That butter was all taken on the Island at prices ranging from 20 to 21½ cents per pound. Two other creameries that had been in operation during the summer, were also carried on in Prince Edward Island, during the winter, this year. Three factories have been running all the winter, although it was said we could not carry on the business past November, and we have applications from the directors of three other factories, to have butter making carried on in them during the coming winter. They would put in the butter-making apparatus and equipment at their own expense. All we would do would be to provide a butter-maker for making the butter, and charge them 3½ cents per pound for doing it. The one lack which the people of the Island still have for continuing this dairy business themselves, is that of close market contact. There have not been means of direct communication from the Island to Great Britain for shipping cheese or butter, and there have been no buyers on the Island to purchase the cheese or butter for export, except those who went at my invitation, and so it has been decided to run the factories there during the current year mainly for the purpose of giving the farmers, through the presidents and representatives of the joint stock companies, a chance to meet the buyers of cheese and butter, helping in the marketing themselves in some measure, and thus becoming fully acquainted with the whole range of business. When that is done, I think the farmers will be both competent and willing to run the factories themselves, except in the case of a few of the smaller ones, which might fairly and reasonably expect and really deserve the support we can give for another year by running the factories for them. Of the thirty cheese factories that are to be in operation this year, I estimate that ten of them will more than pay the whole of the expenses incurred, and leave a small profit, to be turned over and applied to meet charges incurred in the management of the smaller factories.

By an hon. member :

Q. Is the skim milk returned to the patrons, because it appears there is not very much left for them after paying 3½ cents for making butter? I think you said it sold at 17 cents per pound?—A. That was some of the summer and fall butter. Yes; the skim milk is taken back by the patrons from the creameries, and the whey is taken by them from the cheese factories.

By Mr. Innes :

Q. Is there anything in the report that the butter made on the Island is tainted by seaweed?—A. I do not think there is. There was a report that the cheese had a sectional flavour; that has been made fun of by a few unimportant people; but the sectional flavour of Prince Edward Island cheese is like the sectional flavour in the cheese from Switzerland, which fetches the highest price in the London market. That is why a merchant, who once got this Island cheese, has been wanting to buy it ever since. He was well pleased with the quality of it. The peculiar flavour is that from the bacteria which are common in the atmosphere there.

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Q. Did it have any effect on the price when sold?—A. Not so far. The cheese was always sold at top market price; and there was no complaint afterwards. I might give one illustration. When the Prince Edward Island cheese went to Chicago some of the experts there discussed with me a peculiar flavour they had found in one of these cheeses. I went with the judges after the judging was done that day and examined other cheeses which were there, to compare the flavour with that of the Swiss cheese. They said: "That is good cheese. We thought it was some new and therefore objectionable flavour, but we find it is all right." It was merely the unusual flavour that puzzled the judges and so at first it was condemned by them. I think the Island is capable of turning out as fine cheese, in fact I think the finest cheese, that are made on this continent.

Q. Of that peculiar flavour?—A. Not so pronounced. The flavour is also somewhat like that of the Dunlop cheese, which long held the first place in Scotland.

By Mr. McMillan :

Q. Did these cheese go to the market in England?—A. The cheese were sent to England; that was the ultimate destination. We sold them to a Montreal house, but I learned that they had gone to London, England.

BRANDING OF CHEESE.

By Mr. Cochrane :

Q. Are these cheese branded?—A. They are branded on the boxes "Prince Edward Island."

Q. Not on the cheese?—A. Not on the cheese, because the brands on our summer cheese in a moist climate like that of Prince Edward Island would not be discernible after the lapse of a few months on account of the mould.

By the Chairman :

Q. All the boxes of cheese are branded before leaving Montreal?—A. They are branded "Canadian" because the English Trademark Act demands that the name of the country of origin be on the product.

By Mr. McNeill :

Q. Could not the brand be on something that would appear on the cheese?—A. In my opinion it would be quite undecipherable on the cheese. In a moist climate the mould would cover the brand and it would not be discernible if put on the side of the cheese. I had a letter from a large manufacturer of cheese in Nova Scotia a few days ago, referring to the same matter; and he said he had not been able so far to put his particular brand of "Antigonish, Nova Scotia," upon his cheese so as to have it discernible after the cheese had been kept a few months.

Q. Would it not be possible to have a label?—A. I think it would be difficult to have a label adhere on account of the greasy condition of the cheese cloth and of the exudation from the cheese in hot weather.

By Mr. McMillan :

Q. I have seen it done in June and July until September and the brand was all right?—A. In western Ontario you have not the same difficulty from humidity of the climate.

In Prince Edward Island the work has been under the immediate charge of Mr. T. J. Dillon, who is a very capable cheese-maker and a good business man. He attended forty-one meetings since my last report and has trained in these factories seven young cheese-makers, who take charge of seven of the new factories this year. After this year

there will be over thirty Island boys, farmers' sons in every case, ready to take charge of the factories on the Island, so that the people will be able in every respect to run the business themselves after this present year. The probable value of the output of cheese and butter this year will be about \$180,000.

The farmers are growing corn, building silos and feeding their cows much cheaper than they did, finding they can make milk after some of the factories close in October, supply themselves with butter and furnish all they want to the shopkeepers. So they have increased the milking capacities of their cows during the summer, prolonged the milking season, and found a market for their product.

SUMMARY
OF THE
BUSINESS FOR THE SEASON OF 1894
AT THE
NEW PERTH DAIRY STATION, P.E.I.

The factory was opened on June 1st, and closed October 30th.

Milk was furnished by 73 patrons.

The quantity of milk received was 600,413 lbs.

The quantity of cheese manufactured was 56,332 lbs.

The quantity of milk required to make a pound of cheese was 10.65 lbs.

The total quantity of butter fat was 21,335.88 lbs.

The average quantity of fat was 3.55 lbs. in 100 lbs. of milk.

The quantity of cheese manufactured was 2.64 lbs. per lb. of fat in the milk.

The average price realized for cheese was 9.92 cts. per lb.

The net value of butter fat was 20.225 cts. per lb.

<i>Receipts from Sales of Cheese.</i>	Lbs.	\$ cts.
Sold to Hodgson Bros., Montreal.....	35,018	3,361 93
Sold to R. Lawson, Toronto.....	210	21 35
Sold to H. N. Bate & Son, Ottawa.....	213	21 30
Sold for local trade, as per statement No. 3.....	18,322	1,927 93
Sold to patrons, as per statement No. 1.....	2,569	256 92
	56,332	5,589 43
<i>Disbursements.</i>	\$ cts.	
Charge for manufacturing—56,332 lbs. @ 1 $\frac{1}{4}$ cts. per lb.....		704 15
Amount paid for milk drawing, statement No. 2.....		515 56
Freight, wharfage and truckage.....		54 34
Divided among patrons for milk :—		
Cash, as per statement No. 1.....	2,591 00	
Cheese do do.....	256 92	
Seeds, &c. do do.....	46 52	
Balance paid by cheque, 1895, statement No 1.....	1,420 76	
	4,315 20	
Fractions of cents.....	0 18	4,315 38
		5,589 43

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The full details of the work in Prince Edward Island are published on sheets (of which the foregoing is a summary) for every factory, with a further statement of the milk received, the cheese sold, to whom sold, and a statement of the account of every farmer showing the quantity of milk he sent, and the money he received. If any member of the committee would like to get copies of these, I have fifty extra copies of the statements referring to each factory. They are sent to all the patrons for educational purposes. Any patron, in the event of his neighbour getting \$250 while he himself only got \$100, can find out the reasons for that and endeavour to improve his own management.

DAIRY PROGRESS IN NOVA SCOTIA.

In the Province of Nova Scotia we have a dairy station at Nappan. We made cheese from the 1st of July to the 9th of October, and butter from the 9th October until probably the end of next month (June.) At this station our butter for the winter was sold at 23 cents per pound, being contracted for in Halifax early in the fall. That contract lasted until the middle of April, I think; and after that we have simply to take what the market will afford.

There have been many visitors to the dairy station at Nappan. Nineteen young men have learned butter making and cheese making there, and are now in good positions in factories either in Nova Scotia or the adjoining province of New Brunswick. This dairy station has been useful to the farmers who have found through it a market for their milk and in addition it has afforded a good opportunity to young men in these two provinces to learn the business and to follow it up. Mr. J. E. Hopkins is in charge of this dairy station, and it has also been his duty to visit the factories in the province to give instructions and advice. In 1894 sixteen factories were built, ten of them putting in the plant for making both butter and cheese. In that year there were 39 factories altogether in operation in that province, and they are commencing to make butter during the winter and cheese during the summer. In 1895, the present year, there will likely be 49 cheese and butter factories in operation in Nova Scotia, and that province this year will become an exporter of cheese. I may add that Mr. Hopkins has, during the winter, attended 22 public meetings.

DAIRY WORK IN NEW BRUNSWICK.

The Dairying Service in New Brunswick has been somewhat similar to that in the other provinces, although in each province we have tried to adapt our work to the special needs of the farmers. At Kingsclear, the dairy station is now managed by a joint stock company. We had the management of it, for butter making for two years. At Sussex, N.B., winter butter making was started in 1893; the factory is now in charge of a company and it is managed very satisfactorily. We had a travelling dairy in this province which went into the more sparsely settled districts and gave instructions in butter making particularly for home dairying. We sent out posters on which the programme of the work for the day was given. This programme included the testing of milk, the use of the centrifugal cream separator, the making and packing of butter, in fact the whole practical art of butter making from its first steps until the product was ready for the market. This travelling dairy visited sixty-eight places in the province and was in charge of Messrs. S. L. Peters and W. W. Hubbard. We found one unexpected service rendered in this way. Farmers would bring their skimmed milk and buttermilk to be tested, and in some cases it was discovered that there was 40 per cent of the butter fat left in the skimmed milk, owing to the ignorance of the farmers of the best method for recovering it. In other cases there would be 5 per cent of butter fat discovered in the buttermilk when there should only be about a quarter of one per cent. From the instructions which the travelling dairy was able to impart to them, the farmers have learned how to avoid losses in these ways. The travelling dairies have proved themselves valuable in instructing farmers how to make butter for the home market. We commenced the dairy school

at Sussex, N.B., in 1894, and that year we had 30 students who took the course of instruction. This school is expected to meet the needs of the two provinces. This year 54 students were in attendance. During the last session in order to make the opportunity for instruction equally available to all the young men in the province, the local government co-operated with our department and paid half the railway fares of the students to Sussex. I am glad to acknowledge that the local governments have given us every aid, so that our work has not been in any way combative of that of the provincial governments, but in many instances we have arranged the plans for their work, and they have co-operated with us in the heartiest manner possible.

AGRICULTURAL CONFERENCES.

There is one feature of the work in the Maritime Provinces during the past year which deserves special mention, namely, the presence of His Excellency the Governor General at the three great agricultural conferences at Charlottetown, P.E.I., Fredericton, N.B., and Truro, N.S. His Excellency's attendance and addresses contributed much in awakening interest and quickening the enthusiasm of the farmers about recognizing and making the most of the resources of their own country. I have always had a very great respect for and belief in the virtue and value of patriotic, unselfish sentiment; and when you have gatherings of from three to ten thousand farmers you can quicken the wholesome sentiment in those provinces in a way such as nothing else had done there previously. These gatherings were promoted and helped by the provincial authorities. The Lieutenant-Governors and the Provincial Premiers were on the platforms and delivered speeches. The general effect of the gatherings was to encourage the farmers and to stir them up to the task of developing the resources of their provinces, and making them better places to live in. At the meetings in question we had with us ex-Governor Hoard of Wisconsin, who attended the meetings as a matter of generous international courtesy. And here I may make a remark of a somewhat personal character. I have been criticised for visiting the United States and delivering lectures at a few of the large conventions there during the past winter. Ex-Governor Hoard came to Canada last summer without charging any fee for his splendid services, simply to oblige us and to enjoy himself. He is perhaps the greatest living authority on the philosophy of dairying and when he asked me if I would take his place and address a few meetings in the New England States I felt that on the principle of one good turn deserving another, I could do nothing else than accede to his request. The visit of ex-Governor Hoard through Canada last year has had most beneficial results to this country. He publishes four papers, one of which, "Hoard's Dairyman," is the most widely circulated dairy paper in the world, and goes into nearly all countries. Repeatedly since his return from the Maritime Provinces he has made practical references to what he saw there. In the issue of this paper of May 3rd, 1895, this is what he is reported to have said in addressing a large gathering of cheese makers in the United States with reference to Prince Edward Island. He said:—"They have hot weather there in the summer, though not as hot as we have, because they are so near the ocean. They make the finest cheese there that I ever saw. * * * I rode by carriage almost the length of Prince Edward Island which is 120 miles long. I visited factory after factory with Mr. D. M. McPherson and Prof. Robertson, and you would never know that all that cheese was not made by one man, on account of its uniformity. Every single cheese maker had been trained to a given standard, and the result was, factories all being constructed alike, that the goods were remarkable fine, and of great uniformity, though I do believe that they were no better than we can make here in Northern Wisconsin." Then, if you will allow me, I will read another short extract to show the recognition and appreciation which this gentleman, who occupies a foremost place amongst the dairymen of the United States, has of the work of Their Excellencies the Governor General and the Countess of Aberdeen in their visit to the Maritime Provinces last year. The Hon. W. D. Hoard says: "I found human nature just about the same as anywhere else; but I found this, that the government takes a wonderful interest in the dairy industry and stands behind it with a tremendous

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force. Don't you think if the President of the United States should travel for a month holding dairy meetings that it would give great impulse to the sentiment of the country on that question? Suppose that President Cleveland and his wife and little Ruth should start out and hold monster dairy meetings and bid the people 'God-speed this work of civilization, this is the work of progress and hope,' Don't you suppose it would give a great impulse to public sentiment along that line? Now, this question is one which is objected to as being one of sentiment. Why men go to their death for sentiment. I remember lots of times on the field of battle, when, if it hadn't been for my pride, my sentiment, I would have got out of there in a York minute. Sentiment, sentiment everywhere. We love our country because of sentiment, we take a pride in our country because of sentiment, we stand by 'Old Glory' because of sentiment, and we are all the time being, and doing things from mere sentiment. Now, we want a good, strong sentiment in this state, full of pride, concerning the character of our dairy products."

Governor Hoard has helped to foster that sentiment in Canada in a very large measure; and Their Excellencies are establishing in Canadians the inspiring sentiment and conviction that true nobility and a noble service of the people are inseparable.

INSTRUCTION IN DAIRYING IN QUEBEC.

In the province of Quebec the assistant dairy commissioner, Mr. J. C. Chapais, has been actively at work. He spends most of his time giving help as is needed to the French speaking citizens of Canada. During the past year he addressed nine meetings in Prince Edward Island, one in New Brunswick, eight in Ontario, and eighty-two in the province of Quebec. Besides these he delivered thirty-four lectures to the students at the dairy school at St. Hyacinthe. He has also spent a good deal of time in advising and otherwise helping in the formation of syndicates of factories in Quebec. There are organizations of factories, say of 15 or 25, whereby they employ the services of a competent inspector, who visits the factories as often as he can and gives practical illustrations and other information of how to make the finest butter and cheese.

The dairy school at St. Hyacinthe has received help to the extent of \$1,000 a year from the Dairymen's Association of Quebec; our department meets all the other expenses.

In 1893-4 there were 268 students in attendance at this school, and during the winter of 1894-5 the number rose to 328, so that a large number of the cheese and butter factories in the province of Quebec are in the hands of makers who have had a thorough course of instruction in up-to-date methods of carrying on their work. Then the superintendent of the school, Mr. J. D. Leclair, received leave of absence to visit Europe, his travelling expenses being paid by the provincial government. He went to look into the butter-making methods of Denmark and France and got most useful and valuable information which he has since given to the farmers at dairy conventions and to the students attending the course of instruction at the school at St. Hyacinthe.

We carried on a winter butter-making station at Lennoxville, Quebec, and that has been conducted by the farmers themselves since the beginning of April.

The total number of cheese factories in the province of Quebec is 1192 and of butter factories 262. I think that this year the province of Quebec will produce about half of the total amount of cheese exportable from Canada.

DAIRY TEACHING IN ONTARIO.

I come now to what we are doing in the province of Ontario through the Dairying Service. We commenced the work of our winter dairying stations at Woodstock and Mount Elgin, Ont. In 1894 we sold the butter making plant which we had loaned to companies of farmers at these factories, and during the past winter they have managed the business themselves. From reports I have received I learn that they have managed

it most satisfactorily and successfully. From these two factories the winter dairying movement has extended all over Canada, so much so that last winter there were in operation about 100 butter-making factories; and the first that were started were these two, at places I have mentioned, in 1892. We carried on butter-making last winter at Wellman's Corners, Ont., and this year we sold the plant to the cheesemaker there, who will carry it on hereafter. We carried it on at Chesterville, Ont., and the owner of the factory is in correspondence on the subject of buying the machinery there. I hope the dairymen will now be able to continue winter butter-making in Ontario without the direct management of any factories by our department. I think we may withdraw from that part of our work. We also carried on butter-making at Renfrew, Ont., last winter. The joint stock company put up the buildings and furnished them entirely themselves. We did not even lend the machinery. We merely carried on the butter-making so that they might have the advantage of the good name we have gained to get a good start in their business. Since the end of April the company has carried it on themselves, and my last word from the manager was that they would make a ton of butter a day after they were well going in June. We also carried on winter dairying at Kingston, Ont., and carried on a dairy school in connection therewith, at which 109 pupils were in attendance. That work was in charge of Mr. J. A. Ruddick, and was a part of the educational work of the school of Agriculture and Mining at Kingston, whose board of governors put up the buildings and found the equipment. The school of Agriculture and Mining works in harmony with Queen's University, Kingston. At the closing exercises Principal Grant was present, and was willing to express his opinion that no single educational movement in Ontario had been started or carried on with better prospect of helping the farmers in the eastern part of the province. The total cost to our department was about \$2,500, of which nearly \$1,000 was a loss on milk which we purchased for use in the school. It was therein different from our dairy station work. There appeared to be the threatened difficulty of getting a supply of milk for giving illustrations of making butter and cheese. The only way was to offer a good price for it, and we offered 30 cents per pound of butter-fat. As it turned out, the difference in the quality of milk was so great that at this rate one patron received \$1.05 per 100 pounds of milk, while another realized \$1.65 per 100 pounds of milk. We expected to sell the butter for what we paid for the milk, giving the labour for educational purposes. The price of butter went down in the meantime and we lost on it, but we did not lose any more than any other school in Canada that has been obliged to purchase milk for illustrative teaching. Hereafter we can purchase milk at the ordinary market rate, as the farmers have now the experience that they can produce milk in winter at a reasonable cost, which they did not know before. They were afraid of storms blocking the roads, but on no single day did we find it impossible to get a full supply of the milk required for the carrying on of the school. I might mention one matter here which perhaps does not come exactly within the scope of my evidence, but is closely connected with this matter. This \$2,500 was an entirely unexpected and unprovided-for expenditure, because the dairy school was only started last summer, and I think it would have been impossible for the board of governors of the school of Agriculture and Mining to run the dairy school satisfactorily unless our department had taken hold of it. This educational dairy work is so much in its infancy that it is impossible to estimate, at the beginning of the year, just how much money will be required to carry on the work efficiently and still keep within the exact limits of the estimate. When a department or division of a department is well organized and the work is, so to speak, stereotyped in certain channels and directions, then the expenditure can be kept within estimated bounds, but in the dairying service it is very difficult to do the work as it should be done, to undertake all the new work that crops up during the year and needs to be done, and still come out at the end of the year always within the limits of the estimates and appropriation. I hope the members will bear this fact in mind and deal generously with the Dairy Commissioner if sometimes the dairy vote a little behind, which this year, however, I do not think it be.

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MANITOBA AND THE TERRITORIES.

Our work in Manitoba and the North-west Territories has been of two sorts. We started travelling dairies there last year to give the farmers instruction on how to carry on the making of butter at their own homes. The method of procedure was somewhat similar to that followed in the province of New Brunswick. We sent out posters about a month ahead, giving the names of the places where the travelling dairy was to be stationed:

DOMINION OF CANADA.

Department of Agriculture.

DAIRYING SERVICE.

OFFICE OF DAIRY COMMISSIONER,

CENTRAL EXPERIMENTAL FARM,

OTTAWA, May, 1894.

The Dominion Government has made provision for the maintenance of *Travelling Dairies* in Manitoba and the North-west Territories. They will be under the direction of the Dairy Commissioner for the Dominion.

The object of the travelling dairies is to afford those who are engaged in butter-making an opportunity to gain further, exact, practical and helpful information on all parts of the process, from the separating of the cream to the printing and packing of the butter.

One expert butter-maker and an assistant, with an outfit of dairy utensils, including a centrifugal cream separator, a churn, a butter-worker, a Babcock milk tester, &c., &c., will compose each travelling dairy. Two days will be spent at every place which is visited, if the local committee make the necessary preparations of a place for meetings, a supply of milk and a supply of cream.

The programme of instruction and illustration will be arranged, as far as practicable, in accordance with the following time cards:—

FIRST DAY.

- 10 to 12 a.m. (1) Running of centrifugal cream separator, and separating cream from about 10 gallons of milk to be supplied by the local committee ;
(2) Testing samples of milk ;
(3) Preparing about 2 gallons of cream, to be supplied by the local committee ;
- 2 to 5 p.m. (4) Churning of cream supplied by the local committee ;
(5) Making butter, &c. ;
(6) Ripening of cream from centrifugal separator ;
(7) Address on butter-making .

SECOND DAY.

- 9 to 10 a.m. (1) Testing samples of milk ;
- 10 to 12 a.m. (2) Churning cream from centrifugal cream separator, and making butter ;
- 2 to 4 p.m. (3) Running the centrifugal cream separator ;
(4) Discussion on dairying.

REQUIREMENTS.

To enable the farmers, their wives and families to get as much benefit as possible from the practical teachings of those travelling dairies, it is necessary that a local committee or individual, in every place to be visited, should arrange beforehand :—

- (1) For a convenient place of meeting ;
- (2) For a supply of about ten gallons of sweet whole milk, to be furnished on the morning of the first day ;
- (3) For a supply of about two gallons of cream (ripened if practicable), also to be furnished on the morning of the first day ;
- (4) For the distribution of bills (similar to this which will be furnished free) announcing the dates and places of meetings, widely and thoroughly in the surrounding country.

Farmers are invited to bring samples of whole milk, of skimmed-milk and of butter-milk, to be tested ; about half a tea-cupful is plenty for each sample.

IMPORTANCE.

In many districts in Manitoba and the North-west Territories, dairying can be followed with profit and success. The soil, the pasturage, the fodder crops, and the climatic conditions, as well as the demands and opportunities of the markets, are all suitable for the production of the finest quality of milk, butter, cheese, beef and bacon. By a system of mixed farming, the growing of wheat at a profit may be helped and not hindered ; and thereby the farmers may protect themselves from the very serious risk of loss and failure which is incurred by any individual or community in the western provinces, that depends wholly or mainly on one crop or on the selling of grain only.

I urge the farmers and business men generally to avail themselves of the benefits which these travelling dairies are intended to give. The women from the farms are specially invited to be present at the meetings.

If you are interested in the welfare and progress of the district where you live, you are hereby invited to see that a local committee is formed and that it makes the necessary preparations for your locality in good time.

JAS. W. ROBERTSON,

Dairy Commissioner.

The travelling dairy will visit the following places on the dates named :—

* * * * *

For two days we gave the people as much information as we could, especially on the practical part of butter-making. The number of places visited was 63. Here again the reports of my assistants show that there were samples of skim-milk containing quite 40 per cent of the butter-fat ; and butter-milk containing from 5 to 8 per cent of fat. These losses have been remedied in large measure since the waste was pointed out to the farmers. This work was highly appreciated in Manitoba. Besides the thanks sent in correspondence, we have a resolution from the Manitoba Dairymen's Association which commends the work of the travelling dairies and says "No work of the kind has had more useful results or is meeting with more general appreciation." The resolution in full simply speaks well of the men who carried on the work and the good results that

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followed. At the annual meetings of the Farmers' Institutes of Manitoba, in nearly every case they took occasion to refer to the work of the travelling dairies in their sections. I do not think it would be wise to read extracts from their reports, it would take too much time; but I have the reports underlined for the members of the committee to look at if they wish. I will read you one from the Virden Institute which I have taken by chance and without any preferential selection: "The travelling dairy meetings were large and enthusiastic. Over 200 farmers were in attendance and the work of instruction will do a great deal of good."

Our work up there has had the quality which the rest of our work has had as far as we could make it so, in that it was directly helpful to the farmers and practical in every part of its presentation. At the dairy station at Moosejaw, where we had 58 patrons, over 22,000 pounds of butter were made, and the C. P. R. take one-third of the supply, which they need for their whole western service, from this dairy station. There are many new cheese factories and creameries in course of erection in Manitoba and the North-west Territories, and already this year we have sent three travelling instructors to visit these newly established cheese factories and creameries, spending from two to three days at each, according to their needs and the limitations of the railway service. After that work is done we hope to resume the work of travelling dairies, and visit the most sparsely settled districts, giving them instructions in butter making and how to establish and support co-operative factories. At the present time the markets for dairy butter in Manitoba are in a most deplorable condition. At the present time in some places dairy butter cannot be sold for 7 cents a pound, on account of the surplus of dairy butter which is not wanted anywhere for export. The merchants are simply refusing to take it and the only alternative for the people is to get creameries put up for the making of a quality of butter that can be taken for export, and which must be protected against being spoiled during transportation, by cold storage service on the way.

The work at our branch dairy stations will be almost finished this year as far as I can see now. The object of these, as I said before the committee last year, was first to introduce co-operative methods in dairying, where these were unknown. We have done that in the Maritime Provinces and we are getting it done in Manitoba and the North-west Territories. The second object was to establish winter butter-making in factories. That is now being done so thoroughly that we may withdraw entirely from this work in Ontario. The third object was to improve the general quality of the dairy products throughout all the provinces; and there never was such excellence in the cheese and butter of the provinces at any time in the past as now. They are all graded up to nearly one standard of excellence. In consequence next year, that is the financial year 1896-97, I expect the Dairying Service can be administered with \$5,000 less than this year of 1895-96 and the following year with \$10,000 less again because the work of initiation being done and the industry being set well on its feet, the rest may safely be left to the farmers themselves and the enterprise of business men.

GOVERNMENT AID TO BUTTER EXPORT.

The next matter I had in my notes to speak of, was what has been done to foster the butter trade. That I might make what has been done entirely clear to the committee, I shall give a very brief resume of the causes which led to the unfortunate condition of our butter trade in Canada. The volume of the butter trade has shrunk very much. That was not due to anything so much as to the very rapid expansion of our cheese trade. The milk of cows being fed by farmers was turned towards cheese-making instead of being kept at butter making. The enlargement of our cheese trade at so rapid a rate was only possible by the reduction of our butter trade. Then the loss of the market for our butter was due to two causes:—first, to the change of taste on the part of customers who used to prefer the rather strongly flavoured but pure butter to the mild-flavoured imitation butter. Now the consumers in Europe would rather have the mild-flavoured oleomargarine than the stronger-flavoured pure butter

made in dairies, some of which necessarily has a strong flavour. By the change in the taste of consumers, we lost that market in a measure. By the tremendous increase in the production of imitation butters in other countries we lost it nearly altogether.

Then in carrying on the dairy work in Canada under the stress of fierce competition from all quarters, the farmers could find safety only in two directions. If they keep on extending the cheese trade only, and at the same time keep enlarging the flow of milk per cow and lengthening the milking season, the result will be that we will soon have our cheese trade in a very bad condition, because we already send to England sixty per cent of the cheese she imports and are thus pushing our competitors very hard to the wall. Our safety seems to lie in turning milk in larger quantities into butter making instead of continuing to enlarge the cheese-making. Unless we do that I do not see any escape from an era of low prices or from the calamity of over production in cheese. The next question that was to be settled, as far as it could be settled in advance, was, what was the most profitable time of the year to make our butter in order to find a good market. The influence of the Canadian butter on the ruling prices in the British market is hardly appreciable, because we send less than two pounds out of every hundred pounds imported there. But in England there has been a clearly marked yearly fluctuation in the butter market for fifteen years. This chart will illustrate what I want to say more clearly than words will do. The butter market in England has gone down in summer. The zig-zag line represents the price each year from 1880 for Danish butter, and the average price available in summer is about six cents a pound lower from April till August than from September to March. That accounts for the holding of butter made in creameries and elsewhere in June and July in Canada. Nobody cares to ship butter to the British market when the ruling price for fine butter is six cents a pound lower than it will be in a few months' time. The likelihood of this being the case has been based on the experience of fifteen years without a single exception. Then there seemed to be just two ways of meeting that difficulty. Either we should make butter at the season of the year when the butter markets are high and send the butter freshly made then, or we should make butter when it is most convenient to do so and provide for the holding of it without spoiling, so that it would reach the market when the ruling price was highest, and yet without any deterioration in quality. There were just these two ways of meeting that difficulty. We tried to meet it in both ways and that is why our winter dairying movement was started first:—Because the price for butter in England was always higher in winter than in summer, and we could ship then with safety on account of the cold temperature that prevailed at that season. Now, in starting this winter dairying movement, as I mentioned in dealing with the work in the province of Ontario, it was to my mind essential that the farmers should get some direct help which they could not avail themselves of through any other channel than that which the government could provide. When any new business is being started it seems to me essential that the people should co-operate until they have obtained the facilities for doing singly what they require. Let me make my meaning clear—because this lies at the very basis of my view of why we were not only justified, but would have been inexcusable if we had not helped the butter trade as we have been doing during this past year. At first when a man wanted to build a house for himself in this country he resorted to essential “bees.” That was a form of co-operation. Now a man does not build his house by means of a neighbourhood “bee,” because he can hire masons and carpenters and obtain by purchase all the material he needs. But in the old days men could not have had houses and clearings for themselves unless they had these logging “bees,” when other men co-operated with them and helped to erect their cabins. That was the exact condition of the butter trade last winter, when we provided means for the shipments of butter. The Government had ample justification for their action, but there would have been no justification for a neglect or refusal to act under the circumstances.

For myself I believe in the widest possible application, within legitimate bounds, of co-operative methods for the promotion of the public good; and government in the highest exercise of its functions, is one way whereby the people co-operate for their own benefit. The protection of life and property is perhaps only the primary function of

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government, and the making of one's country a desirable land to live in, is a responsibility inseparable from the carrying on of government in the highest order of civilization. The clearest illustration of this is found in the existence of schools maintained by the taxes of the people and kept in a measure under the control of the government. To go back to the old illustration of the logging "bees" and house-building "bees," someone in a new settlement might have said: "Why should I tax my time to help a new-comer who is going to be a competitor with me in the markets?" Had such a one let his question find expression in his action, his conduct would have been short-sighted and hurtful to himself, because it would have been of decided advantage to him as an individual, and eminently fitting and manly in him as a member of the community, to help a new neighbour. The winter butter-making dairyman is simply a new neighbour among the other productive labourers in Canada, and he is a labourer through whom the welfare of the whole community will be promoted.

I would like to make a few observations as to how far the promotion of winter dairying, through the Dairying Service, may be a fair use of government money. If wealth can be created from natural resources through dairying, the business men and manufacturers do not sustain any loss by a portion of the taxes being devoted to helping to develop the butter and cheese trade; because, if the incomes of the farmers are increased they will be able to spend more; and their extra spendings will give a chance for increased profits to the merchants and will cause a demand for products of the manufacturers. What I want to do is to make it clear that, after all, none but the farmers themselves are contributing to the aid which we are temporarily rendering them. But for the organization of dairymen's associations, the employment of travelling instructors, the holding of conventions and the issuing of reports, the cheese trade could not have been established as it now exists. That trade has grown so much that while in 1886 the exports reached only a value of \$6,754,626, last year the exports reached a splendid total of \$15,488,191. The increase in the value of the output of cheese during the last eight years has been more than a million of dollars a year; and it would not have been possible but for the fostering help this business received in the ways I have indicated. This increase has been gained without any depreciation in price, because the thoroughly practical aid given made improvement in the quality of the cheese as fast as the increase in the quantity manufactured. Thus we have been enabled to hold our customers and gain others. This has saved the country from financial distress in many respects, and I may ask here, how much better off would the country have been if we had had half as much more coming in yearly from the exports of butter? I have no hesitation in saying that this is quite within our capacity within a few years. If we had five or seven millions of dollars' worth of butter to export annually, everybody in Canada would have a chance of being better off. That is the possibility and the legitimate outcome of aid to the butter trade.

It is fair to the cheesemen, although a few of them say it is not fair to apply public money to aid those whom they call their competitors. It must not be forgotten, however, that the winter dairying stations have been supported by farmers who were supplying milk to cheese factories in the summer. Those who support the winter creameries are the same men who enable the cheese manufacturers to carry on their industry. The interests are not hostile in any respect; they are identically the same men who are being helped through the cheese business in summer and the butter business in winter; and consequently there is no ground for complaint.

Assistance to the butter makers of Canada is only fair because they ought to receive similar help to that given to the butter men by the governments in other countries. In 1886 when I first visited Denmark, I found two dairy experts in the employment of the government of that country, together with five dairy chemists, while we in Canada have not a single dairy chemist yet. We have Mr. F. T. Shutt, one of the most efficient chemists in the Dominion, and capable of doing any class of work, but he is chemist of the experimental farms, and his work is principally confined to soils, fertilizers, fodders and waters. In Denmark there were five special dairy chemists at work in 1886. In 1883 Denmark exported 14,000 tons of butter and in 1894, 54,000 tons.

By Sir John Carling :

Q. What are our exports in butter at the present?—A. Less than 3,000 tons a year; and think of it, 54,000 tons as the output in Denmark! The people of Denmark were even more inert in regard to buttermaking and improved agriculture than the Canadians were; but from the judicious guidance which they have received, it has become, I think, the most prosperous agricultural country in the world. The change wrought in fifteen years has been most remarkable, as about 1880 it was reported to be the most severely distressed agricultural country in Europe. If, then, we are to compete with the Danes in the British market, and to-day they have the largest share of that market, we need to help our farmers in a measure as they have been helped by the government in Denmark, in order to make the conditions of competition fair and just for our people. Last winter, when we found winter dairying was making satisfactory progress, I had letters from many farmers saying, We cannot sell our butter. At that same time we were selling the butter from the government dairy stations at 21½ and 22 cents per pound, but the men who would ordinarily have been buying and shipping butter at that time of the year were laden down with held butter made last summer. It had not been kept in refrigerators or cold storage and was therefore partly spoiled. Thus it was that the usual channels of commerce were blocked by the speculative action of the dealers who bought last summer's product and who were holding it for a rise in the market. On considering the matter I had no hesitation in recommending to the Minister of Agriculture that butter from these winter creameries should be taken at twenty cents a pound, or a cent and a half per pound less than we were getting at the experimental dairy stations at that time. I should remark that our winter-made butter had been greatly improved in quality and was quite as good as the best Australian, and almost as good as the best Danish. The English merchants, however, did not know that. All things considered, it was an opportune time to make shipments from the Canadian dairy stations in order to attract customers who might be large buyers next summer, and give them an opportunity of judging of its excellent quality. Arrangements for shipments to Great Britain were made, and we sent a less quantity than I had expected. The total number of packages forwarded was 915, plus about 200 from Prince Edward Island, of which I have not yet received the exact particulars. It was understood that we were only to take butter made between the first of January and the last of March. In order to give the committee an idea of the feeling of the trade in Great Britain with regard to our products of butter, I will read you one or two extracts from letters which I have received from prominent produce dealers in the mother country.

After receipt of the first consignment Messrs. Andrew Clement & Son, Manchester, wrote:—

“The high colour of Australian is against even the best qualities. The paler the colour, the better the demand on this market.

“We are much pleased with the quality of boxes marked ‘Chesterville’ and ‘Lennoxville No. 3’, (Government Dairy Stations). These will sell in preference to Australian on this market, being paler in colour, and at least equal in flavour. For these we made 86 shillings to 90 shillings, which is more than Australian brought.

“Most of our customers were surprised at the quality of this parcel, as they expect Canadian to be something inferior. If you can ship quality equal to ‘Chesterville’, and ship it when fresh-made, we can handle all you send.”

Under date 25th April, 1895, the same firm wrote:—

“We have received delivery of 215 packages of butter ex “Ottoman”; most of this shipment is fresher than last.” If I may be allowed to interject an explanation here, I may say that even it was not very fresh, because, in some cases, the butter had been held at the creameries two or three weeks before it was shipped to Montreal, and, moreover, held in unsuitable places. The letter goes on:—“fresher than last, and altogether superior, and proves to us that if care be taken with details at your end, and the goods shipped absolutely as soon as made, you need not fear what quantity you send. They will certainly suit this market better than Australian; of course it will take some time to get them known. * * * We have sold about the half of this

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shipment at various prices from 74s. to 84s. We have had several of the best buyers in Lancashire examining these, and the general opinion is that you could run the Danes very hard in a year or so."

By Mr. Taylor :

Q. What will the prices that you have just given net?—A. Not more than 15 cents on the average ; our first two shipments realized a little over 16 cents at Montreal.

By Mr. Wilson :

Q. Was that Ontario butter?—A. It was butter from Ontario and Quebec. I may state that the butter market was never in a worse condition in the Old Country than of late. The Canadians were not the only people who held butter in unsuitable places. There were some 2,000 tons of Australian butter held in England since the winter of 1893-94, and that quantity held over the heads of the trade had a most depressing and demoralizing effect on the market. If those 2,000 tons could have been bought by the butter merchants and dumped into the Thames, it would have paid them in the end, and would have created a far better state of trade in the butter market. I recognize that the winter dairying business in Canada has grown to such dimensions that we will have to take a price on the export basis for butter, because we will have a surplus to sell. If the summer creamery butter could be shipped out by October, the local markets in Canada would take 90 per cent of the winter-made butter for another year. In the Maritime Provinces the butter-makers have suffered as in the other markets, because Montreal merchants have been shipping summer-made creamery there and selling it at 14 and 15 cents a pound, paying freight and insurance in addition.

That shows the folly and risk of the practice which has been in vogue of holding a perishable product for a rise in the market without protecting the product against injury in quality.

By Mr. McNeill :

Q. What does Danish butter generally bring in winter?—A. I will read notes from the next letter from the same firm, dated May 1st. It says : "Yesterday Danish dropped to 84 from 88 shillings."

Q. What would that be a pound?—A. That would be from 18 to 18½ cents a pound there.

Q. Is that abnormally low?—A. Yes, nearly 50 per cent lower than usual, and in part that is in consequence of the holding of butter that came from the colonies mainly, and was held under very unsuitable conditions.

Q. What might we fairly expect for winter butter in England?—A. I think taking the last five or six years' experience as a basis to found an opinion upon, about 18 cents per lb. here. I do not think our farmers may look for much above that for winter-made butter. Of course markets fluctuate, and I am giving that as tentative and approximate only.

Q. For the last four or five years what did Danish butter net?—A. It has been gradually shrinking, but this chart gives the prices. In 1893 it was as high as 119 shillings per cwt. at Copenhagen, that is 25½ cents per pound, and as low as 86 shillings per cwt. in May of that year. For ten years the price at Copenhagen, Denmark, has been from about 120 shillings per cwt. to 84 shillings per cwt. The highest prices have been on the average from October to March and the lowest prices from May till July.

Q. If they ship such large quantities there from Australia that will have some effect?—A. Yes, some effect, no doubt.

In another letter from the same firm, under date of April 29th, they say, "As it is, to offer Canadian butter means that you must spend some time explaining that it is not that which is usually known as Canadian butter."

COLD STORAGE SERVICE FOR BUTTER.

By Mr. McMillan :

Q. Do you think it possible to make butter in summer and hold it and put it on the butter market in winter in good condition?—A. Yes, I am coming to that point now. As long as seven years ago I publicly advocated cold storage for the summer made butter in order that it might be held in good condition if it was to be kept until prices were higher than when it was made. It is quite possible to hold it without deterioration if proper storage accommodation be provided. I would not provide it to facilitate or encourage speculation, but if it is to be held for the natural rise in the market owing to the scarcity of butter in winter, then it should be held safely so that its quality would not be injured.

By Mr. Wilson :

Q. Is there any difference in the quality of butter made in summer and in winter? Does it vary according to the time of the year?—A. There need not be any marked variation. Our butter made in January was as good as that made in June, and it is as well liked in England.

By Dr. Roome :

Q. Is it the same with cheese?—A. No. It is possible to make fine cheese in winter but not in the ordinary buildings because they are not suitable. It is necessary to regulate the temperature for cheesemaking and cheese curing.

Q. Is the June and July cheese as good as in October?—A. No, the milk is richer in October and the cooler weather favours the curing of cheese with mild flavours, which are preferred.

Butter has two values. The market value is fixed by all competitors in accordance with the law of supply and demand. Then butter has an intrinsic value, so that one butter is worth more as a palatable food than another butter because of its superior quality, regardless of market fluctuations altogether. All we can expect to do is to put our butter on the market in such a condition that by its higher intrinsic qualities it will command the highest price which is being paid at that time. If by its more excellent intrinsic qualities it fetches higher prices than that made in other countries, that is all we can expect. Butter changes in intrinsic quality by the progress of the process of fermentation. In making butter we add a fermentation starter to the cream as the housewife adds yeast to the dough to make it rise. That is how we can make as good butter in winter as in summer, by adding to the cream for winter butter a certain kind of bacteria that are common in the atmosphere in June. If you could introduce or apply a fermentation-stopper as well as a fermentation-starter the butter would remain unchanged. Butter made in June would be liked just as much in January as in June if no change in taste or appearance or smell could be detected. We obtain the flavour we want in butter by heating the cream to 165° Fahr. so as to kill the forms of fermentation we do not want, and then after it is cooled adding the proper fermentation starter to it as mentioned in the appendix. The increase of temperature above 165° Fahr. will practically stop fermentation, and a decrease below freezing point will also stop it, so that butter held in a dark place, protected from other bacteria and at a temperature below 32° Fahr. will stay practically unchanged for months. There is little change in the butter except from the disintegration of its constituents through the action of germ life in it. A fermentation-stopper is simply to put it in a refrigerator so cold that the fermentation will be stopped. About 20° Fahr. (12 below freezing point) is necessary, because an ordinary package of butter stored at a temperature of 32° Fahr. would not be cooled to that temperature at its centre for four or five days, and during that time fermentation would go on, damaging the quality. At a temperature of 12° below freezing point the butter will be cooled in every part in 24 hours and thus be protected from change and consequent damage. The plan for cold storage service

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this year includes the getting of cold storage on railways once a week whereby the butter can be conveyed to some central place without being injured in transit. We also want cold storage in Montreal in warehouses, at least 12° below freezing point, where it can be held unchanged after arriving at the port of shipment. Then we want cold storage on the steamships in one of three ways, all of which will be tested. First of all, in insulated compartments so that when 10, 20, or 30 tons of butter are taken out of these warehouses and put into the insulated compartments, it will continue of a temperature not appreciably above 32° Fahr., and be landed in England without undergoing any change on the voyage. The second system to be tried is that of using ice and salt placed in tubes at the sides of the insulated compartments, so as to keep them and their contents below 32° Fahr. The third method will be by fitting up one or two refrigerating machines for the cooling of insulated compartments by the compression and expansion of ammonia circulated inside pipes. We expect to try all these systems during the coming summer, and my opinion is that with the receiving warehouses at Montreal at 20° Fahr., we will have no difficulty in landing butter in unimpaired condition in England simply by putting it in insulated compartments. Having arranged for the carriage of our butter to the market in good condition, we must make the best arrangements we can for its sale. I have had letters from several of the large firms who have been accustomed to handle Danish, Colonial and Irish butter, and who have received small quantities of our winter-made butter. They say: "We did not know you made such butter as this." I am of opinion that by sending small shipments in June, July, and probably August, when the market is low, and no merchant would ship and sustain the loss to be met under such circumstances, we could introduce our creamery butter favourably to many, who would become large and permanent customers, and it would pay the country to invest a few thousand dollars in this manner, and develop a demand so that customers would be waiting for the thousands of packages that would go later in the season. Just that far I think the department might go into a commercial enterprise, reluctantly and only for the purpose of opening up channels of trade, leaving it to the enterprise of commercial men to continue the business thereafter. The best packages for shipment are packages similar to those I exhibited in the committee rooms two years ago, or square boxes lined with parchment paper inside. The square boxes are preferred now to the tubs in most markets, and they can be purchased for from 16 to 17 cents a piece. They hold 56 pounds of butter. They are made of spruce wood, $\frac{3}{4}$ -inch or 1-inch thick, and 12 inches deep, 11 inches wide, 12 $\frac{1}{2}$ inches long, inside measurements. They should be lined inside with strong thick parchment paper.

Then we have been making experiments in the preservation of butter by the use of a saline preparation. Salt is used for preserving butter in some measure, and we have used another entirely harmless and wholesome substance which put on the butter as a brine helps to keep it unchanged for an indefinite period of time. I have kept butter this winter from some of our dairy stations for two months which then did not show signs of having been made much more than three days. We expect to send directions how to prepare the brine to the creameries in the course of a week or two, and also small quantities of the material to use, the latter at cost price. That will provide a means of keeping the butter sweet even if cold storage be not reached immediately after it is made; and we will be able to send our creamery butter to the English market and get it before the consumers there just as nice as though it were only two days' old from the creamery where it had been made.

By the Chairman:

Q. What is the element used?—A. It is composed partly of salt. It is perfectly harmless. I have taken the opinion of the best experts on that point and is as free from objection as is common salt.

PROSPECTS OF THE CHEESE TRADE FOR 1895.

I now come to make a few observations on the outlook of the cheese trade for 1895. At the present time the outlook for cheese is gloomy in point of prices; a good many of the farmers and salesmen are getting rather disheartened and timid, and I think that some of the English importers and other buyers are making that a handle wherewith to get our cheese at a lower price than they are entitled to have it. I have given some careful examination to the market conditions and outlook this year as compared with last year. I find that in 1894 we had very cheap meats, and meats are competing foods with cheese in Great Britain. With cheap meats the likelihood is that people would eat less cheese or only buy it when it was comparatively cheap. Then last year we had a year of high prices for July cheese; the prices were kept up by speculation, cheese being held off the market when they should have gone forward into consumption. That was an unfavourable condition. Last year there were many strikes in Great Britain as you will remember, amongst the cheese-consuming population, which was an unfavourable condition, lessening as it did the purchasing power of our customers. Then there was the largest make of cheese in Great Britain last year that has ever been known. With all these unfavourable conditions the market took care of all our cheese last year at fair prices with very little loss, and the losses were only suffered by those who bought on speculation at high prices in the summer.

Seeing that the market with these unfavourable conditions took care of our cheese last year at fairly satisfactory prices let me analyze the conditions this year. Up to the end of March the cattle which were killed in the three large markets of the United States were 270,000 short of the number the year before, that is three times more cattle than the whole of the cattle shipped from Canada in 1894. That means high-priced meats, and, therefore, a better outlook for cheese. Then there is a revival of trade all over Great Britain. The cotton market is going up and the cotton factories are more active, business is brisker and better. The shipbuilding trade is improving by reason, perhaps, of the war between China and Japan which has contributed to the building of some large ships. Then the coal trade is reported as being steadier, and those trades which give employment to the cheese-consuming population are in a better condition now than they were in 1894. Therefore our customers will be better able to buy our goods at higher prices than last year. It will be allowed that between eight and nine cents are fair prices for cheese made in May and June. If the cheese go forward and into consumption at those prices they can be retailed at sixpence per pound. That would mean a practically unlimited increase in the rate of consumption of cheese, so that the market can take care of an enormous quantity at that price. Last year instead of the cheese going forward at that price they were held in cold storage here and some of the people were compelled to eat something else because they would not buy cheese above sixpence a pound. Another reason is that we are having a constantly improving reputation, so that more people want Canadian cheese than before. Now adding all these things together, in my opinion the market prospects now are a great deal stronger than they were at this time last year, and I see no reason at all to look forward to a year of very low prices in the cheese market. The main thing that needs to be corrected at the present time is that feeling of timidity on the part of the farmers and on the part of buyers which makes them suppose that the British markets cannot afford more than seven cents a pound for cheese. This week cheese is selling at seven and seven and a half cents, and I see no reason why we cannot send cheese to Great Britain to be retailed at sixpence per pound, leaving us an advancing market for our cheese throughout the season. At ten cents per pound here, our cheese will still be cheap food in Great Britain.

NUTRITIVE VALUE OF FOOD PRODUCTS.

I have put on a chart illustrations by lines of different lengths of the food value of twenty-five cents' worth of several common foods. The black line represents calories, indicating the force value or the fuel value of the food. A calorie is a unit designating the amount of heat which would raise the temperature of a pound of water four degrees

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Fahrenheit. The number of calories which a man needs to sustain him at hard labour is about 3,500 per day. In twenty-five cents' worth of beef at fifteen cents per pound the food value is equal to 1,620 calories. The food value of one dozen eggs at fifteen cents per dozen is 1,860 calories. The food value of five quarts of milk at five cents a quart is 4,062 calories. The food value of twenty-five cents worth of cheese at fifteen cents a pound is 3,455 calories, so that a pound of cheese is the equivalent of about 2½ pounds of the best beef you can buy for food purposes. That is why the Englishman's diet of bread and cheese gives him a well balanced ration at the very lowest cost. That is the reason, you see, why although the cheese market may temporarily pay a low price for it, a large output of cheese is a safe thing in coming years, because it is a cheap food compared with other foods. Men who have to study economy in buying, buy the foods which they like best and which at the same time contain the largest quantity of nutrients for the price paid for them.




















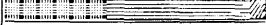


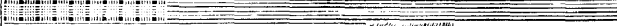


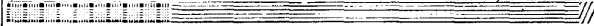




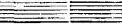








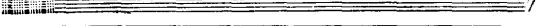




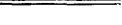


TABLE I.*

Nutritive Ingredients contained in twenty-five cents' worth.	Albumin- oids.	Carbo-hy- drates.	Fat.	Calories.
	Lbs.	Lbs.	Lbs.	
Beef, sirloin, 15 cents per lb. ....	.25		.27	1,620
Eggs, 15 cents per dozen. ....	.34		.29	1,860
Milk, 5 cents per quart. ....	.45	.58	.50	4,062
Cheese, 15 cents per lb. ....	.47	.03	.59	3,455
Butter, 25 cents per lb. ....	.01		.85	3,615
Skim milk, 3 cents per quart. ....	.72	1.00	.07	3,495
Oatmeal, 3 cents per lb.	1.22	5.70	.59	15,370
Beans, 5 cents per lb.	1.16	2.96	.10	8,075
Cornmeal, 3 cents per lb. ....	.77	5.88	.32	13,705
Wheat flour, 3 cents per lb. ....	.91	6.24	.09	13,705
Wheat bread, 5 cents per lb. ....	.44	2.82	.08	6,400
Potatoes, 1 cent per lb. ....	.45	3.80	.02	8,000
Rice, 6 cents per lb. ....	.31	3.31	.02	6,795
Sugar, 5 cents per lb.		4.89		9,100
Standard ration per day for man at moderate work. ....	.28	.90	.30	3,455

* For some of the information in Tables I and II, I am indebted to Farmers' Bulletin No. 23, by W. O. Atwater, Ph.D., issued by the United States Department of Agriculture, Washington, D. C.

TABLE II.*

NUTRITIVE Ingredients contained in twenty-five cents' worth.

Albuminoids.	Carbo-hydrates.	Fats.	Calories.
			
Beef, sirloin, 15 cents per lb.			
Eggs, 15 cents per dozen.			
Milk, 5 cents per quart.			
Cheese, 15 cents per lb.			
Butter, 25 cents per lb.			
Skim milk, 3 cents per quart.			
Oatmeal, 3 cents per lb.			
Beans, 5 cents per lb.			
Cornmeal, 3 cents per lb.			
Wheat flour, 3 cents per lb.			
Wheat bread, 5 cents per lb.			
Potatoes, 1 cent per lb.			
Rice, 6 cents per lb.			
Sugar, 5 cents per lb.			
Standard Ration per day for man at moderate work.			

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The nourishing constituents of food may be considered under two main heads:— The albuminoids, sometimes called “protein,” “proteids,” or “nitrogenous compounds,” are those which contain about sixteen per cent of nitrogen. They get the name albuminoids from a typical albuminoid, well-known to us as albumen, the main constituent in the white of eggs. Albumen is also a constituent of milk. It composes the thin film which is coagulated when milk is heated above scalding point. The albuminoids are the “flesh-formers” in foods; and, while they may be consumed to produce heat in the body, their main function is to nourish and repair the muscles, nerves, skin, and other parts of the body which contain nitrogen.

In contradistinction to the albuminoids are the “heat producers.” These are the carbo-hydrates and fats of foods. They are the starch, sugar and gums which are obtained in vegetables, cereals, fruits, etc., and the fat which we obtain in the form of the fat of meat, the butter-fat of milk, or the oils from grains and other plant sources.

The term “nutritive ratio” is the one used to denote the proportion of albuminoids or flesh-formers in food to the sum of the other nutrients in the food. The heat-producing or fuel value of fat in food is two-and-a-quarter times as great as that of carbohydrates, such as starch and sugar, and also two-and-a-quarter times greater than albuminoids.

That the “flesh-forming” and “heat-producing” parts of our food should be in correct proportion to each other is important for the health and well-being of the race. In the food of the well-nourished peoples of Europe the proportion is about 1 of the “flesh-forming” to 4 of the “heat-producing,” or 1 to 6. In the diet of Americans the ratio is usually from 1 to 6½, or from 1 to 8 or 9. In our experimental work in the feeding of animals we find that it is never economical to feed animals which are being kept for profit through increase in weight or the production of milk upon a ration which has a very wide nutritive ratio. In the fattening of swine upon foods with a wide nutritive ratio, such as would exist in Indian corn, a very much greater proportion of lard or fat to the lean meat is produced in the animals than when similar animals are fed upon a diet containing a larger proportion of flesh-forming material, as in ground pease, oats, barley or wheat, with a little skim milk. The vigour, healthfulness, and apparent contentment of the animals, as well as their profit yielding capacity, are in a large measure determined by the proportion which these two classes of nutrients bear to each other, as well as to the palatability and digestibility of the food which is consumed. I think that the same principle might correctly and beneficially be applied for the guidance of people in purchasing and preparing food for themselves. We have been studying on the experimental farms the best methods for supplying plant-food to plants, in order that they may give us the most desirable returns in quality, size and appearance. We have been carrying on extensive experiments upon the methods of feeding domestic animals to discover what foods yield the best increase in live weight, or through the giving of such products as milk. I think the Department of Agriculture might carry the investigations a step further and provide for an examination of the most economical and beneficial foods for nourishing the people through these plants and animals which are grown and fed for that ultimate purpose. It does not seem wise to stop this investigation at a point where they might, by being continued, become capable of rendering the largest, widest and most lasting service to the people. Information of this nature is what would help to make the nation stronger in the physique and personality of its people, as well as richer in the realizations from its resources. This is one reason why I believe in promoting the making of good butter and fine cheese. These have high values as foods, and can be easily used with other portions of our diet to make well-balanced and nutritious meals at a low cost to the people. If you look for a moment at the chart, you will observe that oatmeal and milk are among the best balanced foods that can be obtained, particularly during the growing period of life, and they have the decided advantage of being cheap. I have observed the diet of some of the people of Canada who cannot afford to buy extravagantly or carelessly, and I find that I can buy for twenty-five cents considerably more nourishing food than many of these poor people, who do not know anything about the nutritive value of foods, buy for one dollar.

If we can help the people to understand these things and the principles which underlie them, and thus teach them how they can get more value for their money, we shall make our country more prosperous and better worth living in.

Mr. O'BRIEN—I would like to ask the Dairy Commissioner's opinion on the branding of cheese.

The CHAIRMAN—I think it might be well for us to call Prof. Robertson again, when he can enter into that subject much more fully than would be possible to-day.

Prof. ROBERTSON—Without discussing the general question there is one observation I may make. At Brockville the other day there seemed to be a feeling on the part of the dairymen that they would like to be represented by a deputation before this committee. I know also that the Honourable the Minister of Agriculture would gladly receive a deputation of these gentlemen. If it be decided to invite them to Ottawa, I think the Dairymen's Boards of Trade would be represented from Belleville, Kingston, Brockville, Montreal, London, Ingersoll, Listowel and other places.

By Mr. Cochrane :

Q. Are they the makers or buyers of cheese?—A. Nearly all of the members are the salesmen who represent the factories, and in the membership are also the men who buy cheese. I am given to understand that the Cheese and Butter Association of the Montreal Board of Trade, which represents the buyers, also wishes to be represented.

Having examined the preceding transcript of my evidence, I find it correct.

JAS. W. ROBERTSON,
Dairy Commissioner.

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APPENDIX to evidence of Jas. W. Robertson, Dairy Commissioner, before the Select Standing Committee of the House of Commons on Agriculture and Colonization.

ON THE MAKING OF BUTTER.

A thimbleful of milk of average quality contains over ten millions of globules of butter-fat. They are lighter than the liquid or serum of the milk, in which they float, and when it is left at rest they rise to the top. Cream is only that part of the milk into which the globules of fat are gathered in larger number than they are in the whole milk. It has no constant or regular percentage of butter-fat. There may be only 8 pounds or there may be 75 pounds of butter-fat in 100 pounds of cream.

SEPARATING THE CREAM.

Two methods of separating the cream from milk are in common use ; one is known as the natural or setting method, and the other as the mechanical or centrifugal method.

In the natural method, the force of gravitation attracts the heavier portion of the milk, commonly known as skim milk, downwards in the vessel which contains it, with the result that the globules of fat are pushed upwards towards the top. The serum of milk is the name given to the heavier portion consisting of water, containing the casein, albumen, sugar and ash, nearly wholly in solution in it. Sometimes the serum becomes viscous or sticky, and a small quantity of it adheres to the surface of the globules of fat, and like a coating of gum hinders their movement upwards.

A small quantity of lacto-fibrin occurs in milk after it is drawn from the cow, and its delicate mesh is similar to the fibrin which forms in blood, causing it to clot after it is drawn from an artery or vein. That also retards the separation of the globules of fat into cream.

In the mechanical method, centrifugal force is applied to the milk in a metallic bowl which is made to revolve very rapidly, in some machines at a rate of over 7,000 revolutions per minute. By the force thus applied, the serum of the milk is thrown outwards against the resisting inside of the bowl, and the globules of fat are pushed inwards towards the centre. In the form of cream they are then conducted by a mechanical device into one vessel, while the serum, which is practically the skim milk, is conducted into another vessel. The machine which is used for this purpose is called a centrifugal cream separator.

The following paragraphs are based upon the information derived from tests conducted at the experimental dairies, of which particulars are contained in the annual reports of the Experimental Farms and Dairy Commissioner.

THE SETTING OF MILK.

1. All milk should be carefully strained immediately after the milking is completed.

2. When shallow pans are used, they should be placed in a room with a pure atmosphere, at a temperature as even as possible at between 50° and 60° Fahr.

3. When deep-setting pails are used, the water in the creamer or tank should be kept below 45° Fahr. or as near 45° Fahr. as is practicable. It is advantageous to have a supply of ice for use in the water.

4. When an abundant supply of cold water from a flowing spring is not available, the cooling power of fresh cold water may be applied economically by conveying it in a pipe to the bottom of the tank or creamer, and allowing the warmed water to run off

from the top. If the water be scarce, the overflow may be carried into a watering-trough for the live stock of the farm.

5. It is advantageous to set the milk as soon as practicable after it is drawn from the cows.

In a test with deep-setting pails, it was found that the quantity of butter fat not recovered in the cream, and consequently left in the skim-milk, was 11.48 per cent greater when the setting of the milk in ice water was delayed one hour, than it was set immediately after it was drawn.

6. There was not much difference in the percentage of butter-fat recovered into the cream, due to the temperature at which the milk was set, when between 88° and 98° Fahr. The loss of butter-fat unrecovered from the skim-milk was 2.53 per cent greater when set at 78° than when set at 98° Fahr.

7. The milk should be left undisturbed for about 22 hours. The quantity of butter-fat not recovered into the cream was 8 per cent greater when the milk was set for only 11 hours than when it was set for 22 hours, in deep-setting pails in ice-water.

8. With ordinary milk, there is no gain from adding water "to thin it" when it is set. There was practically no difference in the percentages of butter-fat not recovered into the cream when, (1) 25 per cent of water at 160° Fahr. added to the milk, (2) 25 per cent of water at 60° Fahr. added to the milk, and (3) no water added to the milk, were the differences of treatment in the setting of milk, in deep-setting pails in ice water.

CREAMING MILK FROM COWS CALVED MORE THAN SIX MONTHS.

9. The milk from cows which have been milking more than six months does not yield its cream so readily as the milk from cows more recently calved.

During the cold weather of autumn and winter, by the setting of milk (in deep-setting pails, in cold water, at a temperature of 38° to 40° Fahr., for 22 hours) from cows which had been milking for periods of from 6 to 12 months, about 33 per cent of the total quantity of butter-fat in the milk was left in the skim-milk.

Where the milk of one fresh-calved cow was added to the milk of eight cows which had been milking for periods exceeding 6½ months each, and the milk set as stated above, about 14 per cent of the total quantity of butter-fat in the milk was left in the skim-milk.

When the milk of cows, which had been milking for periods of less than 6 months each, was set as stated above, from 7 to 15 per cent of the total quantity of butter-fat in the milk was left in the skim-milk.

During the autumn and winter when the milk from cows which had been milking for periods of more than 6 months each was set in shallow pans for 22 hours, from 5 to 15 per cent of the total quantity of butter-fat in the milk was left in the skim milk.

By the use of the centrifugal cream separator all the butter-fat in the milk, except about 3 per cent of the total quantity, may be recovered into the cream, from the milk of cows at all stages of lactation and during all seasons of the year.

SEPARATING CREAM BY THE CENTRIFUGAL METHOD.

10. The milk for the separator should be carefully strained and heated to a temperature of 80° or 85° Fahr. If it be used at a lower temperature, the cream is apt to become thick and clotted in the separator. Cold milk has a greater density than milk at a higher temperature; the higher the temperature up to 85° Fahr., the greater the efficiency of the separation of cream, all other conditions being equal.

11. Particular care should be exercised to prevent the use of any bitter milk. If any appreciable quantity of bitter milk be mixed with the general supply, the result will be a yield of butter which is likely to be more or less bitter in flavour. In very bad cases, the butter may become quite oily. These are both serious defects.

12. Where the heating and cooling conveniences are rather limited, the milk may be separated at a temperature of 80° Fahr.; but in those cases, the inflow of milk should

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be lessened and be regulated according to the percentage of butter-fat which is discovered to be left in the skim milk. That should not exceed one-tenth of one per cent. The Babcock milk tester should be used every day to check the percentage of fat in the skim milk and in the buttermilk. For the testing of the skim milk, the sample should be composed of small quantities taken from the outflow of the separator at different times.

13. The efficiency of the separation of the cream depends largely upon the skill and management of the operator, although there are differences in the capacity and construction of the different centrifugal machines. The thoroughness of the separation of the fat into the cream depends mainly upon (1) the speed at which the separator is run (2) the temperature of the milk, and (3) the quantity of milk run through per hour. The operator should study carefully the instructions which are issued by the manufacturer or agent of the separator which he uses. It is desirable that the separator be run at its maximum speed, and that it be not exceeded. The separator should be set exactly level, and it should be kept so. Where belt machines are used, the belts should not be intensely tight; and in setting up the machines and calculating the speed between the engine and the separator bowl, from 3 to 5 per cent should be allowed for slippage of belts.

14. When the quantity of cream to be separated can be regulated by a set-screw in the bowl, it should be set to allow from 14 to 16 per cent of the quantity of average milk to flow through the cream outlet. A good rule is to take off cream which contains from 20 to 25 per cent of butter-fat, or cream which contains about one pound of butter to from $3\frac{1}{2}$ to 5 pounds of cream. The set screw inside the machines should be loosened occasionally, to prevent it from becoming immovably set.

THE RIPENING OF THE CREAM.

15. The cream from the centrifugal separator should be cooled quickly after it is received from the machine.

16. The cream from the setting method should be kept cold and sweet until the quantity intended for one churning has been gathered.

17. The temperature of the cream, when set to be ripened, may vary from 65 to 80 degrees Fahr. according to the season; the higher temperature is used during the late fall and winter.

18. The temperature at which the cream is set for ripening should be maintained about six hours, during which time it may be stirred occasionally. After that, it should be left undisturbed until ripe for churning. No close cover over the cream vat need be used. A clean canvas cover is sufficient. Care should be taken to purify the canvas or other cover frequently.

19. "Fermentation starter" is the designation applied to the portion of fermented or sour milk, buttermilk or cream, which is added to the cream to ripen it for churning. The ripening of the cream consists of the development of the ferment or ferments which are added to it, or which get into it from the atmosphere, from contact with vessels or utensils, or from other sources.

20. It is quite important that every butter-maker should have on hand a fermentation starter of pure clean flavour, and of a uniform smooth consistency.

21. The following is the way in which a culture of lactic ferment was made at the Central Experimental Farm dairy, from which "fermentation starters" were prepared:—

A quantity of about two quarts of skim milk was heated to 205° Fahr. The temperature was maintained at that point for ten minutes after which, and while exposed to the atmosphere of the butter-making room, it was cooled to 80° Fahr. It was left in a closed glass-stoppered bottle at the ordinary temperature of the dairy-room, from 60° to 70° Fahr. for five days. It was then found to be coagulated and to possess a mild pure lactic-acid flavour, which became more distinct after it had been kept in cold water at a temperature of 40° Fahr. for three days. That was the culture. The flavour of it was such as was characteristic of cream from which fine flavoured butter had always been obtained; and "fermentation starters" for the ripening of cream were prepared from it.

22. A "fermentation starter" may be prepared from skim milk which is pure, sweet and free from taint. It should be heated to 150° Fahr. and left at that temperature for ten minutes. It may then be cooled to a temperature of 80° Fahr., when a portion of the culture, as described above, at the rate of ten per cent of the quantity of the skim milk should be added to it. That becomes the "fermentation starter."

23. The "fermentation starter" should be left to ripen at a temperature not exceeding 80° Fahr. for 20 hours. When the flavour and odour are distinctly acid, it should be placed in cold water at a temperature of 40° Fahr. in order to arrest a further development of the ferment.

24. The bacteria cultures for the making of "fermentation starters" may now be obtained also in the market from firms who deal in dairy supplies.

25. Where no undesirable flavour exists and no difficulty has been experienced in churning, some buttermilk of pure, nice flavour may be used as a "fermentation starter" for the cream. If at any time the flavour of the butter seems to deteriorate from that method, a new "fermentation starter" should be secured, as described in paragraphs 21 and 22.

26. The "fermentation starter" may be added to the cream at the rate of from five to ten per cent of the quantity of cream.

In any case where the cream has become somewhat tainted, if the taint be of fermentation origin, a larger quantity than usual of the fermentation starter should be added. This may in a great measure check the development of the taint and leave the particular fermentation of the starter which is added to be the prevailing one in the cream and butter.

27. If for any reason it is desired to churn the cream while sweet, the churning should be commenced at a temperature of five to eight degrees colder than for the churning of sour cream. In all our examinations, the butter from sweet cream has been rated from two to three points lower in valuable commercial flavour than butter from a portion of the same cream which had been ripened or soured.

28. Although it is usually not desirable that turnips should be fed to milking cows, when they are fed, the odour and flavour may be prevented from appearing in the butter.

In a trial which was made from the milk of cows which were being fed the excessive quantity of 90 pounds of turnips per head per day, the odour and flavour of turnips was not perceptible in the butter which was made after the following treatment was given to the cream :—

The cream was heated at 150° Fahr. and stirred at that temperature for ten minutes while it was still sweet. It was afterwards cooled, ripened and churned in the usual way. A portion of the cream from the milk of the same cows was ripened and churned in the usual way without being heated above 68° Fahr.

The butter obtained from the cream which was not heated above 68° Fahr. had a distinct odour and flavour of turnips; while the butter obtained from the cream which was heated to 150° Fahr. was excellent in odour, flavour and grain, and was without any perceptible odour or flavour of turnips.

From the cream heated to 150° Fahr. before being ripened for churning, eight-tenths of one pound less of milk was required to yield each pound of butter than from the cream from a portion of the same milk which was not heated above 68° Fahr.

29. It has not been found advantageous to thin the cream by adding a quantity of water to it before it is churned or before it is ripened. Quantities of water were added to cream at the different rates of 10, 20, 25 and 30 per cent of water added; and the conclusions were that (1) the churning was slightly less efficient in the recovery of the butter-fat, (2) the quantity of marketable butter obtained per 100 pounds of milk was one ounce less, (3) the butter was not so firm or solid in the grain, and (4) the churning period at an equal temperature was longer by from one minute to thirty minutes, when water was added to the cream than when cream was churned without the addition of water.

CHURNING.

30. The preferable degree of ripeness in the cream will be indicated by the following points,—a mild, pleasant acid taste, a uniformly thick consistency, and a glossy appear-

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ance, somewhat like white oil paint. If not at the exact temperature desired for churning, it should be cooled or warmed to that point, which may range from 54° to 58° Fahr. according to the season. It should be strained into the churn and the churn should not be filled to more than two-fifths of its capacity.

31. If butter colour is to be used, it should be added to the cream before the churning is commenced.

32. The regular speed of a factory revolving churn should be about 65 revolutions per minute; and when butter granules are formed in the churn, a few gallons of weak brine (salt and water) should be added, to assist in the separation between the granules of butter and the buttermilk, and also to give a firmer body to the butter.

33. The churning should then be continued until the granules of butter become a little larger than clover seed. The buttermilk should then be drawn off and a quantity equal to the buttermilk, of pure cold water, at a temperature of from 50° to 58° Fahr., according to the season, should be put into the churn, for the purpose of washing out the buttermilk from the butter granules. The churn should receive a few quick revolutions, and the water should be drawn off immediately. Attention to this is of some importance, as the water will contain more or less curdy matter, which, if allowed to settle on the sides of the churn, forms a film there, where it is apt to adhere to the butter when that settles gradually as the water is drawn off.

34. After the butter has been left to stand for some 20 minutes, it should be salted at the rate of from one-quarter of an ounce of salt per pound of butter, to one ounce of salt per pound of butter, according to the preferences of the market which is to be supplied. The very finest quality of pure butter salt only should be used. That which is of a uniform fineness of grain and velvety to the touch is suitable.

35. Care should be taken to prevent the salt from being exposed to an atmosphere that may leave on it impurities causing foul odours and taints, as these may readily be introduced into the butter by that means.

THE WORKING OF THE BUTTER.

36. After the butter is salted it should be left for 2 or 3 hours, to allow the salt to dissolve. Then, by a second working, the excess of moisture may be expelled, the salt thoroughly mixed, and any streakiness in colour corrected. Care must be taken that the butter be not overworked and made greasy. This may result from the butter being worked at a temperature either too high or too low. Where practicable, it should be worked at a temperature which leaves it in a waxy condition, causing it to bend about one-half towards the under layer when it is being doubled on the butter worker. A temperature of 50° Fahr. will usually put the butter in the best condition for being worked. Sometimes injury results from a larger quantity being placed on the butter worker than can be handled conveniently.

PREPARING PACKAGES AND PACKING THE BUTTER.

37. Where the butter packages are not tinned or paraffine lined, they should be filled with strong hot brine and left to soak for a day. The brine may be used several times if boiled each time. The insides of the packages should be lined with butter cloth or parchment paper—preferably the latter. The package will then be ready for filling.

38. In packing, the butter should be pressed against the side of the package, keeping it slightly hollow in the centre of the package, the object being to pack the butter so close to the side that no air spaces will be left between the butter and the package. These are often seen when a tub or box of butter is "stripped." Care must also be exercised in using the packer, not to move the butter more than is really necessary to make it compact. When the package is filled, the surface should be smoothed with a hardwood ladle or scraper, and then covered with fine butter cloth or strong parchment paper.

CLEANING THE UTENSILS.

39. In the washing of churns and all other vessels for milk or cream, they should first be rinsed with cold or tepid water. The addition of washing soda, or a small quantity of borax to the water, will increase its cleansing properties. They should then be washed with warm water, and scalded with water "boiling hot." The use of a brush for the cleansing of dairy utensils is much preferable to the use of a dishcloth.

40. All wooden utensils and vessels should be scalded, cooled and dipped into cold water before they are used. Small wooden utensils should be kept floating or immersed in cold water.

41. Where closed drains flow from a dairy or creamery, they should be flushed out occasionally with a strong solution of concentrated lye, followed by hot water.

I certify this correct as an appendix to my evidence.

JAS. W. ROBERTSON,

Dairy Commissioner.

Agriculture and Colonization.

COMMITTEE ROOM 46,
HOUSE OF COMMONS,

Tuesday, May 21st, 1895.

The Committee on Agriculture and Colonization met this day at 10.30 a. m., Mr. Sproule, Chairman, presiding.

Mr. JAMES FLETCHER, Entomologist of the Dominion Experimental Farms, was present, and being called, addressed the committee as follows:—

Mr. Chairman and Gentlemen,—As the chairman has stated, I expressed to him a wish to have questions asked under the different headings I shall speak of, as they come up, so that my evidence may be as much to the point as possible, because in previous years it has very frequently happened that after the committee has risen, members have said to me that they would have liked to have further information on certain points, or have asked the question; “Why did you not speak upon such and such a point?” In the department that I have charge of, there are a great many different subjects that come up for consideration and study, and it is, of course, important to find out which subjects are of most interest to individual members of the committee. Now, any one subject may be as important as another, but not of such importance to all as to the one who is immediately concerned in it. For instance, the potato-rot disease is very important in some parts of Canada, but in some others it is actually of little importance, because it is not the serious pest that it frequently is over the greater part of Canada. Therefore I am very glad to carry out the suggestion that has been made by the chairman and Mr. McMillan, and shall be much obliged to any members who will ask me questions.

It was late in the season, gentlemen, last year, when I had the honour of appearing before the committee, and I, at that time, reported on many subjects which had come up for study in my department. Some of the same will come up incidentally, during the course of my remarks this morning, which I shall try to make as concise and short as possible, so as not to cover much ground. And I shall try to make them suggestive so as to bring out from members questions, that I may be able, as I have said, to give definite information with regard to those subjects which are of importance to them in their work in their own districts.

SPRAYING INSECTICIDES,—STANDARD REMEDIES.

What I propose to speak of this morning, first, is spraying for the destruction of insects. For the last ten years, entomologists have been trying to get farmers and fruit growers all over the country to adopt the methods of spraying insecticides and fungicides on plants to protect them against the attacks of injurious insects and fungous diseases. This work was, naturally, rather up-hill work at first, because it was then thought to be of a purely scientific nature, and it had to be first demonstrated that these methods were useful, and then that they could be practically applied by farmers all over the country without special information or special training in the matter. After ten years' study by good men, both in the United States and Canada, we have found there are certain standard remedies which we can definitely recommend to obtain certain results; and with these we find that the chief and most serious diseases of many of our crops can now be kept within control by simple, easily applied and cheap remedies which are now available for all, as a result of careful study; and further than this, these remedies are actually being applied by farmers all over the country.

It is very fortunate that these remedies are so simple as they are; and also that the apparatus necessary for their application has now been so perfected that, at small cost, any farmer of moderate means in all parts of the country, with the present

facilities for transporting articles to and from different parts of the country, can now obtain a cheap instrument by means of which he can save a very large proportion of his income, which he formerly lost through the depredations of insect and fungous pests.

This operation of spraying can be practised advantageously against nearly all the fungous and insect enemies of plants, but it was not found, till a recent date, that we could get the farmers of Canada to adopt it as an ordinary agricultural method. Last year, however, there was and during the present year there certainly will be much more spraying done in all parts of Canada than has ever been done before. This increased attention to the application of this useful remedy is largely due to some experiments which were carried out by my colleague, Mr. Craig, under the Honourable the Minister's orders, in Western Ontario last year. These were of an extensive nature, and it was shown that such good results attended this simple operation that, I think, at the present time there are more people spraying in the Niagara fruit district than there have ever been before in all parts of Canada together. It has been well known, of course, by experimenters, that these methods were useful, as I have stated, but it proved rather difficult to induce people who were getting moderate crops every year to adopt a new method.

SPRAYING WITH BORDEAUX MIXTURE

is certainly an unpleasant operation and involves a considerable amount of labour besides some expense. This is the standard remedy for fungous diseases of crops and the benefits are so very great that everybody should now use it, certainly during the present year, owing to the disastrous frosts which have lately injured the crops in Western Ontario particularly, and even here to some extent. Those that spray this year will certainly reap a much greater reward than in ordinary years when there is a large crop; because, certainly, the crops of some fruits will be reduced very much in quantity and what is remaining on the trees will as certainly be more seriously attacked by the number of insects that were bred last year, and which now exist. The crop will be smaller and the proportion of injured fruit will be larger; consequently, the results from spraying this year will probably be much greater and more apparent than in ordinary years, when there is a usual crop. Therefore, I think there is no time so opportune as the present to recommend fruit growers and farmers all over the country to spray.

The first sprayings for many of the fungous diseases should already have been done, but even now a great deal of good can be effected by following out the methods which are recommended. Recognizing the importance of this subject, we have prepared from the Experimental Farm, a bulletin for fruit growers, written by Mr. Craig, our horticulturist, and myself, upon spraying; and in this the best methods of spraying, the best classes of apparatus, and the different crops, from which the greatest results of spraying will be shown, have been treated of. In the bulletin we have also included what we call a spraying calendar. It is not an original idea: it was originated, I think, at the Cornell University experimental station, but it is a very excellent one. I have some copies here to submit for the inspection of the committee.

CALENDAR GUIDE TO SPRAYING.

Plant.	1st Application.	2nd Application.	3rd Application.	4th Application.	5th Application.	6th Application.
<i>Apple.</i> Apple spot fungus, codling moth, bud moth.	<i>Copper Sulphate.</i> Before buds start. (Important.)	<i>Bordeaux.</i> Just before blossoms open. (Important.)	<i>Bordeaux.</i> <i>Paris Green.</i> —Soon after blossoms fall. (Important.)	<i>Bordeaux.</i> <i>Paris Green.</i> —10-15 days later.	<i>Bordeaux.</i> 10-15 days later if spot disease is severe.	
<i>Cherry.</i> Rot, leaf diseases and injurious insects.	<i>Bordeaux.</i> <i>Kerosene Emulsion</i> for aphids. Before flower buds open.	<i>Bordeaux.</i> <i>Paris Green.</i> —When fruit has set. (Important.)	<i>Bordeaux.</i> <i>Paris Green.</i> —10-15 days later. (Important.)	<i>Ammoniacal Copper Carbonate.</i> 10-15 days later. (Important.)		
<i>Grape.</i> Mildew, rot, leaf eating insects.	<i>Copper Sulphate.</i> Before buds start.	<i>Bordeaux.</i> <i>Paris Green.</i> —When first leaves are half grown.	<i>Bordeaux.</i> When fruit has set.	<i>Bordeaux.</i> 10-15 days later.	<i>Bordeaux.</i> 10-15 days later. If disease persists.	<i>Ammoniacal Copper Carbonate.</i> If disease persists.
<i>Peach—Apricot.</i> Rot, leaf-curl, curculio.	<i>Copper Sulphate.</i> <i>Paris Green.</i> —Before buds start.	<i>Bordeaux.</i> 3 lbs. copper sulphate, 3 lbs. lime, 50 gals. water. <i>Paris Green</i> (4 oz.)—Just before blossom.	<i>Bordeaux.</i> <i>Paris Green.</i> —Soon after fruit has set.	<i>Bordeaux.</i> <i>Paris Green.</i> —8-12 days later.	<i>Bordeaux.</i> 8-12 days later. If rot is prevalent.	<i>Ammoniacal Copper Carbonate.</i> 10-15 days later if rot is prevalent.
<i>Pear.</i> Scab, leaf blight, codling moth.	<i>Copper Sulphate.</i> Before buds start. (Important.)	<i>Bordeaux.</i> Just before blossoms open. (Important.)	<i>Bordeaux.</i> <i>Paris Green.</i> —Soon after blossoms fall. (Important.)	<i>Bordeaux.</i> <i>Paris Green.</i> —10-12 days later.	<i>Bordeaux.</i> 10-15 days later.	
<i>Plum.</i> Rot, shot-hole fungus, curculio.	<i>Copper Sulphate.</i> <i>Paris Green.</i> —Before buds open.	<i>Bordeaux.</i> <i>Paris Green.</i> —Soon after blossoms have fallen. (Important.)	<i>Bordeaux.</i> <i>Paris Green.</i> —10-12 days later.	<i>Bordeaux.</i> <i>Paris Green.</i> —10-15 days later.	<i>Ammoniacal Copper Carbonate.</i> 10-15 days later if rot is prevalent.	<i>Ammoniacal Copper Carbonate.</i> 10-20 days later if rot is prevalent.
<i>Currant.</i> Fungous diseases, "currant worm."	<i>Paris Green.</i> When worms appear.	<i>Hellebore.</i> When fruit is fully formed.	<i>Bordeaux.</i> After fruit is picked.	<i>Bordeaux.</i> 10-15 days later.		
<i>Gooseberry.</i> Mildew, "currant worm"	<i>Bordeaux.</i> <i>Paris Green.</i> —As soon as leaves expand.	<i>Hellebore.</i> <i>Bordeaux.</i> 10-15 days later.	<i>Ammoniacal Copper Carbonate.</i> 10-15 days later.	<p style="text-align: center;">FUNGICIDES.</p> <p style="text-align: center;">COPPER SULPHATE SOLUTION.</p> <p>Copper Sulphate..... 1 lb. Water..... 25 galls. For use <i>only</i> before the buds open. It is ready for use as soon as dissolved in the water.</p> <p style="text-align: center;">BORDEAUX MIXTURE.</p> <p>Copper Sulphate..... 4 lbs. Quick lime..... 4 " Paris Green (for leaf eating insects)..... 4 oz. Water (1 barrel)..... 40-50 galls. See page 7 of bulletin No. 23 for method of preparation. To prevent potato rot, 6 lbs. of copper sulphate is used instead of 4.</p> <p style="text-align: center;">AMMONIACAL COPPER CARBONATE.</p> <p>Copper carbonate..... 5 oz. Ammonia..... 2 qts. Water (1 barrel)..... 40-50 galls. For use late in the season when Bordeaux mixture may stain the fruit. It is also best adapted for green-house spraying. Method of preparation given on page 7 of Bulletin 23.</p> <p style="text-align: center;">INSECTICIDES.</p> <p style="text-align: center;">KEROSENE EMULSION.</p> <p>Kerosene (coal oil)..... 2 galls. Rain water..... 1 " Soap..... ½ lb. To be diluted before use with 9 parts of water. For sucking insects—</p> <p style="text-align: center;">PARIS GREEN AND WATER.</p> <p>Paris Green..... 1 lb. Lime (fresh)..... 1 " Water..... 200 galls. For insects which eat foliage.</p>		
<i>Raspberry, Blackberry, Dewberry.</i> Anthracnose, rust.	<i>Copper Sulphate.</i> Before buds burst.	<i>Bordeaux.</i> 10-15 days later.	<i>Bordeaux.</i> After old canes are cut out.			
<i>Strawberry.</i> Rust.	<i>Bordeaux.</i> After first blossoms have fallen.	<i>Bordeaux.</i> After picking season.	<i>Bordeaux.</i> 10-15 days later.			
<i>Bean.</i> Anthracnose.	<i>Copper Sulphate.</i> ½ oz. to 1 gal. water. Soak 1 hour.	<i>Bordeaux.</i> When rough leaves appear.	<i>Bordeaux.</i> 8-12 days later.			
<i>Potato.</i> Scab, rot, insects.	<i>Corrosive Sublimat.</i> 2 oz. to 16 gals. water. Soak 1½ hours.	<i>Paris Green.</i> For Col. pot. beetle. <i>Bordeaux</i> for flea beetle.	<i>Bordeaux.</i> From 1st August till end of season, 2 weeks apart.			
<i>Tomato.</i> Rot, blight.	<i>Bordeaux.</i> First appearance of rot.	<i>Bordeaux.</i> When necessary.	<i>Bordeaux.</i> Same.			

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You see it just takes two pages of an ordinary pamphlet and is a small sheet which can be pinned up in a convenient place, as behind a door, for reference at all times. We have given the number of times to apply the chief insecticides and fungicidal, the length of the intervals between the sprayings, and the substances which should be applied, so that it may be said, I think, that on this small sheet you have information with regard to nearly all the worst enemies that will attack your crops every year. This is included in the bulletin mentioned, which, of course, is at the disposal of everybody who asks for it. It is printed separately, in order that it may be sent to all that wish for it, and that they may pin it up and have it easily accessible for reference. On it, you will find the leading crops mentioned and the best treatment for them, such as apple, cherry, grape, and various other crops, including also potatoes, beans and tomatoes, which have fungous diseases requiring treatment.

The sprayings are done in the case of insects chiefly with two standard remedies. 1. Paris green, which is the most convenient of all the active poisons containing arsenic, is, we may say, a standard remedy for all such insects as eat the leaves of plants, masticating the substance. 2. Besides that, we have another remedy, kerosene emulsion, which kills without being eaten, for such insects as, instead of eating the substance of the leaves, suck the juice out of them. As I have told the committee before, there are two large classes of insects which injure crops, one of which eats the substance, and the other sucks out the juice. Both are equally injurious, but they require different treatment. In the one case, an active poison placed on the surface of the leaves destroys such insects as have jaws and eat the substance. For the other class of insects, those which suck out the juice, kerosene emulsion, a mixture of coal oil and soapsuds, is the remedy most recommended. This remedy is also useful for scale insects which are causing enormous losses all through Canada, chiefly because they are not recognized by those who suffer from them until the injury is done. Belonging to this class, is the now celebrated San José Scale, which I brought to the notice of the committee last year. It is very injurious in California, in the orange plantations there, and is probably one of the most injurious insects known on the Pacific coast. There has been great fear expressed in different parts of Canada lest this insect should be introduced here and do the same harm in the Dominion as it does in California. This is, I believe, extremely unlikely. I make this statement from a study of its life history and its habitat, the places where it occurs and breeds. It was introduced from California into British Columbia, and was discovered there last year, but I think the measures that were taken were successful in entirely wiping it out. Remedies were applied immediately on its discovery, and I have not received any further report of its occurrence or reappearance. There is a danger of its being introduced in nursery stock, but even if it were introduced, I do not think it is likely to do as much harm in Canada as it has done in California, or even in the eastern States of New Jersey and New York, where it was also introduced. In a very careful study of introduced injurious insects, by the United States entomologist, Mr. Howard, he shows that the extension of the San José Scale is limited within a certain life zone, and there are no instances on record where this insect has penetrated to a more northern latitude and has succeeded in perpetuating itself and living. In instances where it was introduced in certain districts in Massachusetts it lived for a certain time, but it was found the next winter that after a certain time it entirely disappeared. I am speaking in some detail of the San José Scale, because at the present time there is a great deal of alarm with regard to this insect in some parts of Canada.

The two standard remedies for spraying fruit trees to protect them against the attacks of the two large classes of insects are, for mandibulate or biting insects, Paris green, and for the other class, sucking insects, kerosene emulsion (a mixture of coal oil and soapsuds). These are efficacious for all the insects on which we have tried them, though for some more than for others. We have tried to show farmers the best way in which these remedies should be applied, and we have given them receipts for standard remedies which may be used with small preliminary information and knowledge, according to the nature of the attack and the insect causing it. I am glad to be able to state that a law was passed last year which is likely to have a good effect on this

very question of spraying, at least with reference to the use of Paris green. It is a curious fact that if there is the slightest doubt about the efficacy of a given remedy, most people will not apply it at all. There was undoubtedly some adulteration of Paris green, though I have never been able to find that it affected its usefulness as a remedy against insects of this class. It no doubt affected its strength to a certain extent, but the quantity generally used was so far in excess of what was necessary that I do not think it affected the general result. The effect of the adulteration was simply to prevent some farmers from using it, but by the passing of this law by which it is demanded that Paris green shall be sold pure and without any adulteration, a feeling of confidence in the usefulness of this remedy will be produced, which will have a very good effect throughout the country. The excuse that many made use of, that Paris green was often adulterated, now no longer exists, and there is no excuse for people who want to save their fruit and other crops from injurious insects, if they do not take advantage of the remedy which has been proved to be of so much value.

There is just one other point to which I wish to draw the attention of the committee, that is, the necessity of having not only proper materials but also proper apparatus, so that the spraying can be done in the proper way. By the proper way I mean the way by which the same amount of material can be placed upon the plants in such a degree of dilution that it does not waste the material nor injure the plant, but yet strong enough to be efficacious in destroying the injurious insects. As it happens, this useful material, Paris green, is very cheap, but, at the same time, there is no necessity to waste it. By using a proper nozzle and spraying pump, we can place a mixture of Paris green and water which is injurious to all biting insects, on the crops we wish to protect, in a very fine film indeed. Paris green is of a caustic nature and is liable to injure plants if applied to the foliage too strong; but by using one of the perfected nozzles, of which there are now many makes, we are able to put a very small quantity on the leaves and mitigate its virulence, so that it will destroy the insects without injuring the plant. If we use too much, the plant itself will be injured. Nozzles for spraying have now been perfected so that we have many different kinds by which we can reduce the volume of liquid applied to an absolute spray. This word "spray" is often very loosely used. It is generally used for "drenching" which is a very different thing. Here is a nozzle called the "Boss" nozzle, which can be used to do good work, but has also a capacity for harm in that it is easy to use it so as to let out too much liquid, and the plant is drenched instead of sprayed. It is sold by almost all the pump makers and can be made to do good work if it is carefully used. On the other hand, we have another nozzle made by Mr. Vermorel, in France, and which bears his name, with which it is almost impossible to do bad work, inasmuch as the volume of the liquid with which you spray is broken up into such a fine mist that it cannot do harm, except by careless use. If the nozzle happens to be stopped up, there is an apparatus for clearing it called a disgorger, by which the obstruction may be removed easily without even unscrewing the nozzle or stopping the work.

By Mr. McNeill:

Q. What is the name of that nozzle?—It is called the Vermorel nozzle. The original of this nozzle was the "Cyclone" nozzle invented by Professor Riley and his staff of the United States Division of Entomology, and the principle of it is that the liquid is forced into a very small chamber in a tangential way so as to strike the other side of the chamber. Then it is forced through a very small central orifice and this has the effect of breaking the liquid up into a very fine spray. Too much importance cannot be attached to the fact that the liquid must be broken up into as fine a spray as possible. In that way we can use expensive materials if necessary, and a small quantity can be made to go a long way and yet be quite efficacious. Owing to the study given to this subject, it has been found that it is not necessary, for many pests, to use expensive materials; but this nozzle was invented with the object of using as little as possible of materials that were at that time expensive and were thought necessary. It is also found useful for the other reason that it deposits a very small quantity of the poison on the plant in such a manner as to destroy the insect without hurting the plant.

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Another very good nozzle which I have here—and I think these two nozzles are the best for general purposes—is the “McGowan” nozzle. The Vermorel and McGowan nozzles are excellent, probably the best that have been brought out. There are perhaps others equally good, but these two can always be relied on. The difference in this nozzle (exhibiting a sample) is that a small orifice is obtained by forcing the central brass disc against the bottom plate so that it contracts the orifice through which the liquid is distributed. It throws out the liquid in fan shape and has the same effect as the Vermorel nozzle. If any member of the Committee would like to ask questions as to this matter of spraying, I should be glad to answer them now.

By Mr. McMillan :

Q. Is the bulletin which you referred to, the one that was sent out lately?—A. Yes.

By Mr. Cochrane :

Q. Have you some copies on hand?—A. Yes, I have a few with me.

By the Chairman :

Q. Do you find any particular kind of pump more advantageous than another?—A. No, there is no particular one which I care to recommend. Competition in the sale and manufacture of spraying pumps, owing to the great demand for them, has brought it about that a very good article is now being manufactured, and pumps have been brought down to a reasonable price. It would hardly be wise to recommend any one, but we have three or four made in Canada which answer all purposes. There are three kinds of pumps. The first is the small hand pump which will answer for a garden containing from fifteen to twenty trees. This can be got for about \$5. For \$10 or \$12, you can get a good strong force pump for putting in a barrel or tub which can be drawn through the garden or orchard by a horse. Again there is a larger pump for large orchards, costing from \$25 to \$30, in which the power is geared on to the axle of the vehicle. I think probably these do not answer quite so well as the smaller pumps which are regulated by hand power, because in stopping or turning these instruments there is a good deal of waste. I think the middle size for general purposes is as useful as anything we can get. We have had very good results from these at the Experimental Farm.

By Mr. McGregor :

Q. When you speak of Paris green, do you mean the Bordeaux mixture?—A. No, but the Bordeaux mixture which is used specially for fungous diseases, such as the black spot on the apple, may have Paris green mixed with it for treating at the same time insect enemies. One of the most important discoveries that has been made is that lime if mixed with Paris green neutralizes its injurious effects on foliage, so that in all mixtures where Paris green is used it is advisable to add an equal weight of fresh or quick-lime to the Paris green. This has the effect of neutralizing its caustic effects and does not take away its toxic qualities. Bordeaux mixture, consisting of sulphate of copper and lime, is now very generally used for potato rot, which I shall speak of presently. It certainly has some insecticidal qualities but it is not strong enough alone for many insects. It also has a preventive effect in some way we cannot understand. Where Paris green is used on egg-plants for the potato bug, it is not strong enough to prevent the beetles from eating the egg-plants, which curiously they are fonder of than they are of the potato plant itself; but Bordeaux mixture will keep them off. Through its use we grew egg-plants last year where in previous years we had failed. However, for insects which attack fruit trees, Bordeaux mixture is not strong enough to use as an insecticide without Paris green; but the two can be mixed and used together.

Q. Our farmers were instructed to use four pounds of the sulphate of copper to a barrel of water and four pounds of lime mixed with it for the second application?—A. What was that for; for fruit trees?

Q. Yes.—A. That is Mr. Craig's recommendation. The results of my experiments have been much more successful with six pounds of sulphate of copper and four pounds of lime to the 45 gallons of water.

Q. And when is it to be applied?—A. You can put it on at any time when the trees have foliage. The first application Mr. Craig advises to be done with sulphate of copper alone before the leaves expand.

Q. Would you advise it at first?—A. In spraying apple trees, if the bud moth is noticed on the trees, Paris green can be put in the first spraying. That is an insect which when it does occur is frequently very troublesome, but it does not occur regularly every season. In fact, luckily, it can be described as rather intermittent in its occurrence, but when it is present, Paris green may be put in the first application the same as in the following ones.

Q. Is there likely to be any danger for the bees?—A. Yes, if the trees are in flower. There is no danger while they are fruiting, but there is while they are in flower. The bees visit the flowers of fruit trees for the nectar, and then there is a likelihood of their being poisoned. This fact has been distinctly proved by Prof. Webster of Ohio. He made a careful examination and analyses of bees that had been gathering nectar from sprayed trees and had subsequently died. The result of his examination was that he found in the bodies of the bees undoubted traces of arsenic derived from the Paris green which they had imbibed with the nectar from the flowers.

By Mr. Semple :

Q. What quantity of Paris green would you apply to an acre of potatoes?—A. The quantity applied to an acre would depend altogether on the amount of the foliage to be treated and this would vary in different soils and according to the width of the rows apart. Now that lime is known to neutralize the caustic effects of Paris green the standard application would be one pound of each in 200 gallons of water. That strength can be applied safely on all foliage that we have as yet tried it on.

By Mr. Smith (Ontario) :

Q. Will that mixture kill the potato bug?—A. Yes.

By Mr. Macdonald (P.E.I.) :

Q. Do you refer to unslaked lime or slaked lime?—A. I allude to fresh lime. If slaked lime is used, it will require more. If it has been a long time slaked, it will have no effect at all, as it will have changed into chalk.

By Mr. McGregor :

Q. Do you experience much trouble in the clogging of the spraying pump?—A. Not if care is taken to strain the lime waste. The results obtained are so very marked that the little extra trouble necessary in getting the lime thoroughly strained is small compared with the trouble which otherwise we should have in the pump being stopped up all the time. We therefore strain the lime carefully; there is no trouble in doing this through a sack. By a slight agitation of the liquid in the strainer we get all the lime through that is necessary. In the amount of four pounds of lime to the six pounds of copper sulphate to which I have alluded there is really an excess of lime over what is required, and in making the Bordeaux mixture it is not necessary to bother with the sediment which will not slake.

By Mr. Featherston :

Q. If you take the water out of the stream would it not be necessary to strain that also?—A. Undoubtedly. As you have only a small orifice in the nozzle, so as to obtain the finest possible spray to cover the surface of the foliage, the mixture to be sprayed must be free from all rubbish, as leaves, chips, etc.

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By Mr. Pridham :

Q. Can you get those nozzles anywhere?—A. Yes. The leading seedsmen in Canada now keep them in stock, or they will get them for you in a very few days.

By the Chairman :

Q. Is there any pump which forces air to the bottom of the barrel and keeps the mixture agitated all the time and of a uniform strength?—A. Many pumps have been devised in which there is a special apparatus called the "agitator," but in my experience none of them gives perfect satisfaction. Although they succeed in keeping the mixture agitated to a certain extent, they cannot be relied on. The best is a mechanical agitator which operates every time the handle of the pump is worked. These agitators usually consist of an extra tube which forces air or water to the bottom of the barrel, but owing to the heavy nature of Paris green they only act where the pipe discharges. The result is that the poison collects into edges of the barrels and it is difficult to get it mixed. If you keep it stirred with a stick, it helps it somewhat. The motion of the cart as it goes along also shakes it to a certain extent, but after it has been filled three or four times, it is best to empty out the barrel because a quantity of Paris green has sunk to the bottom every time the barrel was filled, and if allowed to accumulate, there is danger that it will burn your plants.

By Mr. Featherston :

Q. If you had a vessel sufficiently large could you not use the clear lime water from the top without any danger to the trees?—A. Only a small quantity of lime actually dissolves in these mixtures; the most part of it is in suspension in the same way as the Paris green. The lime water is not strong enough, but after stirring up the lime wash you might dip from the top where the finer particles would be, for the heavier ones would sink to the bottom quickly and would not then get into the mixture, but under the circumstances it is best, I believe, always to strain the lime wash.

By Mr. McGregor :

Q. You have given us four pounds of lime to six pounds of copper sulphate. Now, how much Paris green would you use to the barrel, and what is the easiest way to apply it?—A. About a quarter of a pound. The potato, however, which is much treated with Paris green for the Colorado beetle will stand a good deal severer treatment than other plants or trees. For instance, the peach tree is very sensitive indeed to injury from Paris green. It was almost impossible to use Paris green of sufficient strength to destroy insects on peach trees without injuring the foliage, until it was found out that by the admixture of lime with the Paris green this injury could be avoided. The easiest way to apply it to potatoes is with a spray pump. Although Paris green is a very deadly poison, it must be remembered that it is slow acting. You might put it on the foliage of potatoes one morning, and the next morning see very little result. Apparently the plants are covered with the beetles; the second day, however, they will be very much reduced, and the next day they will be gone altogether.

By Mr. Featherston :

Q. The trouble would be if there were a rain in the meantime?—A. Yes, if there were a heavy rain it would wash off a quantity, certainly. The most extensive use we have put these mixtures of Paris green to, are for the Codling Moth of the apple and the Plum Curculio of the plum. If rain falls, the treatment should be repeated after a day or two, but in good weather it would not require to be applied oftener than once a fortnight.

Reverting to the subject of the potato rot and the treatment of the different diseases of potatoes, it was thought advisable by the Director to have published for the information of the farmers during the last summer what we call an "Experimental

Farm Note." I may explain that we have two classes of publications at the Experimental Farm; those for immediate use at some crisis or time of urgent demand, which we call, "Experimental Farm Notes." These are a smaller publication than the usual bulletin, which is the other class of publications we issue. It was found necessary last summer to get out one of these notes with regard to the potato blights. It referred especially to the two blights of the potato which are most injurious. The first is the Early blight, which strikes the potato about the first of July, but is not always injurious. Three years ago this early blight was, however, very injurious; the next year it hardly occurred at all. The worst disease of the potato is that which occurs every year and is known as the Potato Rot, or the Irish blight as it is sometimes called. This is the most serious enemy which the potato crop has. The Bordeaux mixture, when applied to the growing potato plant, has shown such remarkable results, that it was considered most advisable to publish a bulletin urging that this remedy be applied for the potato rot with instructions as to the most efficacious manner of treatment. The results reported to me are of a most satisfactory nature. The history of the Potato Blight is simply this: It passes through the winter in the potatoes which are used for seed the next spring, and when these are sown for seed the disease may develop in a very virulent form. I have a specimen here that shows the potato thoroughly rotten. A character of fungi is this, that they may develop and keep on increasing enormously, or they may reach a stage where the conditions of the weather may stop the development and then they have the power of remaining dormant for a long season. I have here two specimens showing these methods of development. This is a potato which shows only a slight discoloration beneath the skin; while this other one is thoroughly rotten. In the field from which this latter one was taken, a large quantity of the crop was so rotten that it was not carted from the field at all. As a result, next year, infection will come from the crop left rotting there. Then, I have here another one which was picked from a bushel of seed potatoes represented as exceptionally good. On examining these potatoes casually, there is no very great appearance, from the outside, of the existence of disease. It is difficult often to discover disease by merely examining the outside of the potato; for this reason, it is, I think, advantageous to use large potatoes for seed and cut them up before sowing. In this way there will be a better opportunity of detecting the disease. The favourite practice is to use moderately sized, but whole, tubers. In cutting up the larger ones, you get two or three eyes and sufficient starch to make a good plant, and in addition you see whether the potato is diseased or not. By spraying the foliage of the potato plant from about the first of August, and afterwards at intervals of ten days or a fortnight, that is with three or four sprayings at the most, the results are very satisfactory. A good crop of tubers is secured, and the cost of the treatment is so small that no one should hesitate about using it for the purpose of saving his crops. In my experience, everyone who has tried it has found the results quite satisfactory. In England and Ireland, however, the results have not been quite so good. There the conditions of the climate are much more advantageous to the disease, and the results, although satisfactory in the long run, are not so wonderful as they have been in this country. The treatment of the potato crop in the Dominion has been so beneficial that everyone ought to adopt it for his own sake and to get rid of the disease which at the present time is destroying a large proportion of the potato crop of the country. In some districts the rot was so bad last year, particularly in the Lower Provinces, that there was practically no crop at all. This should not be. There is no necessity for this very great loss, and those who have tried the remedy carefully have got such good results that they say they will never give it up again.

By Mr. McGregor :

Q. Would the disease in the Lower Provinces result from the manures taken from the sea shore?—A. I think not. It is the same in other parts of Canada.

By Mr. Roome :

Q. Do you think the disease comes from planting seed that is diseased?—A. Undoubtedly. It is exactly the same as a disease like typhoid fever or any other fever.

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It comes from a definite germ. Conditions of wet soil and climate will permit it to increase, but its origin is a germ of a definite nature, which passes the winter in the tubers. I brought these potatoes with me to-day to show how essential it is that the farmer should use sound potatoes when sowing his seed, and to illustrate some of the forms the disease presents.

By Mr. Semple :

Q. I suppose the condition of the season has much to do with the condition of the crop?—A. Very much indeed. There may be indications of a serious infestation at the time the rust stage appears on the foliage, and then the crop may be saved by favourable weather. The spores germinate and the parasite grows up through the tissues of the potato, and about the first of August the new crop of spores appears under the leaves as a hardly-perceptible grey mould. The spores are given off and either carried by the wind to adjoining plants or washed by the rain into the ground. If you get a dry August, these will not be washed into the soil at all. If they are carried into the ground, the rot will follow. If they are blown to the foliage of adjacent plants, they will produce the mere rust which is a summer form of the same disease. A field of potatoes may be badly infested by the rust on the leaves, and yet you may possibly get a tolerably good crop from it. Again, you may have some of the foliage rusted, and, wet weather following, the whole of the crop will be destroyed. I once saw a particular instance of this where a fine crop of potatoes disappeared in three days. The tubers were all destroyed, because the spores were washed into the ground by heavy rains. There was nothing left that could be carted away. Again, on the other hand, four years ago, we had very wet weather late in the season and some of our potatoes were actually under water for about a week, and yet we had very little potato rot. Now, it is probable that these spores had more moisture than they required, and on that lower ground, where we expected there would not be a single potato dug, we had better results than on the higher ground where there was not so much moisture.

By Mr. Featherston :

Q. Have you any experience with the turnip louse?—A. Yes, it is one of the aphides or plant lice. The only remedy is to treat it promptly when it first shows itself. It appears when the turnips are large enough to be thinned out. They always begin in small colonies, and these colonies can be treated by spraying with kerosene emulsion, which is a mixture of coal oil and soapsuds, or the affected plants can be pulled out. One year I saw a whole field entirely destroyed by these aphides. Some four or five years ago on the Experimental Farm we were troubled with them, but we had the affected spots attended to and they did not spread any further. Another field, however, close by, left untreated, was seriously injured.

By Mr. McGregor :

Q. How much coal oil do you use to the barrel?—A. The mixture is made with an emulsion of coal oil and soapsuds in this way: Half a pound of soap is cut up in fine shavings so as to dissolve easily in boiling water. It is then put into a gallon of water and boiled until it is thoroughly dissolved. Then you have a gallon of soapsuds. You pour that into a barrel or tub containing twice the quantity of coal oil, two gallons. This is then churned or beaten up thoroughly for five minutes with a whisk or syringe, or, what is preferable, a spraying pump. You then have an emulsion which is like cream. This may be mixed with ten times its quantity of water before use.

By Mr. Grieve :

Q. Is not that the same as is made use of for horn fly?—A. Yes.

By Mr. Cochrane :

Q. With reference to the use of that liquid for potato rot, what effect will it have to treat the tuber itself?—A. The Bordeaux mixture?

Q. Yes.—A. None.

Q. Do you recommend treating seed before you sow it?—A. You cannot treat it before you sow it. The disease is in the inside of the potato not on the outside. Some experiments have been conducted with a view of getting at it from the outside but it could not be reached.

By Mr. McDonald (Assiniboia) :

Q. Is there any remedy for the yellow worm which attacks the tuber?—A. These are the larvæ of the click beetles or wire worms, which penetrate the potatoes rendering them unsightly and allowing decay to set in. The only remedy which can be used with any success at all is that used in Nova Scotia, where this worm is sometimes very injurious. The plan is when the potatoes are dug to carry them away at once. In that way a very large number are taken into the carts and taken off the field. Of course it is a very partial remedy, and though it can only destroy a small number comparatively, it has been found efficacious. A gentleman of Bridgetown, Nova Scotia, Mr. William Miller, a very successful farmer there, told me he had entirely cleared out his land from this worm in this way. It means simply for two men to work together, one to dig and another to carry, so as to clear the rows as soon as they are dug. It seems a very simple and only a partial remedy ; but, as I have stated, it has been found effective.

By Mr. Featherston :

Q. Are not these worms generally found in land that has been in sod for a long time?—A. I think they are. Most of the insects that attack our crops are the insects which in nature attack some other wild plant, and in sod you have several kinds of grass and other plants as well, so that all the insects which attack these will be found there in the land, after ploughing in sod, but at the same time wire worms attack certain lands year after year. There is a Mr. Caldwell living within a few miles of Ottawa who has a field on which, he says, he can only grow barley, owing to the wire-worms, but when he grows barley or rye on it, that is not injured. I am trying experiments to see whether that crop is always exempt, and if it is exempt whether it cleans the land of wire worms so as to allow it to be used after a time for other crops.

By Mr. Featherston :

Q. Is there any other remedy that can be used?—A. Several have been tried without good results. There was a careful series of experiments conducted at Cornell University and it was decided that the only remedy which gave any degree of success was ploughing the land late in the fall, so as to expose it to the winter frost and destroy the insects after they had gone into winter quarters.

By Mr. McMillan :

Q. What effect would it have to spread slaked lime over potatoes after they were dug?—A. It would have the effect of drying the potatoes and preventing to a certain extent the spread of the disease in the tubers, but it does not cure it because it has at that time penetrated the tissues, and although the wet-rot is checked the disease is still there and shows as a discoloration just under the skin, as in these specimens on the table.

Another disease which is very injurious to potatoes and is seldom taken notice of is the Scab. This again is a definite disease which comes from infested seed, and, although you may get apparently clean seed, if it has been kept in boxes or bags where scabby potatoes have been it is probable it will have the germs of the disease upon it. This fact has caused some confusion, as where it has been thought that clean potatoes had been sown and a scabby crop was reaped ; but "the Scab" is certainly a definite disease and can be controlled. In our *Spraying Calendar* we have at the bottom here, under the heading Potato—"Scab, rot and insects." Then for the scab the remedy

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recommended is two ounces of corrosive sublimate dissolved in sixteen gallons of water. This makes a solution which will destroy the spores, so that the disease may be prevented if the seed potatoes are soaked in the mixture for a day and a half. It is not a very strong solution; but the material is a very powerful disinfectant. It does not injure the seed at all and this requires to be soaked for a long time to destroy the fungus and its spores. I made some experiments with plain sulphate of copper solution and found that the eyes were apt to be injured, but there was a decided advantage from this treatment also. But by the method I now recommend, the seed is not injured and the disease is checked.

By Mr. Pridham :

Q. Some people are of opinion that a certain class of manure causes scab?—A. The term scab covers a whole class of diseases, in its general acceptation, but I have used it today with reference to the disease shown on the specimens on the table, which is due to a fungus known as *cospora scabici*.

Certain manures undoubtedly do produce roughness of the skin, but not so deep-seated as shown in the one which I hold in my hand. Naturally it makes a potato unsightly, but it does not penetrate the body and does not occasion what in aggravated cases turn out to be deep pits in the tuber. I had some potatoes sent to me lately which were full of deep pits in the body and which only showed on the outside a very small hole. I have a sample here of one of the most serious forms; it is an instance of the "deep scab" and this could have been prevented by corrosive sublimate treatment.

By Mr. McDonald (P.E.I.) :

Q. With us, the use of river mud or lime will produce the scab?—A. Undoubtedly lime has that effect.

By Mr. Roome :

Q. How does lime produce that?—A. I do not think that that has been decided. The matter has been very carefully investigated by the Rhode Island, Connecticut and Massachusetts stations, and they find that lime undoubtedly produces surface scab.

By the Chairman :

Q. Would ashes produce it, if put on freely?—A. I think so, but do not know to what extent. Ashes contain a great deal of lime. One ton of air slaked lime contains twice as much lime as a ton of wood ashes.

By Mr. McGregor :

Q. I would ask you to tell us something about the clovers. How can we save red clover? It is going out with us?—A. Do you mean to save the seed?

Q. No, to save the plant. In my part of the country some insect is troubling it?—A. It is probably the root borer. The root borer of the clover is an insect which has not occurred widely in Canada, up to the present. In one of my previous reports I have referred to it. You will see it mentioned on page 200 of the 1891 Experimental Farm Report. The illustration which you see there is, of course, very much magnified. The clover plant is attacked seriously by three insects. Probably the most serious is the clover seed midge which destroys the seed, and which could be controlled in the clover seed districts by cutting or feeding off the first crop before the 20th June. In that way you remove the whole of the grubs of the first brood in the flowers, but if these are left on the field they fall to the ground and produce the second brood which appears at the same time as the flowers of the second crop. If, then, you cut the first crop before the 20th June, the insects are carried away with it. They are then so small that they do not affect the hay as food. Where this practice is followed the second crop is generally clear of the midge. Then there is the Punctured Clover Weevil, which is much larger,

but not nearly so injurious as the midge. It is sometimes injurious in some localities by eating the leaves of the clover. It is a curious fact that this weevil is, in Canada, being kept thoroughly in check by a fungous parasite peculiar to it. The weevil has never occurred in Canada seriously two years running. The first year it occurs and seems to have uninterrupted liberty. The second year, however, a fungous disease attacks it before the weevil comes to maturity. Another pest is that to which I referred a few minutes ago and which is treated of in my 1891 report, the Clover Root Borer. The most useful remedy for that is to plough up the clover after the first cutting.

By Mr. McMillan :

Q. We have found it the best practice to put the cattle on in June and then take them off. In that way the borer is tramped out.—A. Undoubtedly the cattle tramping the land would have that effect to a large extent, but the most good comes from the larvae never being allowed to mature.

By the Chairman :

Q. Would it do to roll the land ?—A. That would not be very effective. Many of the insects would be beneath the surface and it would be almost impossible to injure them.

By Mr. McGregor :

Q. What is the general opinion as to the best class of clover ?—A. They are all good for different purposes. We find the perennial clover, or cow grass or mammoth clover to be very good. It comes into bloom too late for the midge to affect it. The common red clover is considered a more valuable crop for most purposes, and it is that with which Canada has kept up her reputation for producing the best clover seed.

By Mr. Featherston :

Q. In my county (Peel) something is attacking the Alsike clover and destroying the seed ?—A. The whole head ?

Q. Yes.—A. I think that is probably the clover weevil I spoke of.

Q. For the last two years they have grown Alsike for dyeing purposes and have exported it for that ?—A. I did not know that it was grown extensively in Canada for that purpose. There is one other plant, while I am on the subject of fodders, to which I might allude. It has been written about a great deal, and we have received many inquiries concerning its nature. For that reason I brought a sample with me to-day to show the committee. It is a member of the Dock or Knot weed family and is called Sacaline. Remarkable advertisements have appeared in the seed catalogue and in the newspapers as to the value of this plant as a fodder. These advertisements, I think, are rather exaggerated. The plant has been particularly strongly recommended for the North-west and for dry lands. I am not prepared to say that it will not suit there, but I think the evidence is against it. The island of Saghalien, where it is indigenous, is almost an arctic island lying to the north of Japan, and off the coast of Siberia. This island has a particularly wet and cold climate, the mean temperature being only about 40 degrees. It has a large area, being equal to Holland and Belgium combined. The island is long and narrow and extends up the coast of the mainland. The climate being wet and cool, it is unlikely that a plant native to that island and there growing along rivers would do well in our North-west. I call attention to this now, because I noticed that the plants were badly nipped by the frost the other day at the Experimental Farm. It has not been grown extensively as yet and it might be well for anyone wishing to experiment with this plant to try only a small quantity at first. If we could add to the fodder plants of the North-west nothing would please me better, but from my observations so far, I have come to the conclusion that we have not found a valuable addition in Sacaline.

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By Mr. Roome :

Q. Would it not be too stalky for food?—A. No, I think not. It grows over ten feet high, and has a succulent soft stem.

By Mr Bain (Wentworth) :

Q. Is it an annual?—A. No, a perennial. In low lying lands it extends very much by the roots. In Germany, Switzerland and Russia it has been tried, and all the reports are rather adverse to it.

Q. Is it like the Canada thistle ; staying when it once gets here?—A. I suppose it would be rather persistent.

By Mr Pridham :

Q. Is it for feeding or cutting?—A. It is grown either for feeding green, or for cutting for hay.

By Mr. McDonald (Assiniboia) :

Q. Do animals like it?—A. It is reported that animals will eat it when they are short of other things. There are many waste lands and fields which might be utilized for the growing of this plant if it proves to be of value. On a previous occasion I drew the attention of the committee to the Awnless or Austrian Brome grass, which produces an enormous quantity of hay or green fodder of good quality. I recommend it to be grown in corners of fields and odd corners of land which it would not be possible to utilize in other ways than pasture. I recommend it for some parts of the eastern townships, where they have a grand climate for grasses but where the land is rather hilly and rocky. This grass would therefore be specially useful there, or in similar districts.

By Mr. Bain (Wentworth) :

Q. Is it permanent?—A. Yes, extremely so, and in land used for alternate husbandry this will certainly be considered a defect.

By Mr. McGregor :

Q. What is your experience of alfalfa?—A. We have been very successful with alfalfa. The frost the other day nipped some of our clovers, but I noticed that the alfalfa was not so badly injured as some others. We must not, however, be misled by this instance, as possibly the situation may have had something to do with its immunity from frost.

By Mr. Featherston :

Q. It was likely not exposed like the others?—A. Yes, the exposure is exactly the same for all. I have two crops of alfalfa at the farm. They were sown five years ago and give us yearly a splendid cutting of hay. Where this clover will grow at all it is an extremely valuable variety. It has given us excellent results, and should be tried by everybody.

By Mr. McGregor :

Q. Will you give us a good pasture mixture?—A. The one that I mentioned last year has shown up splendidly in our comparative tests. If any members of the committee will visit the farm shortly, I am sure they will be interested in looking at the plots in which the mixtures for hay and pasture are grown. The mixture named has certainly a fine appearance this spring. It consists of six pounds of timothy, four pounds of meadow fescue, two pounds of orchard grass, and one of Kentucky blue

grass. In wet land there may be added to that one pound of red top. Then to the foregoing you require 2 pounds each of the four clovers, common red, white, alsike and alfalfa, making 22 pounds of seed to the acre.

By Mr. Featherston :

Q. Is that considered a good pasture mixture?—A. Yes. It gives a good crop of hay for two or three years, and may then be used for pasture. Timothy is not considered a pasture grass, but the others are all excellent for that purpose. Alsike will last for three or four years, but the common red clover will for the most part be gone by the third year. This variety only lasts two years, but the mammoth red clover will last about three years and sometimes four. In suitable soils the alsike will last longer than four years.

WEEDS.

There is one other subject which I would like to speak upon, and that is weeds. Judging from the amount of correspondence which reaches us, I imagine that the weed question is one of the most burning questions for farmers in Canada. We probably had between two and three hundred letters about weeds, last year. The writers send in weeds to be named, and ask for treatment. Owing to the large number of inquiries, I have orders from the Director to prepare a bulletin on weeds, as soon as possible. I think the chief reason why farmers do not get rid of weeds is simply because they do not try. They make up their minds that certain weeds cannot be got rid of, and consequently they do not try, or do so in a half-hearted or even a wrong way. Others perhaps do not recognize the importance and seriousness of getting rid of weeds. There is a very curious instance of that in the Perennial Sow Thistle. That is probably to-day one of the worst weeds we have in Canada, not even excepting the Russian thistle about which so much excitement has been shown in Manitoba.

By Mr. McDowall :

Q. Is the sow thistle the Canada thistle?—A. No. It is really not a thistle at all, it is a soft milky weed with large yellow flower heads like those of the dandelion, borne in a loose cluster of four or five together. It can easily be recognized, because when barley, wheat and oats are in the head the yellow flowers stand up about two inches above the top of the grain. All through Quebec and the maritime provinces into Prince Edward Island this weed has got thoroughly hold of the land. Farmers have not thought much about it, although it is a terrible pest, as bad, indeed, as the Canada thistle, and as hard to get rid of. It is, too, much more abundant now even than the Canada thistle and is causing a great deal of loss. The leaves grow in a flat rosette over the ground and preventing the grain under it from making its appearance. This weed will start in a corner of a field, and the first year makes only a single stem. Then several stems are thrown out from the root, each of which forms at its end a close rosette of leaves which lie flat on the ground. It spreads rapidly and if not checked will soon take possession of a field. In some parts of Quebec the French farmers call it "creves-yeux" because it is so abundant that they have to cover their eyes with a veil when threshing their grain; this being necessary to keep out the down which comes from the seeds. If the nature of this weed is studied it will be found at the time when it throws up its stem it can easily be pulled up, and the rosette at the roots also. It holds to the ground very lightly, so that by careful watching and prompt action much can be done to check its spread and eradicate it. The Canada thistle is known as a bad pest, and quack grass as well, but unfortunately some people have the idea that nothing can be done to get rid of them. Laws are passed requiring that they shall be cut down, but unfortunately not in one parish in a thousand are the proper steps taken to carry the law into effect. I question whether there is any railway in the country which makes a systematic attempt to remove the thistles growing alongside its tracks, although the law provides that they shall. The only

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way to get rid of these dangerous weeds is by calling public attention to them and endeavoring to make known the best methods. Weeds can be removed from every farm without much difficulty if the farmer will only recognize their nature. In my report for 1891, I included an article on weeds in which the following general principles were stated.

Weeds may be divided into the following classes: annuals, biennials and perennials. In eradicating weeds it is all-important to know under which of these heads they come.

Annuals—Are those plants which complete their whole growth in a year. As a rule, they have small fibrous roots and produce a large quantity of seed. Examples of this class are found in Wild Mustard, Penny Cress (called in Manitoba Stink-weed or French-weed), Lamb's Quarters, Wild Buckwheat, Purslane, Ragweed. There are also some annuals which are biennial in habit, that is, of which seeds ripened in the summer produce a certain growth before winter sets in and then complete their development the following spring. Of these may be mentioned Shepherd's Purse, Penny Cress, mentioned above, and Chess.

Biennials—Are those plants which require two seasons to complete their growth, the first being spent in collecting and storing up a supply of nourishment, which is used the second season in producing flowers and seeds. Examples of these are Burdock, Wild Parsnip, Mullein, Evening Primrose and Viper's Bugloss or Blue-weed.

Perennials—Are those plants which continue growing for several years. Perennial weeds are propagated by various methods. The most troublesome are those which extend long shoots beneath the surface of the ground as Sheep's Sorrel, Canada Thistle, Perennial Sow Thistle, Chicory and Couch Grass. Some perennials extend but slowly from the root by means of short stems or offsets, but produce a large quantity of seed. Of these, Ox-eye Daisy, Dandelion, Golden-rod and Perennial Groundsel are examples.

In adopting a method of extermination the nature of the plant to be eradicated must first of all be taken into consideration. Any method by which the germination of the seed in the soil is hastened and then the young plants are destroyed before they produce fresh seed, will clean land infested by annual weeds. The seeds of some annuals have very great vitality, and will continue appearing for several years as fresh seeds are brought to the surface. Wild Mustard and Wild Oats have been known to germinate after lying deep in the ground for twenty years. Biennials must either be ploughed up off or cut off previous to flowering. Where ploughing is impracticable they should be cut below the crown of the root. For this purpose a large chisel in the end of a long handle (to obviate the necessity of stooping) is as convenient a tool as can be used. Perennials are by far the most troublesome of all weeds and require very thorough treatment, and in some instances the cultivation of special crops, to ensure their eradication. Imperfect treatment, such as a single ploughing, frequently does more harm than good, by breaking up the underground stems and stimulating growth.

There is no weed known which cannot be eradicated by constant attention, if only the nature of its growth be understood. Farmers should be constantly on the alert to prevent new weeds from becoming established on their farms. There are some general rules which all should remember:—1. Weeds do great harm by robbing the soil of the plant-food intended for the crop. 2. They crowd out and take the place of more useful plants. 3. They cause great loss of time to eradicate, and frequently compel the farmer to change the best rotation of his crops, and perhaps grow crops which are not the most advantageous for his farm. 4. *Weeds of all kinds can be eradicated* by constant attention along the following lines: (i.) Never allow them to seed; (ii.) Cultivate frequently early in the season, so as to destroy seedlings while of weak growth; (iii.) For perennial weeds, the only means of destroying them is to prevent them from forming leaves and storing up nourishment in their roots.

The most difficult class of weeds to fight is, of course, the perennials. These require constant attention. I am glad to know there are some farmers who do pay attention to weeds and make efforts to clear their land of them. But I think it must be conceded, that any person going through Canada with his eyes open will see that the proper amount of attention is not paid to this question which there should be. You will find

that one farmer has done his utmost to keep his farm clean and you will say he is a good farmer because he has kept down the weeds, and this fact alone is the best evidence in most people's opinion. Sometimes, however, a neighbour is careless about the matter, and the one who takes a real interest in his farm and works hard, has his labour increased simply because of the carelessness of the farmer whose property adjoins his. Weeds certainly occasion great loss and they are one of the worst enemies farmers have to fight. It is essential, therefore, that they should be imbued with the idea that with a little labour they can be kept down and not think that the case is hopeless.

By Mr. McMillan :

Q. How would it do to hoe the sow thistle?—A. Hoeing would certainly tend to get rid of it, but the root runs deep under ground, and, if the earth is well hoed and care is taken, you will prevent the weed from breathing and feeding by destroying the leaves, and hence it will die.

Q. I was on a farm this year where the farmer was seeding down on it with grain.—A. It would be hard to hoe it down under those circumstances. Pulling up the thistle would perhaps be the easier method.

By Mr McGregor :

Q. How would it do to summer fallow the land?—A. That would do, but you would lose the value of your land for the season.

By Mr. Macdowall :

Q. In the Prince Albert District we have been trying to get rid of the dandelion, It grows very rapidly there. In ten days it comes to maturity. Would the thistle grow the same way?—A. Ten days for the growth of the dandelion is very rapid. You must have very rich land.

By Mr. McGregor :

Q. Some fields are very much troubled with mustard. Is there any way of getting rid of it other than by pulling it?—A. It is an annual, and pulling it is the only remedy when it is among crops. Mustard and some other seeds have great tenacity of life and can germinate for many years—the mustard certainly for twenty years. Every time fresh seeds are brought up to the surface of the land and obtain the necessary heat and air, they germinate. The only remedy, therefore, in land infested with mustard is to pull it. Directly the crop is off, there are sure to be seeds near the surface of the ground. These should be started by harrowing and the land may be harrowed at short intervals, when many will germinate, and every one that is started is destroyed by the next harrowing.

By Mr. McDonald (Assiniboia) :

Q. How do you treat quack grass?—A. The chief thing to remember about quack grass is that it does not grow deep into the soil. It is therefore necessary to plough lightly.

Q. Do you plough in the spring?—A. Every time you can get at your land. When we first went to the Experimental Farm we had quack grass growing there very thickly in one field, and it took us three years to get rid of it. Every time we got a chance we ploughed lightly or cultivated in order to bring the underground stems to the surface. The land was kept in hoed crops for three years. Quack gives a heavy crop of hay for a couple of years, but of course it cannot be recommended on any account as a crop to be grown.

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By Mr. Featherston :

Q. Light ploughing in the fall is good.—A. Yes, I think the chief thing to remember about quack grass is that it does not grow deep into the soil.

I have here the celebrated Russian thistle which was introduced into Manitoba from the Dakotas. It is a very pernicious weed, undoubtedly, but the Manitoba Government have taken such vigorous steps to have it eradicated that I am in hopes we shall not have as much trouble with it in our country as they have had in the Dakotas. This specimen is not thoroughly matured ; it has not the sharp thorns which older plants show. One of its chief injuries is to horses. It is said to be quite impossible for horses to work in fields infested with the Russian thistle, as it pricks their legs, when the wounds fester and become very painful.

Q. That is when the weed is at its matured growth?—A. Yes, the spikes are then hard and sharp. The matured plant grows in a round bush about four feet high and four feet through. It is one of the tumble weeds which in autumn and winter are blown everywhere by the wind.

By Mr. McNeill :

Q. With regard to the spraying of fruit trees for fungous diseases, is a strong solution early in the season of benefit?—A. Our chief aim has been to obtain remedies of a preventive nature. For instance, the principal disease of the apple is the black spot. That pest rests on the twigs and boughs of the trees during the winter. If we spray the trees early in the spring before the foliage makes its appearance there is great immunity from this disease, but of course none of these remedies are absolute preventives.

Q. You can use a stronger solution in the winter than in the summer?—A. Yes. You can use one pound of sulphate of copper to twenty-five gallons of water. This salt dissolves freely and is a powerful destroyer of fungous growths. You will find full particulars set forth in bulletin 23 to which I have referred and in the reports of Mr. Craig, the horticulturist.

Having examined the preceding transcript of my evidence, I find it correct.

JAMES FLETCHER,

Entomologist and Botanist to the Dominion Experimental Farms.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 46.

WEDNESDAY, May 29th, 1895.

The Select Standing Committee on Agriculture and Colonization met this day at 10 a.m., Mr. Sproule, Chairman, presiding.

Mr. A. G. GILBERT, manager of the poultry department at the Experimental Farm, was in attendance by request, and, being called, addressed the committee as follows:—

Mr. Chairman and Gentlemen of the Committee,—First let me express the pleasure that I have in meeting you again, and next let me ask your kind consideration of some facts which I wish to lay before you in regard to the importance of the poultry interests of the country. I wish to lay these facts before you because, last year, the copies of my evidence before the Committee were eagerly sought for when published, notwithstanding the fact that many thousands of our farm report containing my annual report had been circulated and a special bulletin on “poultry and eggs” had been gotten out by instructions of the Minister of Agriculture,—all going to show increased interest in poultry matters. I, therefore, ask you to allow me to make certain statements in regard to the poultry interests.

SPECIAL VALUE ATTACHED TO POULTRY RAISING.

I wish first to ask and answer the question “Why poultry should enlist the interest of the farmer?” Two years ago I stated while making a similar statement that I did not intend, in so doing, to depreciate any other department of agricultural work. Nor do I wish to do so now, although I still think that poultry has peculiar claims on the sympathy and interest of the farmers that no other branch of agriculture has. Take for instance small fruits. It will be three years from time of investment before profitable returns can be had. You may say the same of a heifer. From time of birth it will be three years before she will give milk in paying quantity. It will be seven or ten years before an apple orchard will give profitable returns, and it will take half or a whole generation for forest trees to mature. But with poultry, in three weeks from time of setting the eggs you have chickens. In four or five months you have cockerels ready for market and in six months you have pullets which will be laying eggs of greater or lesser value according to a close or distant market.

There are other considerations which make poultry a profitable investment. Much of their food may be composed of stuff that would be otherwise wasted or thrown away and by this means it can be turned into manure and be made valuable. Besides it is an occupation in which the farmer's wife or daughter may engage and leave the farmer to apply himself to other departments. It may be pursued with the greatest profit in the winter when the farmer has most time to spare. While it can be made with capital and suitable buildings a special business, it can be a valuable adjunct to the ordinary farm, at little cost.

Then again there are certain kinds of farming which can only be successfully prosecuted in certain parts of the country. For instance, it is true of fruit. Peaches, apples, plums, &c., &c., can only be grown in certain sections where the climatic conditions are favourable. The same may be said of certain cereals. It is not so with poultry, which can be cultivated with success everywhere. Lately we have heard that a great deal of damage has been done to the fruit crop in many portions of the country by frost, but I have yet to learn that the chicken crop has been so affected anywhere. “Poultry are equally at home,”—says a well-known writer on poultry matters—“in the palace or in the humble abode of the cottager.” You will see from these facts that poultry should certainly enlist the sympathy and attention of the farmers.

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POULTRY RAISING AS AN ADJUNCT TO GENERAL FARMING.

Now, why should poultry secure your warm support and interest? As practical men representing many different sections of the country—indeed I may say all sections of the country—I ask your particular attention to the statement that we have in Canada 630,000 farmers. I ask you if each one of these were to make only \$50 per annum profit out of his poultry (which he can do with what is comparative waste), what an enormous amount it would represent in the aggregate! We have heard a great deal about the agricultural wealth of France. The French farmer, we are told, farms a small holding, as a rule, and may make little, but that little is profit and in the aggregate the amount is an enormous one. So it would be with our farmers if they would direct their attention to the poultry department and make it pay, but if a little. As I said before, I do not wish in any way to run down any other department of farm work, in advocating my own.

The next consideration of importance for a farmer in relation to poultry keeping is what price shall I get for my eggs? I have here some letters that I got from farmers to whom I had written asking if they could supply me with new laid eggs during the winter of 1894-95. First I wrote to Mr. Duncan Paul, of Lachute, who is a well-known farmer, and I asked him what he would sell so many dozen eggs for in the winter, and he wrote me in reply:—

“LACHUTE, 19th December, 1894.

“Sir,—Your kind favour of the 17th to hand to-day. I am getting 40 cents per dozen for strictly fresh eggs at present, and would not like to promise any to you except on the condition that it would be a permanent business, for it would not do to drop my customers at this season unless I could do better.”

By Mr. Girouard (Two Mountains) :

Q. What is the name of the gentleman who wrote you that letter?—A. Mr. Duncan Paul, of Lachute. His residence is within two or three miles of Lachute.

I also wrote to Mr. Henry Lathe, of Lacolle, in the Eastern Townships, making the same inquiry, and his reply is as follows:—

“LACOLLE, 24th December, 1894.

“Sir,—Your letter of the 17th instant received. We are getting at present an average of five dozen eggs per day, but I would be very loath to change customers. I have shipped continually to Montreal for four years and get from 15 cents per dozen, the lowest summer price, to 45 cents per dozen in winter. I ship to one man. It costs me about 22 cents per 30 dozen crate. Since January, 1894, I have shipped 8,092 dozen eggs, and I expect to send many more.

“HENRY LAKE.”

He also answers incidentally another question as to the profit he makes out of a hen, which subject I may mention later on.

I then wrote to a gentleman in Montebello, and he wrote to say that he could give me no eggs because he sent all his eggs to Montreal at 35 cents per dozen. I next wrote to a gentleman in Montreal. This may be going from the country to the city, but I do so to show you the extraordinary prices that are paid by dealers in a large city, for new laid eggs in winter. The letter is from Mr. M. A. Sutherland, the Assistant Secretary of the Montreal Poultry Association, and he says: “I got 60 cents all winter for my eggs, while people with stoves and hot-water pipes did not do so well.” He did this, I may remark, in passing, without artificial heat. Now, you see from what I have read that large prices are to be had in certain localities for new laid eggs in winter. If there

are any questions you would like to ask me, before I go on to another point, I shall be very glad to answer them. I mention these facts to show the inducement for the farmer to get eggs from his poultry in winter.

By the Chairman :

Q. Do those prices realized apply to eggs for hatching?—A. No. They were sold for eating purposes. Mr. Duncan Paul and Mr. Henry Lathe sold to dealers in Montreal, who afterwards made their profit by selling to customers; but Mr. Sutherland sold directly to customers at 60 cents. I might say that we got 45 cents last January from the Rideau Club in this city, for eggs from the Experimental Farm.

By Mr. Burnham :

Q. Did you write to anybody in the neighbourhood of Toronto, or anywhere else in Ontario?—A. Yes; but I had also been in Ontario attending Farmers' Institute meetings, and I found that in Toronto the price paid for choice eggs was from 30 to 35 cents a dozen. In some parts near London the price was only 20 cents per dozen; but I could not help contrasting the difference in the prices of 20 cents a dozen paid in some places, and 60 cents a dozen obtained in others. I thought if it were possible to get the eggs from the cheaper places to the high price districts, that we would be conferring a favour on the consumer and also on the farmer. At this point I may say that I have been asked at several Farmers' Institute meetings, "What about over-production?" and I have always replied that so long as eggs are selling at 60 cents a dozen at certain points it means that the rich only can buy them as a luxury, and that when new laid eggs are put into the hands of the masses at those points in such quantity that they can be bought at reasonable prices, then, and not till then will I take into consideration the matter of over-production. The same may be said in regard to over-production in butter; so long as the superior article is not found on the table of the masses in the same quantity as the inferior article, so long is there no danger of over-production.

By Mr. Roome :

Q. There is over-production now in the local market. Is it not so in eggs?—A. Only at certain seasons.

Q. Eggs to the extent of from one million to two millions of dollars a year have been shipped out. There must have been over-production then in the local market?—A. The question of markets with your permission I would like to consider later on. I may, however, say at this point that there is our winter home market, to supply which no great attempt has been made.

PROFITS OF WINTER PRODUCTION OF EGGS.

By Mr. Grieve :

Q. What price is now given for eggs?—A. 18 cents for strictly fresh eggs.

Q. That is for table use?—A. Yes; as I said, I did not intend to bring up the subject just here, as I was going to refer to it under the head of the different markets the farmers have for their eggs, and to deal with that phase of the subject you have mentioned.

By Mr. Macdonald (Huron) :

Q. How is it that Montreal people do not take their eggs from the west where they can get fresh eggs at from 8 to 10 cents, and when they are selling in their own city for 18 cents? There is something strange in that?—A. I cannot say. I know when I was in Cornwall attending an Institute meeting, last fall, several members of the poultry association there, stated their intention during the coming winter of

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putting up new laid eggs in small packages and sending them to Montreal to sell at 40 cents a dozen. I don't know whether they carried that intention out or not, but what I read to you from those farmers who made regular shipments, will show you the prices they have been getting. I have always thought there was a great discrepancy in the prices paid at different points. It amounts to this, that in the portions of the country where the winter is mild, prices are low as compared with the prices paid in those sections where severe winter weather prevails.

Next, how can the farmer secure the eggs at a time when they are highest in price? Is it not true that the farmer as a rule does not get eggs in winter, and consequently the high prices that I have mentioned, prevail. New laid eggs in winter are a scarcity and not a matter of every day supply. In this city not long ago we could not buy new laid eggs at all or very seldom, and we paid from 45 to 50 cents per dozen. Before I went to the Experimental Farm to occupy my present position, I sold many dozens of new laid eggs at from 45 to 50 cents, and I have been paid as much as 60 cents a dozen. It was entirely owing to the fact that the farmers in the neighbourhood did not bring in eggs, that such high prices prevailed. They are doing better now, and last winter I was told there was a fair supply of new laid eggs, for which the farmers got a higher, or, a lower price, according to their efforts to obtain customers. If the farmer brought his eggs to the market, without any trouble to get a customer, of course the huckster or the dealer to whom he sold them would push him down to the lowest possible price. If, however, the farmer took the trouble to look out for good customers, with the choice article, he would get the high price. Wherever I have addressed farmers I have impressed that fact upon them. They should try if possible to do without middlemen in the matter of winter eggs, and when they do sell to them make them give a good price. It is certainly to the middleman's interest to push the farmer down to the lowest possible figure. If the farmers would only take a little trouble to secure good customers they would get better prices for choice eggs. I have got, in several cases, good customers, in this city, for farmers in the surrounding country.

By Mr. Grieve :

Q. Would it not follow, if the production of eggs in the winter season were anything like half as great as in the summer season, that the price of eggs would be materially affected?—A. Certainly it would, but would it not also be a benefit to the masses if we could bring down the price of eggs in winter? Sixty cents a dozen make eggs almost prohibitory to the people. There is plenty of profit in eggs at 25 or 30 cents a dozen. Two years ago I submitted a calculation to the committee to the following effect: Suppose we had from a hen a hundred eggs at a cent each, that would be a dollar. Suppose that the hen raised ten chickens worth 10 cents each, that would be another dollar. The body of the hen would be worth 25 cents to sell or to eat: that would be \$2.25. The manure or excreta might be allowed to go for the time occupied in looking after the hen, and it is valuable if properly taken care of. You thus have two dollars and twenty-five cents. The cost of feeding the hen would be no more than a dollar, so that you have a margin of a dollar and twenty-five cents of profit as to the cost of the hen per annum. Mr. Henry Lathe, of Lacolle, a practical farmer, says: "In reply to your question 'what is the cost per head per year?' I would say after repeated tests I am fully satisfied that 95 cents is the maximum cost of the keep of a hen for a year, and if there are waste vegetables and other waste stuff given you could possibly reduce this price to 75 or 80 cents per annum." That is how a farmer calculates. I put down a dollar per annum cost of the hen as being very fair, so that we may say the farmer has a margin of \$1.25. I do not give these figures as my own for I have repeatedly asked the question as to cost per annum wherever I have been, even in localities where the eggs have been selling at a very high price; and it must be remembered that I am taking the statement of farmers, not of specialists, who go into the business as an enterprise, and have special buildings and make special arrangements for the production of eggs.

By Mr. McGregor :

Q. To get this \$1.25 you must have winter eggs for the market. You must not do as the farmer does now?—A. No. Not as he is doing now. At present the farmer

allows his hens to remain non-productive in the winter, to produce eggs when they are at the cheapest price. Everybody's hens are laying in the spring and that is the time when the farmers' hens begin to lay.

By Mr. Macdonald (Huron):

Q. In your calculation, how many eggs do you reckon a hen will lay in a year?—
A. 100 per year.

Q. Besides raising a number of chickens?—A. Besides raising a number of chickens.

Q. At what price per dozen?—A. 12 cents a dozen.

Q. Not for summer eggs?—A. At that figure the price is distributed over the entire year. At certain times in the year eggs are much higher in price than at others.

EXPERIMENTAL WORK IN TREATMENT OF HENS—RESULTS OBTAINED.

By Mr. Burnham:

Q. Would there require to be special treatment for the hens, including special heating or other arrangements?—A. It ought to include accommodation such as a farmer can give his hens.

Q. Would it not include better accommodation to give better production?—A. Certainly it ought, but the farmer would have to calculate as to the accommodation for his poultry as he would for his cattle. I have a new and improved plan for a cheap poultry house with a southerly aspect, that can be attached to a barn.

By Mr. Macdonald (Huron):

Q. What has been your own experience at the Experimental Farm. You keep a number of hens and they produce eggs which have been sold. What is your opinion as to the profit?—A. The profit depends upon the season in which the eggs are produced, but I should say his poultry ought to net \$1 a year profit per head to the farmer.

Q. What do you make at the Experimental Farms?—A. It is hard for us to get at the exact figure, because we have to carry on so many different experiments. Then again, I have to keep over so many old hens for sitters, and so many male birds to sell to the farmers where they want them for breeding. My position is not exactly the same as a farmer's would be. Again, I have to carry on many experiments, all affecting my work, that a farmer would not have to do. Sometimes my failures are as valuable to me as my successes. From the experience which I have had, I have procured facts about the treatment of hens and hen habits which are most valuable. I have a number of fowls in close confinement, and by observing them closely I find out much about them that no one can ascertain unless he is similarly situated. For instance, I have valuable data in regard to the vices of poultry. I have found that such breeds as Andalusians and Black Minorcas or other high strung birds of similar nervous temperament require to be kept actively employed all the winter day, for when idle they are predisposed to pick feathers and eat eggs. It is not so much so with the more phlegmatic Brahmas, Cochins or Langshans. All laying stock requires to be kept active.

That is the sort of experimental work that I have been doing. In the spring time when we are selling eggs at \$1 per setting of 13, I have frequently gathered up six dozen eggs a day, and there is always a greater demand for them than I am able to supply. That is \$6 for the day, but that would not be a fair price to put down for all eggs obtained, or for all the year round, because at the same time I may be only getting 15 cents a dozen for some of the eggs for eating purposes. The high price for eggs, for hatching purposes, only prevails for about 3 months, then I come down to the ordinary position of affairs and go on with my experimental work. It is hardly fair to compare my position at an experimental farm, with fourteen breeds in limited quarters, with the comfortable and happy position which the farmer has with only one breed and

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unlimited range for that breed. He is particularly well situated as regards the obtaining a constant supply of eggs in summer. The keeping of hens in summer does not cost the farmer a great deal.

Q. Would it not be a good thing to try some such experiment as this at the experimental farm : Take, say 100 hens on the farm, keep them in the same condition as the average farmer, without mixing them up with the experimental work, and see what the result would be?—A. That suggestion was made to me some time ago. The difficulty that struck us was in getting the cost of the production of the grain. The waste of the farm is what should be given to the poultry. I get all the waste of the experimental farm which it is possible to obtain, and use it in my department.

By Mr. McMillan :

Q. The experiment suggested would be a very important one for the farmers. I think you could get a flock of hens and experiment with them under the same conditions as the ordinary farmer?—A. That experiment could certainly be carried out, but it would be necessary to go over the year's work to give you the average of cost.

By Mr. Cochrane :

Q. You could keep those hens as the farmer does. You have the waste grain and the waste of the farm and you could utilize this under practically the same conditions as the farmer?—A. I will give the Committee the feed for one day in winter, in order to give an idea of how we feed. In the month of January we fed to our hens, 24 lbs. of wheat for one morning ration. Next day for the same ration we fed, instead of the wheat, 18 lbs. of cut green bone.

By Mr. Grieve :

Q. Do you feed the grain in the raw state?—A. Yes.

By Mr. McGregor :

Q. And the cut green bone the same way?—A. Yes. On the third morning I would vary by giving a warm mash and feeding the cut green bone in the afternoon with a little grain afterwards. The object is to so feed the grain as to keep the hens busy scratching for it in the litter on the floor. It is very essential to success that the farmers realize the importance of keeping the hens busy during the day. There are three factors in winter laying ; cut green bone, plenty of exercise, and green food. When we lessen the supply of one ration we increase that of some other.

By Mr. Roome :

Q. Why not feed the grain and the cut green bone regularly every day?—A. We get better results by varying the rations.

Q. Why?—A. Because the variety we find to be better for the health of the poultry, as well as giving better results.

Q. Why not give the food regularly every day?—A. It may be cheaper in some cases to feed another grain than wheat.

Q. It seems to me that you could well feed them regularly every day, so much bone, so much wheat, and so much soft food?—A. I think it is essential that the food should be varied, and that fact should be impressed on the farmer.

Q. But the farmer cannot vary the food very easily?—A. I urge on the farmer to feed his hens with what he has in the greatest abundance, at the same time affording variety. Sometimes he may find wheat the cheapest feed, at another time some other grain.

By Mr. Cochrane :

Q. Reverting to winter treatment of hens, what other essentials are there than those you have named?—A. Allow me to answer the question in this way. In the

winter treatment of laying hens, you have to feed with material to make the shell, as well as the egg. You require to feed so as to supply phosphate of lime for the shell as well as albumen and phosphoric acid for the egg. Cut green bone supply all these and is considered the cheapest and most perfect food known.

Q. You would not consider it necessary if the hens were running around as farmers' hens are?—A. No, I am not talking of summer treatment, but of feeding hens for eggs in winter when prices are high. In the summer when they are running about and hunting for themselves, they require to be given very little food.

By Mr. Macdonald (Huron):

Q. Your object for feeding the cut green bone is also to supply the shell?—A. Yes.

Q. Would not ordinary lime answer the purpose?—A. Yes, in the form of old mortar, but we have never found anything more satisfactory than the cut green bone as a means of supplying the lime necessary to make the eggshell.

Q. Of course all farmers would not have an opportunity of getting it?—A. Well, they will have to supply material to make the eggshell in some other way. It is as necessary in the case of the hen to furnish egg-shell making material, as it is necessary to give the food required to make milk in the case of the cow.

Q. Would it not be more feasible to give the food that is at the disposal of the farmers generally, then your results would be of more practical use to the farmers?—A. Certainly, if they have not cut bone at hand they can use the best egg-shell making material they have.

By Mr. McNeill:

Q. Do I understand you to say that lime in other forms does not give so satisfactory results as cut bone?—A. That is so. We also give oyster shells with the double object of supplying grit and lime.

Q. And the shells are broken up?—A. Yes.

Q. What is the cost of a machine to cut up green bones?—A. For cutting bones, from \$10 to \$15.

By Mr. Sanborn:

Q. I have found broken crockery a good thing. They will eat any quantity of it?—A. I intended to touch on the necessity of grit, in speaking of the treatment of the hen in winter. There is no doubt that broken crockery is very good, and there are many other things of advantage.

TREATMENT OF FOWLS TO REALIZE PROFITS.

With your kind permission, I will now pass on to speak of the proper treatment of the hen, in order to obtain from her the largest number of eggs. Let me say here that if the farmer will only take proper care of his fowls in winter and, in so doing, use the waste of his farm, also using discretion and judgment in the treatment of his layers, there is no reason why he should not make poultry keeping exceedingly profitable. There are many farmers I have recently met who said they got eggs from their hens in winter who never got them before, and they admit that it has been in consequence of their following out the instructions in the poultry reports sent out from the Central Experimental Farm. The proper keeping of poultry is a subject on which very little information has been given to the farmer in past years, and he is just beginning to take advantage of the knowledge given to him. Up to recent years what the farmer has known about poultry, you may say, has been a sort of traditional knowledge, but lately progress has been made in poultry keeping, as in every other branch of agriculture, and

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to-day it is becoming one of the most important branches of farm work, because the farmer is beginning to see that what has hitherto been a non-productive agent in winter may be made, by proper management, a valuable revenue producer. Formerly the cow was unproductive in winter, but now, under judicious management and treatment, she has been made the means of bringing millions of dollars to the farmers. I want the farmer to do the same with his poultry. I know, from my own experience and from what farmers have told me, that there is no branch of farming in which there is greater profit, but it takes care and it takes trouble and energy to get it. No man can make dairy farming successful without effort and without the expenditure of money. I heard Mr. Fletcher say the other day that it costs \$10, \$15 and \$20 for pumps to spray fruit trees. You have difficulties to contend with in poultry raising, but there is less expense necessary. I may say that less expense is necessary to get a revenue from poultry than from any other department of agriculture. I do not want the farmer to turn all his farm into a poultry yard. I do not want him to go to the expense of putting up special or extravagant buildings, or to lay out much capital. All I say to him is, "Utilize the non-productive fowls you have about your barnyards, instead of keeping them in a half-frozen and non-revenue-producing condition during the winter."

The cow has certainly been the means of bringing many millions of dollars into the hands of the farmers, and, while we appreciate that fact, let me say that few persons realize the enormous value of the poultry interests of our own and other countries. In the *American Agriculturist* (published in New York) of the 15th December of last year the statement is editorially made, that "Great as is the value of the dairy interests of the Eastern States, it is exceeded by that of the poultry interests."

There is another thing in connection with poultry keeping that our farmers do not understand. They do not understand the kind of poultry to keep that is good for both egg-production and market. Our farmers might just as well keep the breeds which lay eggs making seven to a pound, as those which lay small eggs. Farmers require to be educated on this point as they do on points relating to dairy farming. At a recent institute meeting a farmer said to me, "We do not know much about the proper way to keep hens." While attending a meeting at Carp, a neighbouring village, last winter, I was told that a farmer's wife in the neighbourhood had made \$230 by her poultry during the previous year. After a meeting at Clayton—a village in North Lanark—a farmer told me that he had followed the instructions given in my reports and had got eggs all along in the winter, a thing he never did before. He made money out of his hens by reading up how to manage them. Our farmers only need to be educated in the proper management of their poultry to make a profit out of them, and that profit would be so much more wealth to the country at large. If they will only make the effort they will make the profit.

By Mr. Cochran :

Q. What kind of hens would you recommend to produce the best results?—A. I would recommend to the farmer if he wanted a good fowl for general purposes to keep the White Plymouth Rock, the Wyandotte, Langshans, the Bramahs or one of the Javas. I would take the Langshans and the Bramahs in the order named, but we have no fowl to give better results than the Plymouth Rock, as a general all round farmer's fowl.

CROSS BREEDING.

By Mr. Roome :

Q. Do you try crossing breeds?—A. Yes, that is part of our experimental work. I have crossed the Plymouth Rock with the Dorking with most satisfactory results. In crossing you need to have some definite aim in view. I crossed the Plymouth Rock with the Dorking for the reason that the Dorking is full of flesh in the breast and small of bone, and the Plymouth Rock is heavy in flesh in the thighs and legs, but rather lacking in breast development. By crossing the two breeds I got a cockerel last

year that put on a pound and a quarter per month. I do not say the chicken did that in the first month, because in the first month the growth is not so great as it will be in the second, but at the end of four months we had a cockerel showing a development of a pound and a quarter a month, which I thought most satisfactory. Now, just think for a moment what a source of profit it would be to the farmers if they were to do the same, and they can do it if they try. I am not asking anything more from them than energy and intelligence. If farmers would only bring chickens of that weight into the market they would surely get better prices and it would certainly be better for the consumer. As a result of the work of the Experimental Farm it has been noticed that there is a better class of poultry brought into Ottawa. The result of the farmers giving more attention to their poultry.

By Mr. Bain :

Q. Have you tried a second cross of that sort?—A. No, the first cross generally turns out more satisfactory than the second.

Q. You are not trying to establish a new strain?—A. No. I was just trying for a heavy market chicken and one to mature early.

Q. I thought perhaps you were after a new strain which will combine the best of the qualities of both breeds?—A. Very often when you get a market fowl you do not get a good layer. It is hard to get both laying and market qualities combined. It does not follow that by crossing a good layer, but a poor market fowl, with the reverse that you will get the good qualities of both. Very often you lose in one direction what you gain in another. I thought it best to cross to get the market fowl without aiming at establishing a new strain.

Q. Then you are only recommending the cross for chickens?—A. That is all.

Q. I suppose you find their laying qualities deteriorate very often under those circumstances?—A. Very often deteriorate.

By Mr. McNeill :

Q. Was the cross with the Plymouth Rock cock with the Dorking hens or the other way?—A. It was a Plymouth Rock cock with Dorking hens.

Q. Did you try the other cross?—A. No. In crossing the Plymouth Rock male with the Leghorn hen we got as good a layer as the Leghorn, a slightly larger egg than laid by the Plymouth Rock, but not a larger fowl than the Plymouth Rock.

By Mr. Bain :

Q. Did you use a Plymouth Rock cock?—A. Yes.

Q. Did you use a small fowl in both cases?—A. A smaller fowl in the case of the Leghorn. Next year we used the smaller Leghorn cock bird with the larger Plymouth Rock hens, but did not get quite as satisfactory results.

Q. We would expect that?—A. Perhaps. I got as good a layer as the cross the other way, but not as good as a market fowl, and that knocked some preconceived ideas of poultry men on the head. I find a good deal of teaching in the poultry journals purely theoretical. You often hear it said that the offspring take their markings from the cock bird, and their size from the hen. Now, it was not so in the cross I mention, because the female was smaller and the egg was not any larger. In crossing the White Leghorn male with Light Brahma hens the result was similar, the female being smaller than the Brahma hens.

By Mr. Macdonald (Huron) :

Q. Does it interfere with the hens in laying eggs, to remove the male bird from among them? Will they lay as well?—A. They lay better.

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Q. Then do those eggs without the germ keep longer?—A. Yes. Undoubtedly, in my opinion. I have attempted to inform you how to feed a hen ; on what to feed her, and the proper quantity of feed to give. I will now go on to another point of management.

By Mr. Bain :

Q. Just a word before you leave the subject of food. You remember the quantity of wheat you fed to your fowls, but you forgot to mention the number?—A. There were 160. I intended to mention that. I also intended to mention the number of eggs they laid and so on.

By Mr. Rosamond :

Q. Before you proceed, tell me what is the best kind of bone cutter?—A. The Malleable Iron Works, of 19 Mill Street, make an excellent bone cutter at \$15.

By Mr. McNeill :

Q. I did not catch what you said. What is the name of that firm?—A. The Malleable Iron Works, of 19 Mill Street, Montreal, make a bone cutter for \$15. If there was a demand for bone mills they could be made much cheaper.

By Mr. Rosamond :

Q. There is a kind of mill, but it does not stand very long, sold at \$15.—A. I think you will find the mill I mention satisfactory.

By Mr. Semple :

Q. Is it possible to have eggs the whole winter round without having a stove or heating apparatus in the hen house?—A. Yes, I think so.

By Mr. McGregor :

Q. Do you use heat?—A. I have got to use heat in the poultry house at the Experimental Farm on account of the height of the ceilings, but a farmer should require no artificial heat for his poultry house. If you will allow me to state, while I lived on the Richmond Road, where I may say I served my apprenticeship to the poultry business for many years before coming to my present position, I built my houses with my own hands, and I found that a house built with ordinary pine boards—with tar paper on inside and grouted with sawdust—that the drinking water will not freeze in it. Sawdust is the best non-conducting substance that I know of.

By Mr. Rosamond :

Q. How about vermin getting in?—A. Well, the tar paper seemed to have prevented that. There is that objection, I know, but I prefer the sawdust to the air space that is so much in vogue, and perhaps it is just as well. But I do not think there is any necessity for the farmers having artificial heat. You see, too, that Mr. Sutherland says in his letter "that he got the eggs which he sold for 60 cents a dozen last winter without artificial heat, while people with stoves and hot water pipes had no results." I believe that artificial heat is enervating. I would rather be without a stove, if possible, than have one.

By Mr. McNeill :

Q. I would like you to tell me what size hen house would you require for, say, two dozen hens?—A. It is a safe rule to allow 4 feet square to each hen. You can do with no less, and as much more as you like.

Q. Four feet on the floor?—A. Four feet floor space. Now, another very great mistake the farmer makes is in keeping his hens until they are too old ; I was among

many farmers last year, and when I asked them about the age of their hens, they did not know. I found also that farmers who were the most successful were those who had young stock. It is a fact which we have learned from our experiments on the farm that no fowl of the Asiatic family, Brahmas, Langshans or Cochins is of any use to the farmer after $2\frac{1}{2}$ years of age.

By Mr. McMillan :

Q. Just one thing comes in here. I am aware most farmers are ignorant of how to tell the age of a hen. I am ignorant of it myself. Is there any mark by which you can tell the age of a hen?—A. After two years of age you will see a spur beginning to develop, and as the hen grows older, so much longer does this spur get; but it is a very hard thing to tell the difference between a two year old hen and a yearling.

By Mr. McNeill :

Q. You don't say that is an invariable rule, with regard to spurs on hens?—A. No, but you will find in most hens there is a large growth. I have seen them on some hens almost as large as the spur on the cock bird. There is another sign: The older the hen gets the more scaly is the leg.

By Mr. McNeill :

Q. Could not some process of marking be adopted?—A. Yes; there are half a dozen ways of marking. There is the small leg band; the web of the foot can also be punched.

Q. Could you not punch the bill?—A. Yes, but the easiest and best way is to punch a hole in the web of the foot of the fowl.

From what I have already said, the committee understands that the Plymouth Rock is the best general purpose fowl for the Canadian farmer. Closely following that breed comes the Wyandotte and the Java.

AVAILABLE MARKETS FOR EGGS.

Having got the eggs, naturally you ask where will the farmer best dispose of them. We have several markets. There is the winter home market which is not yet by any means fully catered to and with prices varying according to the severity of the season. In Montreal you may get 60 cents a dozen for eggs; in Ottawa 45 cents. The further west you go, the climate is milder and eggs are more easily procured, because the conditions are not so hard to fill, and you have the lower price. Then there is the British market if you choose to cater for that, and there is a summer market for eggs with good flavour, which has not yet been catered to. It may seem strange to say, but I repeat it that there is a good summer market for new laid eggs of good flavour. Can you or I buy eggs, on the market, in summer, and put them before our friends with any sense of security? I have experience in this respect. We bought from four to five dozen of eggs at a time, frequently last summer, and paid 12 cents per dozen for them. Half were bad which made the price 25 cents per dozen, while the remaining half had not the flavour that a new laid egg ought to have. I consider the subject an important one, for it affects us in a very tender spot in our domestic economy, viz.: our stomachs. What is the cause of so many bad eggs being brought to market? Simply because, I believe, the eggs are in the great majority of cases partially hatched before they leave the farmer's hands. There is a farmer in the neighbourhood of New York city who sends thousands of eggs to that city every week, and he says if through carelessness or by accident a broody hen sets on a new laid fertilized egg for twelve hours, the flavour of that egg is completely gone, and I believe him. Risk of any such result may be avoided by the farmer taking 10 or 12 of his best hens and putting them apart for breeding purposes. After he has saved, from these hens, what eggs he wants for hatching chickens, let him

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take away the male bird and sell or kill it. Let him keep the hens in the breeding pen for a week or more until the effect of the male bird is lost, and then let them run at large with the other laying stock with which there has been no male bird. If he adopted such a course, the farmer would have stronger and larger chickens and non fertilized eggs to sell on the market. By no means would I allow the male bird to run with the laying stock.

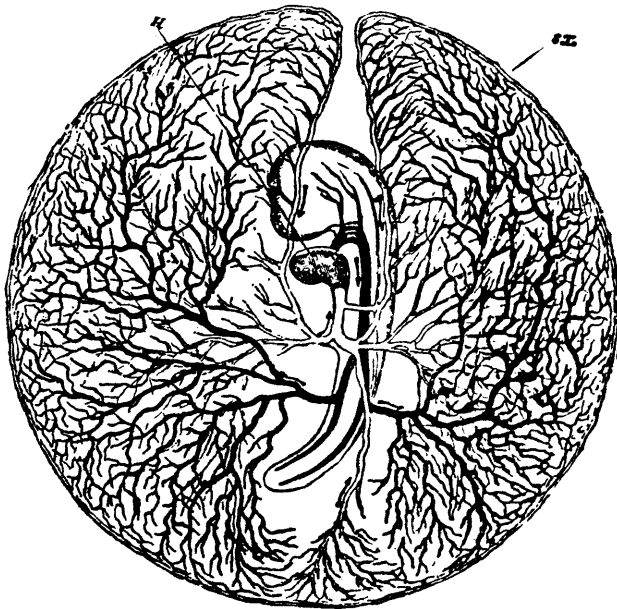
HOW EGGS ARE RENDERED UNFIT FOR MARKET.

Three or four years ago when there was some agitation for cold storage in which to send eggs to the English market I said that was beginning at the wrong end. We must first get the egg with good flavour from the farmer. No subsequent cold storage treatment would make a bad egg good. We must first begin with the farmer and educate him as to the importance of having non-fertilized eggs and the necessity of preserving their good flavour by collecting them frequently and getting them off his hands quickly. He has got to prevent the male birds running promiscuously with the laying stock. Sometimes you will see in the barnyard four or five cock birds with four or five dozen hens. Such should not be allowed where eggs of superior flavour are to be sent to market.

Then the farmer is not careful in collecting the eggs as frequently as they should be. Perhaps he does not send them to market as often as he should. Then again the eggs may have been allowed to remain in the nests in the hen house and hens may have been sitting on them for some days before they are collected to send to market. The result is that when collected to be sent to market the germ has started on its way to become a chicken.

The following is a diagram taken from a treatise on "Incubation and its Natural Laws" by Mr. Chas. A. Cyphers: It is the result of microscopic observation and in his

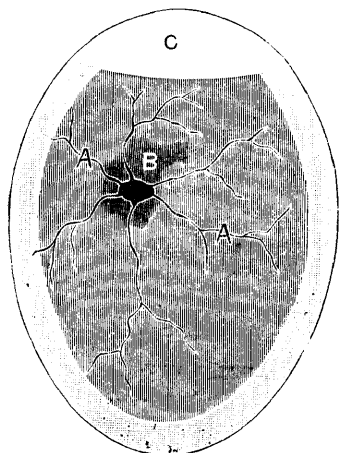
DIAGRAM A.



own words it is a "Diagram of the circulation of the yolk sac at the end of the third day of incubation. The veins are marked in outline and the arteries are black." The diagram is not very large and may not be distinctly visible to all the committee but it

will suffice to show the condition of a fertilized egg at the third day of incubation, a condition in which many eggs are taken to market. When we test the eggs in the incubator at the end of the fifth or sixth day we can see with the naked eye, by means of our test tube, the embryo of the fertile egg quite distinctly. The egg at this period presents the appearance as shown in the illustration, which is that of a strong fertile egg :

DIAGRAM B.



HOW TO PLACE EGGS IN GOOD CONDITION UPON THE MARKET.

You can easily see from what I have said and shown you, how, with a little care on the part of the farmers, a superior class of eggs can be placed on the market in summer, or, indeed at any season. When the farmer sees the condition of the fertilized egg on the third and fifth day, he will be impressed with the necessity of keeping the male bird away from the hens. From the foregoing you will also see how easy it is for bad eggs to find their way to market in summer. I am sorry to say such eggs are the rule and not the exception.

If it is true that you cannot depend upon the eggs you buy in summer, so is it true that to send a collector to gather eggs in a hap-hazard manner throughout the country is only to get a collection of doubtful eggs for market or shipment. The necessity of the farmer being instructed on these points will be apparent to you. The sooner the farmer realizes the fact that he must have non-fertilized eggs for market or for shipment, the sooner will the reputation for a superior Canadian article be secured.

Q. Have you any faith in the usual way of testing the egg by reflected light?—A. We do that in the case of incubator eggs.

Q. Is it a true test?—A. It is very reliable, but the ordinary way of handling is not satisfactory.

By Mr. McGregor :

Q. Is there much disease where you house the hens together closely?—A. By keeping poultry in close confinement they are more subject to disease than when running at large. Louis Wright, the great English poultry authority, says it is impossible to house a large quantity of poultry together in limited quarters without having a large percentage of mortality.

By Mr. Pridham :

Q. How much longer would a non-fertilized egg keep than a fertilized one?—A. I have known a non-fertilized egg to be fairly palatable at the end of nine weeks. It must be understood, however, that a non-fertilized egg must not be kept near contaminating substances. One of our best authorities states that a corn-fed egg will keep better than any other, and he urges, moreover, that the cellar in which the eggs are kept should be cool and the atmosphere pure. The egg-shell is porous and the egg is susceptible to contamination, as with butter.

By Mr. Sanborn :

Q. Then, the character of the food would influence the quality of the egg?—A. There is a great deal in that. The flavour of an egg from a hen fed on clean food is better than from one fed on decayed or decaying vegetable or animal substances.

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By Mr. McGregor :

Q. You spoke before of Indian corn as too fattening. Have you made any further experiments on that point?—A. No. We found that we could not give it with any degree of safety to Plymouth Rocks, Bramahs, Langshans or Cochins.

Q. It is too fattening?—A. Too heating and too fattening.

Q. When would you feed it?—A. At the last feed. We can use it in that way in our part of the country with impunity, so far as the Leghorns, Minorcas or Hamburgs are concerned.

By Mr. Moncrieff :

Q. Would that be for laying purposes?—A. Yes. We give different foods to the fowls we are feeding for the market to those we feed for laying purposes. The treatment is different in the two cases. What you feed to the laying hen you would not feed to the hen which you would fatten for market. And you would not feed what would go into the eggs, in what we call the Spanish class, to members of the Asiatic family. It would make the latter so fat they would not lay at all.

By Mr. Smith (Ontario) :

Q. When you speak of Indian corn, what kind do you mean?—A. The Canadian Indian corn, not the horse-tooth corn.

By Mr. McMillan :

Q. Do you feed roots of any kind?—A. Yes, when wheat was dearer than it is now we tried roots, and we found that when we supplied all the vegetables the layers required the less grain food.

By Mr. McNeill :

Q. Do you use cabbage?—A. Yes, cabbage is excellent.

By Mr. McMillan :

Q. We have found mangels very good.—A. Yes, the fowls eat mangels with avidity.

By Mr. McNeill :

Q. Do you feed them raw?—A. Yes.

Q. Have you tried them cooked at all?—A. Yes, cooked turnips make an excellent mash. It is better to vary the rations by giving cooked vegetables once a week. I think it adds to the health of the laying stock to do so.

By Mr. Macdonald (Huron) :

Q. In what way do you feed the cabbage?—A. Hang it up and make them jump for it. That is the better way.

By the Chairman :

Q. You spoke of producing eggs unvitalized. How long is it necessary to keep the cockerel away before the hen will produce such eggs?—A. About a week.

Q. And how long should the male bird be with the hen in order to get vitalized eggs?—A. The male bird should be with the hens eight or ten days before the eggs are fit to set.

INTELLIGENT TREATMENT NECESSARY TO REALIZE PROFITS.

I have rapidly gone over some of the points which I wished to bring to your attention this morning, and I would ask your kind consideration of the fact that poultry can be made a satisfactory revenue producer to the farmer. I regret that his poultry has not received that attention from the farmer that is given to the cow. I have said before, I think, that next to the cow the hen will be found the most important revenue

producer to the farmers of this country, that is, when she receives careful and intelligent treatment at his hands. In so doing the farmer need not go to any great expense. He has the buildings that can be utilized for keeping poultry and he need not spend much for food because what he would give the hens would much of it otherwise go to waste. I have found that wherever I have been among the farmers great interest has been taken in the subject of poultry. There is hardly any farmer who has given the subject his practical attention and who has got eggs in the winter and brought them into market to sell but has been very much gratified at his success. Poultry-keeping is bound to be the means of bringing a large amount of money into the hands of the farmers of this country, but they must look after their laying stock properly. The subject of chickens of a better class for market which I was going to touch upon, and have touched upon briefly, is one which has never received the proper attention it deserves. In England the hatching and rearing of chickens for market purposes has received great attention. Indeed, the subject of poultry has, of late years, in England, been much discussed. Within the last eighteen months the English authorities have appointed a Professor of Poultry at the Royal Agricultural College in England, and commissioners have been sent all over the country to report as to the possibilities of successful poultry-keeping in the different districts. They have found that the profits of poultry-keeping are much greater than they ever expected, and in certain districts the rearing and selling of poultry for market purposes is a means of wealth to a large number of persons. The market poultry business is handled differently there. The farmer hatches out the chickens and sells them while young to a dealer who comes round for them and afterwards fattens them. Our farmers have little excuse for not putting a better class of poultry on the markets of the country. If they will only keep the fowls that will develop flesh quickly they will have a superior article for sale, and a superior article will bring a better price. In my opinion it is only a matter of educating the farmers as to the breeds that will put on the most flesh in the shortest time.

The Plymouth Rock, Java and Wyandotte have given us the best satisfaction so far, and if the farmer will only make a choice of one of these breeds he should bring cockerels to market in four months weighing eight pounds a pair. That is development at the rate of one pound each per month. I repeat that farmers should bring to market cockerels weighing eight pounds per pair in four months. Such birds will be satisfactory to him from a pecuniary standpoint, and a great deal more satisfactory to the consumers, who will get better value for their money. It is, as I have said, a matter of educating the farmer in the proper handling of his poultry department.

By Mr. McNeill :

Q. Do you give meat to the fowls at all in the winter, or do the bones take the place?—A. The bones take the place of all meat preparations that we heretofore used.

Q. The fowls have the meat and the lime in the bone?—A. Yes, it is the most satisfactory way of giving both.

DIAGRAMS OF APPROVED POULTRY HOUSES.

Here are two plans of poultry houses to which I referred a few minutes ago and which I now submit to the Committee, with my own approval. The first is that of a house calculated for from twenty-five to fifty hens ; and the second for a hundred hens. The object aimed at in both is to give the laying stock warmth at night and also afford them an opportunity to keep themselves busy exercising during the day. We find that to keep the nest dark underneath the platform not only prevents egg eating but also feather picking, and these two vices are much easier prevented than cured. The house faces to the south, and I think Mr. Rosamond will agree with me that it makes a great deal of difference which way the house faces. I think the southern position makes many degrees of difference in the temperature inside the house in the winter.

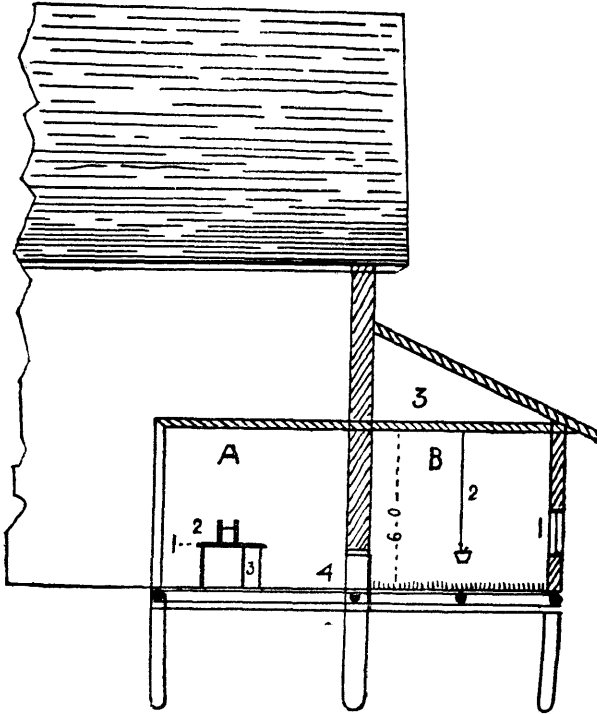
Agriculture and Colonization.

By Mr. McNeill:

Q. What amount of glass have you in the front? What amount of light?—A. You can have as much light as you think necessary.

Q. Is it well to have much glass or not?—A. In a cold section of the country such as this I would not have too much glass.

DIAGRAM No. 1.



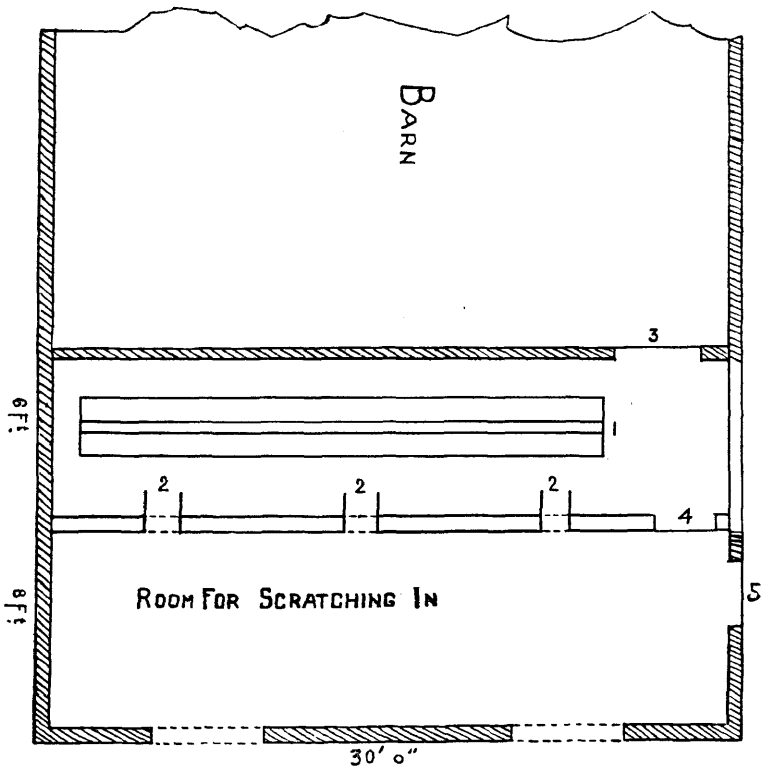
References to Diagram No. 1.

- A.—1. Platform.
2. Support for roost with notch.
3. Entrance to nests under platform.
4. Slide door to scratching house.
5. Hinged door giving access to nests.
- B.—1. Window facing south.
2. String with cabbage attached.
3. Space for straw, sand, gravel, &c., to be let down below.

The above plan No. 1 is an improvement on the plan given in 1893 report, and represents a house and addition that can be added to the end or side of a barn facing south. A small portion "A" of the end of the barn is partitioned off for the roosting and laying room. The ceiling is made low, and under this low ceiling is the platform and roost so placed as to economise the animal heat of the fowls during the cold night, and keep them as comfortable as possible during that period. The roost should be a 2 x 4 inch scantling, broadside down, and placed 10 or 12 inches over a platform which should be two and a half feet wide and eighteen inches from the ground. Under this platform should be the nests so arranged that by boarding the front of the platform, they (the nests) will be kept dark. The partitions of the nests will support the platform. The object of keeping the nests dark is to offer no inducement to the hens to stay in or about them after the egg is laid, and to keep the other hens from seeing the eggs. Egg-eating is so prevented and prevention is a great deal easier than the

cure. After keeping themselves comparatively warm by scratching busily all day in the scratching room the layers require some warmth during the night and in most poultry houses that is the very time they are coldest. The improvement consists in having the platform with nests underneath placed close to the wall or partition and allowing the farmer to get access to the nests by means of hinged door 5 without going into the hen-house.

DIAGRAM No. 2.—FLOOR PLAN.



References to Diagram No. 2.

1. Platform and roosts with nests underneath.
2. Slides to scratching room.
- 3, 4 and 5. Doors.

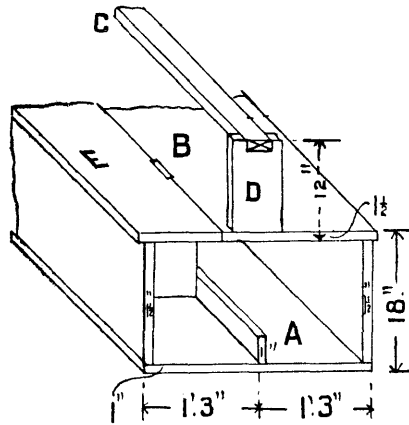
The above plan, No. 2, shows the end of the barn with the roosting and laying room and scratching room attached.

The numbers are explained as follows:—

1. Is the platform and roost with the nest boxes underneath. This platform need not run all the length of the room. Indeed, the room might be made smaller and warmer at night by making the platform into smaller lengths and running them cross-ways or from north to south.
2. Are the slides to allow access to scratching-room. In a smaller house one or two might do.
- 3 and 4. Are doors to get into the apartments.
5. Is a side door to get in and out the room for scratching, to clean up, etc. If it can be managed without, there need be no necessity for this door as the fewer openings the less cold the premises are likely to be.

Agriculture and Colonization.

DIAGRAM No. 3.



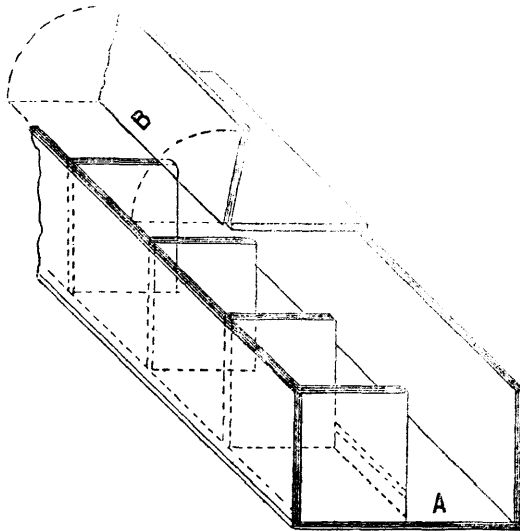
**DIAGRAM SHEWING PERCH
AND NEST BOXES UNDER**

References to Diagram No. 3.

- | | |
|---------------------------------|-------------------------|
| A. Entrance to nests. | D. Supports for roosts. |
| B. Platform. | E. Hinged door. |
| C. Roosts 2 x 4 inch scantling. | |

The above diagram shows the platform and roosts with nest boxes underneath and the hinged door to nests. It is only when occasion requires that two roosts are necessary. Under ordinary circumstances one roost may do.

DIAGRAM No. 4.



**DIAGRAM
SHEWING NEST BOXES**

The above diagram shows the nest boxes underneath the platform and access to which is had by the hinged door E shown in diagram 3.

The following Nos. 5, 6 and 7 are diagrams of sections of a more pretentious house divided into compartments (diagram 5), and so arranged that the nests may be reached from the passage way by the hinged door. The pens are 11 x 12 with a door entering into them 2 x 6. This will permit of their being cleaned, and new straw or other litter being put into them from the passage way 3 feet wide. The depth of the house including passage is 15 feet. The front faces the north and the rear windows of course face the opposite direction. The object is to have abundant room for the layers to scratch in, to have the platform and darkened nests underneath to prevent egg-eating, and access to the nests from the passageway. Each pen may be separated from the other by a solid partition, or open by means of wire-netting. The height of the ceiling is put in the plan at 7 feet, but it may be made lower, or the animal heat may be utilized by having a light wooden screen 2 or 2½ feet over the fowls as shown in the sectional view. A brief description of the plan is as follows: 1, door to building; 2, feed room with bars; 3, passage way 3 feet wide or smaller if thought best; 4, pen for fowls allowing 4 feet square to each fowl; 5, window.

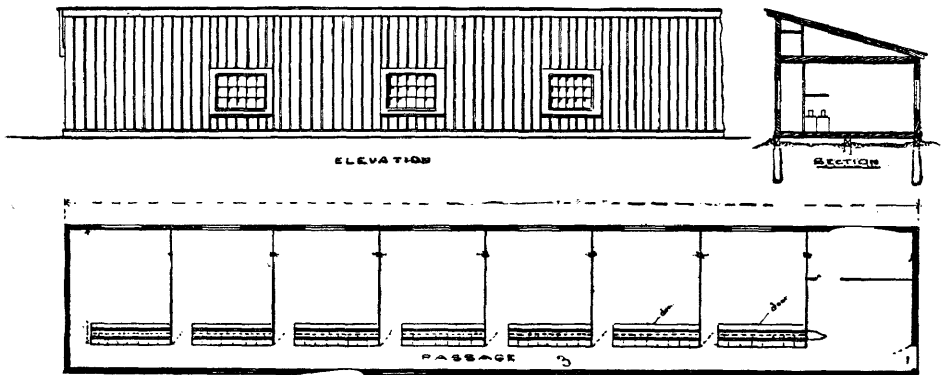
DIAGRAM 6.

Is the front elevation of the building which will face the north.

DIAGRAM 7.

Is a sectional view of a pen in diagram 5.

POULTRY HOUSE.



Diagrams Nos. 5, 6 and 7.

By Mr. McGregor :

Q. You could double the glass ?—A. Yes, you could and with good results. I would certainly have a window large enough to allow plenty of sunshine during the day on the floor, and in the smaller roosting and laying room they could retire at night and so keep themselves warm. The animal heat of the fowls would be economized, that is a very important point. Such a building would not necessitate any very great outlay, whilst the method of keeping the hens warmer is far better than any artificial heat that you could get.

Agriculture and Colonization.

By Mr. Cargill :

Q. What sized building have you for 100 hens?—A. We allow 4 square feet or 4-foot square for each hen, and the houses are divided up into pens 8 by 14.

By Mr. Smith (Ontario) :

Q. How many do you keep in these?—A. Eleven.

By the Chairman :

Q. Do you mean 4 square feet?—A. Yes.

Q. That would be much less than 4 feet square?—A. I would put it at 4 feet square if the space would permit, and under no circumstances less than 4 square feet.

By Mr. Carpenter :

Q. On the floor?—A. Yes.

By the Chairman :

Q. That would be 16 square feet?—A. Less space would do.

By Mr. Rosamond :

Q. Four feet square would be 16 square feet to each fowl?—A. I was going to say that we have found when we give the fowls plenty of room they will give better results. You will get more eggs out of 15 fowls with plenty of room than 25 that are crowded. If you crowd your fowls too much you get no eggs at all.

By Mr. Carpenter :

Q. In this space you are not including your pen room as well, but simply the space in your building?—A. I would have my pens so made that the roost and all the furniture would be included in that calculation.

By Mr. Sanborn :

Q. Do you keep 100 hens in one block?—A. We keep them together, but divide them up into colonies.

Q. Of twenty-five only?—A. Thirteen or fifteen in each pen.

By Mr. Tyrwhitt :

Q. On a farm where the poultry have the run of the barn yard or farm during the day time there would be no harm in having the hen house the size of this room and allowing 100 hens to roost in it?—A. No. For it would only be a roosting room. Fowls should have as much room as can possibly be given them; but I am dealing with cases where room is an object, and where you have to economize on that account.

By Mr. Smith (Ontario) :

Q. And where they have to be confined?—A. Yes.

By Mr. McNeill :

Q. When you say 4 feet square, do you mean 4 square feet in this way (indicating with the finger), or do you mean a space of 4 feet on each side?—A. I mean the smaller square of the two.

By Mr. Moncrieff :

Q. A building 10 x 10 holds 25 hens exactly?—A. I would not put more than 11 hens in 8 by 14 ; I have tried more in that space, and found that a larger space would be better.

By Mr. Smith, Ontario :

Q. A space of 8 x 14 would be quite sufficient for 25 hens, if they had the run of the barnyard?—A. Yes, in such a case you do not want to have too much room for roosting in during winter.

By Mr. McGregor :

Q. When you house them in winter, are you troubled with vermin?—A. No, we have never been, because we take some precautions during the summer to prevent the lodgment of vermin.

Q. What are the precautions?—A. We coal oil the roosts. It ought to be done once every fortnight, as also inside of the nests, in hot weather.

Q. Do you use much lime and whitewash?—A. Yes. We use lime when wanted, but with us we have the place painted and we use coal oil. We find coal oil better.

Q. Do you put it on with a brush?—A. Yes, with a brush.

By Mr. McNeill :

Q. What do you find best to put on the floor?—A. I find that straw or any similar substance is better than earth for giving the hens a chance to keep in exercise.

Q. Do you like a wooden floor.—A. I like a wooden floor better than an earthen one, for the reason that what you put on it is more likely to be dry, particularly during the winter.

By Mr. McGregor :

Q. Have you not put lime in the food to see if that would assist some?—A. Not pure lime, but I have fed red clover which is said to contain a certain percentage of lime.

Q. How do you feed that?—A. We generally pour boiling water over it and let it remain steeped all night and pour off the water in the morning, it then mixes well with the soft food.

Q. Do you have it cut fine?—A. Yes. It is cut up in quarter-inch or half-inch lengths.

Q. Do you mix your mashes with hot water?—A. Yes, mix with boiling water and let cool a little. I think food half cooked is better than raw food.

Q. What sort of mash is it? Bran and shorts?—A. Yes, and whatever is most plentiful on the farm. Sometimes we use a mash of ground wheat, ground oats, ground rye and bran.

By Mr. Cargill :

Q. In speaking of the amount of space for each hen, do you mean four square feet or four feet square?—A. I would give the hen as much space as possible.

Q. And you recommend four feet square ; not four square feet?—A. I would give the hens four feet square if it were possible.

Q. In that case it would require the building four times the size of the other?—A. If you can give that space so much the better, but the lesser space will do. I want the layers to have as much space as possible. It must be remembered that some breeds require more space than others. If you are keeping Andalusians or Leghorns you will find they will require more room than Plymouth Rocks or Wyandottes.

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By Mr. Carpenter :

Q. Would you recommend that the fowls be confined all summer?—A. Not when it can be otherwise. Give the laying stock all the run you can, but keep away the male birds from them.

Q. You are hard on the male birds?—A. No, but I want the eggs in summer to be put on the market with good flavour. All these points of management require to be talked over, many may be new to the farmer. From the questions asked at the different meetings I have attended in the past it is evident the farmer, in most cases, requires to be informed on the local methods of poultry management, and he is fast acquiring that information.

In conclusion, I have to express my thanks to the Committee for the kind attention given to the different subjects I have brought up in connection with poultry-keeping. I wish also to express the pleasure I had in meeting different members in their different constituencies last year. I hope to have the pleasure of meeting others during the present year. I am much gratified to find that our farmers are taking greater interest in poultry matters than they have ever done, and it will not take them long to find what a great source of revenue the poultry industry may become if properly conducted. I am confident that the poultry department of the farm will become a great source of revenue to our farmers and the country.

Having examined the preceding transcript of my evidence, I find it correct.

A. G. GILBERT,
Manager, Poultry Dept.

COMMITTEE ROOM 46,

HOUSE OF COMMONS,

OTTAWA, Thursday, 6th June, 1895.

The Select Standing Committee on Agriculture and Colonization met this day at 10.30 o'clock a.m., Mr. Sproule, Chairman, presiding.

The CHAIRMAN.—We have with us this morning, Mr. Craig, Horticulturist of the Experimental Farms, who will speak to us on the operations carried on in his branch last year.

Mr. JOHN CRAIG, Horticulturist of the Dominion Experimental Farms, then addressed the Committee as follows:—

Mr. Chairman and Gentlemen of the Committee, I am pleased to have again an opportunity of meeting you in council. I recognize you not so much as fruit specialists, but as representatives from widely separated portions of the Dominion, of the particular service or industry which I am endeavouring to foster. Through you I also expect much assistance in furthering and promoting this particular industry and in reaching the fruit-growing public. The Central Experimental Farm at Ottawa, as you are aware, is particularly designed to answer questions affecting agriculture and horticulture in the two provinces immediately contiguous to it, namely: Ontario and Quebec. Although the horticulturist is styled the Horticulturist of the Central Farm, I may say that his duties are by no means bounded by, or restricted to, the two provinces which the Central Farm at Ottawa represents. I am therefore pleased at all times to answer questions relating to my particular department, no matter from what part of the Dominion these questions may come. It is my duty, and I also feel it as a special privilege to encourage horticultural progress in all parts of the Dominion. This is done by personal visits—when the travelling expense fund will admit of it—to the provincial gatherings and farmers' institute meetings in the different parts of the country, as well as by transmitting information by letters and bulletins.

It may be advisable, Mr. Chairman, for me at the outset to state briefly the lines of work and of investigation which I would like to discuss with you this morning. In the time at my disposal I may not be able to discuss all the points which I may desire to lay before you. I intend, first, to consider in a general way the progress of horticulture in the various provinces of the Dominion. I shall also ask your attention for a short time to a consideration of some points which have an important bearing upon the successful marketing of our fruits. This I shall present to you under the head of "cold storage," and I may say that during the past year I have been experimenting in the cold storage of fruits. Then I would like to give you some of the results of spraying experiments carried on last year in Ontario for the prevention of fungous diseases, and lastly, to supplement the remarks which I made last year upon the tobacco industry of the country from the producer's standpoint, by showing you samples of the finished product, with the addition of an expert opinion regarding its value.

MEETINGS.

During the year it has been my privilege to attend, besides various farmers' institutes, for the purpose of giving addresses, the Provincial Fruit Growers' associations of Nova Scotia, Quebec and Ontario. I have not gone further west than Ontario, so far, but I nevertheless have attended a large number of meetings. The Provincial Fruit Growers' associations, as you are well aware, are doing good work in their respective provinces in fostering and furthering horticulture, and they are being supported liberally by the local legislatures. During the past year also I had an opportunity of visiting Prince Edward Island, and was present at the Agricultural Convention held at

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Charlottetown, which was arranged for by the Dominion Dairy Commissioner, and was honoured by the presence of their Excellencies the Governor General and the Countess of Aberdeen. The impressions which I gathered from a hasty review of the Island from a horticultural standpoint have been very useful to me since, in enabling me to arrive at a more-or-less correct estimate in a general way of the capabilities of the Island as a fruit producing region. It is obvious that without personal visit and personal contact with the farmers it is impossible to give advice or counsel that is likely to be of service. From what I saw I am led to believe that the soil of Prince Edward Island, especially in the more elevated portions of the island, is well adapted to the cultivation of a number of our leading fruits, both large and small. The common red cherry of England is found growing freely and naturally in nearly all parts of the island. The earlier varieties of plums and apples have also been cultivated sufficiently to demonstrate the probability of success if grown on a commercial scale. The geographical situation of the island and the climatic conditions surrounding it, are such as to give fruit growers peculiar and special advantages for the marketing of their products. For instance, cherries and small fruits ripen at a time when the western product is out of the market so that it allows these fruits to be put upon the home market or the Boston market after the crop from other points has been exhausted, and in that way the farmers may reap larger returns.

By Mr. Bain (Wentworth):

Q. You mean that these fruits are much later than ours in Ontario?—A. Yes, very much later. For instance, the common red cherry ripens in Prince Edward Island about the 1st of August, or in the latter part of July, while in Ontario they ripen about the beginning of July. On my visit to the island I was specially struck with the excellence, both in regard to size and quality, of English gooseberries, which I saw growing near Charlottetown. I have been taking a particular interest in the cultivation of the English gooseberry, because I think there is a market for this berry if grown in the proper way, and on the right kind of soil. What is most needed at the present time in that section, from a fruit-grower's standpoint, is definite information of an elementary character suitable to the beginner. It is impossible for anyone to answer correctly all questions which are likely to arise in the mind of the beginner, without first visiting or seeing something of the surroundings of the place where he resides. Experience, in my line of work particularly, is the only reliable guide, and I would like to impress on the members of the committee the importance of this fact. Reliable experience can only be acquired by years of patient trial. Apart from this, however, much information useful to the beginner may be imparted by individuals who have had the opportunity of studying similar problems though under different conditions. In connection with my work I can be greatly aided by you, gentlemen, who have opportunities of gathering knowledge by coming into contact with the practical difficulties of your constituents. I shall at all times, however, be only too glad to answer questions or impart information of a useful or helpful character to beginners and others in fruit culture, so far as I am able.

During the past year various publications have been issued from my division of the farm, and I have some of this literature here. The first publication was in response to a demand for special information regarding the Black Knot, a disease which affects the plum and the cherry. In response to that demand this bulletin was published and distributed freely in English and French in the parts of the country where the disease is most prevalent. About the same time a circular, in the French language, on the TREATMENT OF FUNGUS DISEASES, was published and widely distributed.

I have been experimenting for the last four years with SMALL FRUITS on the Central Farm and during the past winter the information gained during that time was compiled and has been issued in the form of bulletin No. 22, copies of which were sent some time ago to all Members of the House as well as to those who were on our mailing list. One of the most prolific subjects of correspondence and discussion at Farmers' Institutes has been that touching the prevention of fungous diseases, and in answer to a general demand for this kind of information, bulletin 23 was issued recently and in time to enable the recommendations contained in it to be put in practice this spring.

By Mr. Macdonald (Huron):

Q. Are these bulletins distributed to the members by the bureau or by the Farm?
—A. By the Farm.

Q. And they are sent to the members for distribution among their constituents?
—A. No, the Farm has a mailing list of its own. In addition to that, it always sends copies of its publications to the members so that any member can ask for extra copies of any publication, if he likes, and they are supplied, as far as possible.

Q. How frequently is the list changed?—A. It has been revised this year, and we are adding new names all the time, as fast as they come in.

Q. I do not think the list for my constituency has been revised for a number of years?—A. I believe that the whole list was revised this year.

Q. Who revises the list?—A. It has been revised under the supervision of the Director of the Farm.

Q. Who gives you the information?—A. This list has been built up by personal application on the part of farmers, and by lists sent in by the members of the House, but mainly by personal request.

Q. A few years ago Professor Saunders asked the members to put in a list of four or five hundred farmers in their constituencies. That was five or six years ago. Has that list never been revised?—A. After the names are on our lists we deal with the recipients directly.

Q. The reason I want to know is this, that after a certain number of farmers in the constituencies have got these bulletins for five or six years, we would like to change and give other farmers the opportunity of receiving them. When the same people get them year in and year out, it is really going over the same ground again.—A. I think they would decidedly object to giving up the bulletins after having received them for some time. Our mailing list is constantly increasing, and we hope to extend it from year to year.

By Mr. Carpenter:

Q. I think all members of the farmers' institutes are put on your list?—A. If the names are sent in.

Q. I think the names were put on?—A. In most cases they have been.

In addition to the publications I have already mentioned, there is a circular here, in the form of a calendar, which gives much information in regard to spraying, in a very condensed form, and this I have found very useful to farmers, who can pin it up in a place convenient for reference.

By Mr. Sanborn:

Q. Have you any in French?—A. All these publications are published in both languages.

During the year part of my work is to receive and examine new fruits, and I solicit from parties who are interested in the introduction and production of new fruits or old fruits which have lost their name, to send me samples and I shall examine them and identify them as far as possible, because the value of a fruit is very much enhanced when we know its name and in this way can deal with it commercially. During the past year I have examined an unusually large number of specimens of seedlings and un-named fruits. This kind of work involves a considerable expenditure of time, but gives me much satisfaction as indicating a move in the right direction. There is also another aspect of usefulness in connection with this work, viz., that it brings me into contact with, and gives me a knowledge of, varieties of fruits worthy of trial and introduction. Whenever a fruit appears promising, an endeavour is made to procure scions for trial at the Central Farm and at the branch farms. Our experience will be a guide in recommending or condemning it in the future. A large number of scions have been received and tested during the past year, and in some cases I have sent scions to specialists throughout the country, so that the scope of the experiments is extended and the

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results made more valuable. I am also pleased to state that interest in our work is being evidenced by the receipt of donations of different kinds sent in by manufacturers of implements, spraying pumps, and so on, and originators of new fruits have also sent us from time to time samples for trial, showing that they take some stock in our work and find that our opinion is of some weight and value in the country. Then I have received from time to time a large number of specimen plants of different kinds which may be infested with various kinds of fungous diseases. These I am always glad to examine and give the information as quickly as possible to the senders. This is a very important branch of my work, and a large amount of information has been thus dispensed to inquirers from the Atlantic to the Pacific.

PLANT DISTRIBUTION.

I have from year to year reported briefly what we have been doing in sending out plants and seeds for trial. Mr. Saunders has no doubt told you about the distribution of seed grain. In the horticultural division of the farm there is also a distribution which has been carried on for the last four years. It has been mainly so far—mainly I say—in the way of supplying to settlers in Manitoba and the North-west Territories varieties of hardy and fast growing forest trees for the purpose of giving them shelter for their gardens and stock-yards. It has been our experience that they cannot grow fruits successfully without first getting some sort of shelter about their gardens. Without a wind-break, which will catch and hold the snow and thus give additional moisture to the soil it is impossible to grow any kinds of fruit with any degree of certainty. In order to overcome and meet this difficulty during the past three years, we have sent out large quantities of cuttings of poplars and willows. These have been found to be the most serviceable for that country. They are hardy and fast growing and do not winter-kill. In addition to these, last year about 200 packets of seed of hardy varieties of apples were distributed. Three years ago a distribution of the hardiest known kinds of apples, that we had was made. I have since found that they all failed and this led me to believe that there is only one possible method of success in growing large fruits in that country, and that is to start with the seed. Then by having the seed established in the soil and the plant grown without removal we may be able to secure fruit. If the seeds of that fruit are sown, we shall be much more likely to get varieties that will stand the climate than by any other method. Accordingly, during the past season I have sent out a number of packets of apple seed, and in addition young seedlings of hardy plums and cherries. In this work of distributing desirable plants, the Horticultural Societies of our central provinces have not been forgotten. I may say that this work is one which is rather difficult to manage, inasmuch as it has a tendency to increase so rapidly and the number of requests are so large that we are not able to meet the demand; it was therefore found necessary, a few years ago, to restrict the distribution to the Provincial Horticultural organizations of the Dominion, so that now we select for each province the class of plants likely to be most useful and send them to each organization. The Fruit Growers' Associations of Ontario, Quebec and Nova Scotia received consignments in this way during the past season.

HORTICULTURAL PROGRESS.

I would just like to run over some of the evidences of the horticultural advancement in the Dominion during the past year. Beginning down at the east in Nova Scotia, horticultural progress is very well set forth there in the rapid growth of the Provincial Fruit Growers' Association which has been truly phenomenal. Two years ago it was a comparatively small organization, though an old one, but since that time renewed life and vigour have been infused into it and the membership has more than trebled. In connection with this association it has established a horticultural school in the Annapolis Valley, which is the only one of its kind in Canada, and I think the only one of its kind in America. This speaks very highly for the enterprise of the members of that society. I had the pleasure of being present at the closing exercises of the year's work in the history of the school, and I was exceedingly gratified at the progress that had been

made during the season, and to note the broad and liberal foundation upon which the school has been established under the direction of Professor Faville. An arboretum has also been established for the purpose of gaining information relative to the adaptability of trees and shrubs, and to afford object lessons to the student. Some idea of the importance of fruit growing to this part of the country may be gathered from the fact that the output of apples, which has been increasing year by year, reached last season the magnificent total of between 250,000 and 300,000 barrels, from the Annapolis Valley alone, meaning to this section a cash value of over \$500,000.

In Quebec the Provincial organization is also doing good work and the fruit growers there are realizing that a better system of cultivating and fertilizing their orchards than has been practised in the past is necessary. For a number of years past, orchards have been put out there, and have not been cultivated nor fertilized in the way which fruit growers now recognize is necessary in order to gain the best results, but of late better methods of cultivating and manuring are being introduced, and with the instruction which the Provincial Association affords fruit growers, a much improved state of things is coming into vogue.

By Mr. McNeill :

Q. There is a matter you touched upon, manure for orchards. In the case of the ordinary farmer whose manure is taken up very much with his other crops, what would you recommend as the best manure?—A. Where manure is scarce, it is a great mistake to grow other crops, such as grass, in the orchard.

Q. Should there be no grass?—A. As a general rule there should be no grass in the orchard. A second mistake is often made by the farmers in not applying sufficient manure. If it is found inconvenient, or for some cause impossible, to cultivate the orchard, then it should be pastured with sheep. I think a sheep is the best animal to have in the orchard, but in addition to the manure furnished by the sheep the orchard sod should be dressed with some other sort of manure. Of course the ideal way is to keep the orchard ground perfectly clean by frequent cultivation. A good fertilizer, I have found, is one composed of alternate dressings of barnyard manure and wood ashes.

By the Chairman :

Q. Don't you find that sheep eat the bark off the small trees?—A. The small trees should be cultivated for four or five years and it is not necessary then to put sheep in the orchard. I am referring particularly to old orchards where it is impossible to cultivate with satisfaction. Sheep will do a little damage to large trees. I know of a great many orchards now that are being pastured with sheep, very successfully. If the pasturage is short, it is advisable perhaps to allow half a pound of meal per day to each sheep. This will increase the value of their manure and remove their appetite for the bark or young branches of the trees. I would say therefore cultivate when possible, and when the trees have attained such a large size, then it may be well to pasture with sheep.

By Mr. Pridham :

Q. Would hogs be better than sheep in the orchard?—A. Hogs are sometimes desirable in the orchard, but they generally do rather too much rooting in certain small places, or limited areas, and none in other places. They will very often root around two or three trees and leave the rest of the ground undisturbed, seeming to prefer one locality to another, while sheep will crop the whole ground. They also eat a good many of the sprouts that come from the roots of the trees.

By the Chairman :

Q. They cannot plough quite as well as a hog?—A. As the chairman says they cannot plough quite as well as the hog.

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By Mr. Semple :

Q. Would not a ring in the nose prevent rooting?—A. Then they do not browse as well as the sheep.

FRUIT DISTRICTS FOR QUEBEC.

In connection with Quebec in order to give definite information to beginners in fruit growing, I divided the province into definite districts in my report of last year and arranged fruit lists for each district. This I have found to give much satisfaction and to be of great service to planters. To explain this I may say that in my report for 1893, you will notice that the province has been divided into 13 districts, each district being made up of two or more counties. Then under each district are enumerated the best pears, plums, cherries, grapes, raspberries, gooseberries, currants and strawberries which, in my experience, and in the opinions of the leading fruit growers are deemed most suitable for cultivation therein.

By Mr. McNeill :

Q. Is there any place in Canada where the Newton Pippin can be successfully grown? It brings a much higher price in the London market than any other?—A. I do not know of any place where it is successfully grown at the present time, nor do I know that I am prepared to say that it cannot be successfully grown in our best apple sections. It has not been successfully grown because in the past we have not been practising our best cultural methods. We are going to do better in fruit growing in the future, and I think we shall be able to grow Newton Pippin successfully. In the Grimsby district last year, after spraying, I saw some very good Newton Pippins and I dare say there are other places where this variety has been grown and is being grown to perfection now that spraying is being generally practised with gratifying results by the farmers

By Mr. McMillan (Huron) :

Q. You were speaking about English gooseberries, and you were going to tell us something about the variety of soil required to cultivate them. I have tried them very many times.

Mr. MCGREGOR:—Also the districts.

A. The English gooseberry is rather particular in the character of the soil which is necessary to bring it into the highest state of perfection. It requires a cool, moist and rather heavy soil but not sodden; so that many of the clay soils of Ontario where there is sufficient moisture are well adapted to the cultivation of the English gooseberry. A somewhat shaded situation is preferable. We have at the farm at Ottawa, 130 varieties of this fruit on trial for the past two years and many of them are fruiting this year. We experience some little difficulty from winter-killing, but otherwise there is no difficulty in growing them except that any one who plants them must make up their minds in this climate to spray with Bordeaux to prevent the mildew, because no matter how well they grow, the leaves and fruit, in this climate, are particularly liable to be injured by the mildew which gives that powdery-like appearance which is characteristic of infested plants. On the Island of Montreal fruit growers are cultivating the English gooseberry quite extensively, and those who have gone into it find it profitable.

By Mr. Carpenter :

Q. How many varieties did you say?—A. About 130. They are being cultivated on the Island of Montreal because there is a good home market, they have also the right kind of soil and manure within easy hauling distance. It is a fruit that needs a heavy soil, good cultivation, and careful spraying, and then you will get good returns.

By Mr. McNeill :

Q. Is the limestone soil suitable?—A. Well, limestone soils are usually too light.

Q. Supposing it were heavy?—A. If it is heavy enough by having a fair amount of clay in its composition it would be quite as suitable.

By Mr. McGregor :

Q. What about the climate of Essex?—A. The climate of Essex would be very favourable, but the sandy loam which prevails in many portions would not give the best results.

Returning to the horticultural progress of the country with regard to Ontario the principal feature of interest in connection with horticultural progress during the past year was the establishment of fruit experimental stations. This is purely a provincial matter established and controlled by the province, and I mention it with no other object than that of chronicling an important event and to record the pleasure I experienced in being able to assist in the drafting of the scheme upon which these trial stations were organized, which plan was adopted and put into operation. If thoroughly carried out these stations will do much towards solving questions of local adaptability of variety. The stations are under the joint control of the fruit growers association and the authorities of Guelph College, and they are managed on the basis of giving some specialist a full assortment of the fruits with which he is best acquainted. For instance a plum specialist is supplied with a large number of varieties of plums and is asked to test them carefully and report. The same with strawberries, peaches, apples and so on.

PRESERVING FRUITS BY COLD STORAGE.

I want now to direct your attention to the results of some experiments carried on last year in preserving fruits,—not canning them,—but retarding their period of maturity by means of a low temperature. The object of cold storage, as you know, is to retard or arrest the process of ripening. This process of ripening in apples and pears and other fruits is in reality the beginning of decay because it is almost impossible to differentiate or show just where the fulness of maturity ends and the beginning of decay commences—so gradually do they grade into each other—and the principle of cold storage is thus based upon this process, or the possibility of arresting the chemical changes which produce decay in fruits. These chemical changes which transform ripeness into decay are very gradual and almost imperceptible. By placing the fruit in a temperature below a certain point no change will take place. The changes in fruits are due to vegetable ferments which can only grow in the presence of a sufficiently high temperature; thus by having your fruits surrounded by a temperature below that point the ferment is prevented from developing and the fruit does not change.

By the Chairman :

Q. What temperature did you put this fruit in?—A. The temperature for the fruit experimented upon last year was uniformly 34 degrees Fahrenheit.

By Mr McGregor :

Q. Did you obtain the temperature by the use of ice and salt?—A. With your permission I will discuss the different systems later on. Cold storage in connection with the fruit display at the World's Fair was probably the means of calling attention to the possibility of carrying fruits from one season to another. It will be remembered that our success in the fruit exhibit at Chicago was due in large measure to the cold storage facilities which were afforded us. The success achieved there gave rise to the idea of trying some experiment with our Canadian fruits. Accordingly last year, beginning with the first large fruits, viz., early apples which ripened at the farm, consignments were forwarded at intervals to a cold storage warehouse in Montreal. I am pleased to acknowledge the kind co-operation and facilities which were afforded me by the

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Montreal Cold Storage Compaay. Without charge to the government, the managers of this company gave sufficient space as enabled me to carry on these experiments in the most satisfactory manner. I began with early apples, following them with peaches and pears as they ripened. The peaches, of course, were not grown at the Central Farm, and had to be secured elsewhere. They were sent to Montreal, and placed in an uniform temperature of 34 degrees. One of the points which I wished to bring out was the best kind of package to use and the effect of wrapping the specimens in tissue paper. I had duplicate packages of each variety sent to the warehouse, the fruit in one package being wrapped in tissue paper, and that of the other being placed in baskets or boxes, as the case may be, in the ordinary way. We packed Mountain Rose and Early Crawford peaches, each peach wrapped in tissue paper, in twenty-pound baskets and placed them in warehouse on September 5th. These remained in good condition until October 1st; a little over three weeks. The same varieties under the same conditions, but without tissue paper wrapping, on the 1st October showed five or six per cent of decayed fruit.

By Mr. Roome :

Q. In the same cold storage?—A. In the same room; not the slightest difference in the conditions except that of the tissue paper wrapping. On October 10th, about 30 per cent of the wrapped packages of Mountain Rose had decayed, indicating that decay went on rapidly after it once commenced. This was about six weeks after the fruit had been put in cold storage. At this time, of the fruit which was not wrapped, fully 75 per cent had rotted. The Early Crawfords, on the same date, were in a very much better condition. Not more than 10 per cent of the wrapped fruit had decayed six weeks after experiment commenced, and of the unwrapped 15 per cent.

By Mr. McGregor :

Q. Was the fruit which came out of cold storage as good as that which had not been stored?—A. That was one of the points which I was specially trying to investigate. The results were different. Peaches which were kept for four weeks in 34 degrees temperature lost flavour to a certain extent. At three weeks the flavour was not much affected, at four weeks it was slightly impaired, and at five weeks they would only "stand up" for a few days after being taken out, after which they wilted away. This shows that in the case of peaches, and it probably holds good in the case of all stone fruits, that it is not safe to hold them more than three weeks.

By Mr. McMillan :

Q. Was the atmosphere in the warehouse damp?—A. For most fruits a slightly damp atmosphere is preferable.

By Mr. Roome :

Q. Why is that necessary?—A. Otherwise they would shrivel. Our experiments with plums were not so successful as with peaches. We were not able to keep them quite as long, as the fruit soon became discoloured. The discoloration began first near the stone and worked outwards. They would sometimes look well on the surface, but when they were cut open you would see that they had lost colour and quality in the centre. Moreover, they also lost flavour and firmness. The general conclusion which I drew from the experiments was that, for peaches and plums, it would not be safe or wise for growers to hold them for more than three or four weeks.

Our experiments with pears were very much more satisfactory. Bartlett pears were stored when fully ripe. I may remark here that, for cold storage, the fruit should not be allowed to hang on the tree till it has reached perfect maturity. It should be fully grown, but not fully ripe, otherwise in the case of early maturing varieties they may have reached the period when decay has commenced. Once decay has commenced it cannot be arrested. Fully ripe Bartlett pears, wrapped and packed in baskets, stored

on 1st September, began to show signs of decay on 15th November. The same unwrapped were badly decayed on that date. The same variety of pear taken not quite so ripe and packed in wooden cases holding from 50 to 75 pears each, kept in good condition until 15th of December, or a month later.

Q. Is there any guide with respect to the time the fruit should be picked for storage?—A. I do not think that anyone could describe the proper condition in a manner that would be intelligible. It is a matter that has to be acquired by experience.

Q. An old gentleman told me that from his experience with regard to apples, the moment the pip was brown, the fruit should be pulled?—A. That is not an invariable guide, although it is very good as a general rule.

By Mr. Bain (Wentworth):

Q. Were your Bartlett pears perfect specimens?—A. They were picked in the Grimsby district, and they were very fair specimens. I think the crop on the average was rather better than that of the previous year.

By Mr. Carpenter :

Q. How long did you keep the Bartlett pears?—A. Those stored in baskets until 15th November, and the same varieties in wooden cases and carefully wrapped, up to 15th December, a month later. These when taken out of storage would keep in fair condition from a week to ten days.

By Mr. McNeill :

Q. Were they impaired in flavour at all?—A. Yes, I think they were.

By Mr. McGregor :

Q. Was the market fairly good when you came to sell them?—A. I am glad you asked me that question, as my experience on this point rather astonished me. I thought at the outset that good Bartletts kept in cold storage until two weeks before Christmas ought then to sell like hot cakes. They were put up in nice-looking boxes holding 50 pears each, but when they were put on the market they did not sell readily. First we had to convince the commission men that the fruit were really Bartletts. They were not ready to believe that it was possible to keep Bartletts until that time. Then the same thing had to be done with the buyer, and in addition that they would keep sufficiently long to allow of their being sold. A few boxes were put in the windows of some of the best retail grocers in Montreal and sold at advantageous prices. At first considerable loss resulted in the case of those which were not sold in December. It is evident, however, that unless some one looked after a business of this kind very closely and kept pushing them out whenever possible, it would be difficult to get rid of the fruit at advantageous prices. It is a new business, and a line that would have to be worked up before it could be made to pay. Just in the same way when Californians shipped pears, two years ago, they could hardly be sold, but last winter Montreal took two or three car loads a week, and they were disposed of readily. It is a matter of education. I do not think I need go over the results in detail. I have them on a printed form here. I would like to say in regard to grapes, that Lindley, Delaware and Niagara grapes were stored on 27th September and kept in good condition till the 15th of March. The Lindleys did not lose flavour in the slightest degree. The Delawares were slightly off flavour, and the Niagaras were also slightly off flavour.

By Mr. McGregor :

Q. They had not decayed?—A. No.

Q. Were they put up in paper?—A. No, they were not wrapped in paper but were simply placed in storage in the same condition as they came from the shipper, that is packed in 10 pound baskets.

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Q. Did they sell pretty readily afterwards?—A. The grapes were stored only in small quantities and were not put upon the market, but there should have been no difficulty in disposing of grapes during winter as there is a regular demand for grapes all through that season.

Q. Would they keep as many days after being taken out as if they had not been in cold storage?—A. I had some of them in my office about two weeks in a temperature of 70 degrees and they were very good. The Lindley kept best but the thin skinned varieties like Delaware and Niagaras kept fairly well.

Q. How do you think Catawbas would do?—A. This is a thick skinned grape and I think for that reason, would keep well.

The deductions which may be drawn from the results of this preliminary trial in the preservation of fruits by cold storage may be summarized briefly as follows:

1. Fruit for storage should be picked when fully grown but before it has thoroughly matured.

2. Early pears, peaches and the larger varieties of plums should be wrapped separately in tissue paper.

3. Tight wooden boxes are the most satisfactory packages for storing and handling. When baskets are used they should be provided with strong veneer covers.

4. Stone fruits, such as peaches and plums, under ordinary circumstances should not be held for a longer period than two or three weeks.

5. The marketing season for early pears and apples may be extended from thirty to sixty days, and under favourable circumstances for a longer period.

6. The outcome of experiments with fall and early winter varieties of apples and pears, including samples of grapes, shows that cold storage could be used with profit by the grower.

By Mr. Roome :

Q. What starts decomposition in fruits in cold storage?—A. As I explained, decomposition of fruit is caused by ferment.

Q. Would not making it a little lower than 34, below freezing point, prevent that?—A. It does not ferment in cold storage, but a change which causes discoloration takes place.

Q. You say it lost flavour, but I suppose it would not decay. I think you said that the peaches and plums decayed after being so long in the storage?—A. I called it decay but they turned brown without actually rotting or breaking down. I do not think it would be safe to bring the temperature much below 34 degrees.

Q. I thought it would destroy the bacteria and the fruit would keep longer?—A. I do not think this particular kind of decay was caused by bacteria producing rot. The discoloration took place without any breaking down of the tissues of the fruit. It could be classed under the general head of decay but it did not take place because of bacteria or the ferment produced by them.

Q. Have you tried keeping them in some chamber where the air was impregnated with some germicide?—A. No; I have not tried that. If the temperature is kept as low as 34 degrees, there will be little or no growth of germs.

By Mr. Macdonald (Huron) :

Q. I did not catch what you said about the apples. How long were you able to keep the apples?—A. Early winter varieties like Wealthy and Colvert kept easily till the 1st of April and then the storage building had to be used for other purposes and they were taken out.

Q. How did the early varieties do?—A. The very earliest variety we had was the Tetofsky and that kept in good condition for two months. The Duchess I had in good condition up to the middle of February.

DISTRICT STORING HOUSES.

The cold storage system came into use in New York city about 18 years ago and it has been operated there in connection with the fruit business with great success for

about 15 years. Dealers began first with the ordinary refrigerators on the ground floor, from which the cold air was forced upwards over the product they wished to cool. With that system they could only obtain a minimum temperature of about 38 degrees, that is simply cooling with ice.

By Mr. Carpenter :

Q. Before leaving this question I wish to ask whether with our present system of cold storage for the export of butter to the English market, we could successfully place our fruits on the English market in the same way. As you are no doubt aware, the growth of our fruit industry has been a very wonderful one; and if we could get the market of England for our plums and pears it would be a great advantage.—A. I think that is a question that would not only be profitable to discuss, but in my opinion would be feasible to carry out. Having the cold storage system that is being introduced in connection with the butter trade and with the addition of district cold storage warehouses, I do not see why grapes and plums and peaches and early pears could not be put in these district cold storage warehouses and then sent forward in refrigerator cars and with the cold storage accommodation on the steamship they should reach the English market in good condition.

By Mr. Bain (Wentworth):

Q. Would they reach that market at a season which would give a good price there? —A. That is a question that would have to be investigated by actual experiment. It would depend upon the market that we sent them to. I do not know enough about the London market to be able to answer off hand.

Cold storage is now used for a great variety of purposes. In New York not only fruit but vegetables such as peas, lima beans, lettuce, okra, celery, horseradish and all sorts of vegetables are held for a short time and kept in good condition. Dried fruit, nuts and even sauerkraut is stored in large quantities. Nurserymen use it for keeping nursery stock dormant. Fruit trees have been kept dormant for three years in one of these warehouses with low temperature and have been planted out and grown very successfully. The amount of cold storage space operated in the principal cities of the United States is very large. New York has 8,000,000 cubic feet; Chicago 5,000,000 cubic feet, Philadelphia 4,000,000; Boston 4,000,000; Baltimore 2,500,000; St. Louis 2,000,000; San Francisco 1,500,000; Pittsburg 750,000; Washington 750,000; a total of 28,500,000 cubic feet.

By Mr. McGregor :

Q. Are these run on the refrigerator system with ice and salt?—A. The simplest form of a storage building is a frost proof building. To have it frost proof it would be necessary to have three air spaces separated by double boarding. The air spaces would need to be not only in the wall but also in the roof. That kind of building ought not to vary more than 15 or 20 degrees, after receiving fruit in autumn, perhaps not as much as 20 degrees in winter. This would be the simplest kind of cold storage building which it is possible to construct, but a very useful structure for storing pears and grapes.

Q. You could not get 34 degrees in that without ice or something?—A. Oh, no, I did not mean to give that impression. You would have to depend on the temperature of the outside atmosphere more or less, but you could regulate it in the autumn by keeping it closed in the day and opening it during the night. A building 100 feet long, and 40 feet wide, would accommodate 10,000 barrels of apples and would cost about \$1,200, depending principally upon the price of lumber.

The next building to be considered is one which is cooled with ice only. It is suitable for storing apples and pears. Large reservoirs on the upper floors are required to hold the ice. The third system is that in which you introduce salt with the ice. Having salt with the ice gives a much lower temperature. With this system the rooms

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are lined, or more or less lined with large metal pipes, cast or of galvanized iron about ten inches in diameter. Above these rooms are tanks in which ice is placed and broken up and then mixed with salt. Then the pipes are filled with salt and ice. With this system a temperature as low as 15 degrees above zero can be obtained, which is necessary for the preservation of butter. In Montreal one of the large warehouses is supplied with this sort of cooling apparatus, and it has worked very efficiently.

By Mr. McGregor :

Q. The pipes going down through the building are of galvanized iron?—A. Yes they are ranged along the walls. I think that this is probably one of the best and cheapest systems for district warehouses intended for storing fruits. A building 100 feet long by 40 feet wide would probably cost from \$1,200 to \$1,500. We might then estimate an equal amount for piping and ice chambers, making a total cost of, say, \$3,000. Such a building would store eight to ten thousand barrels of apples, and in periods of a glutted market I think would be exceedingly useful.

Q. There are partitions in it?—A. You should have compartments so arranged as to give different temperatures.

Q. Taking out and taking in you should not open all the doors at the same time?—

A. It should also be supplied with a ventilating system.

The next system I would like to call your attention to is that known as the Linde system. This is based on the evaporation of liquid anhydrous ammonia at a low temperature, the heat necessary for this evaporation being extracted from surrounding bodies which are thus reduced in temperature or refrigerated. The ammonia vapour having served this purpose is again recovered by means of a compression air pump and reduced to liquid form by means of condensation.

Q. That would cost ten times as much as the other?—A. There are machines of the Linde system now on the market which can be put in at comparatively small amounts. A machine which will cool 200 tons can be now purchased for about \$5,000, and this is a system you can always depend upon. The temperature may be reduced as low as you like, and can readily be regulated, the temperature of the different rooms may also be regulated to suit the product stored.

Q. Could you put down one costing \$5,000 in a room of this size?—A. Of course, in a small room salt and ice alone would be very much cheaper, depending upon the price of ice and labour, but in cooling 200 tons you would need a comparatively large building. There are two methods by which the cold is distributed throughout the building. (1.) A solution of salt brine is constantly circulated from the brine refrigerator through pipes placed in the chambers and returned again to the brine cooler. (2.) In the case of the other, the cold is driven directly by revolving disks placed above the tanks which contain the salt and the brine. This is cheaper than the coil system and is more applicable to small warehouses.

I think, returning again to the question of district cold storage warehouses, that wherever there is a refrigerator car service, district cold storage warehouses in fruit centres can be very profitably erected. It would not be safe to place fruit designed for foreign shipment in cold storage, then take it out and ship it in ordinary unrefrigerated cars. This would be very unwise, as the fruit would decay rapidly by reason of rapid change of temperature.

Q. Goods coming out of a refrigerator should be kept in a cool place and disposed of without delay?—A. If they are chilled below a certain point they do not stand as well.

KIND OF PACKAGE.

Then, with regard to packing, I have already drawn your attention to this matter. I think that fruit-growers in this country would make much more money if they paid a little more attention to the kind of package they used and exercised a little more care in grading their fruit. By selecting the finer fruit and wrapping it carefully in tissue paper and placing in smaller packages they will get much larger returns than by packing

in barrels and baskets and shipping them without taking care to make the package attractive. Our Californian friends are shipping tremendous quantities of fruit here every winter, and they find it pays to go to the expense of wrapping up each sample of fruit and packing in small, neat cases. The fact that after shipping all this distance they can compete successfully with our own home-grown fruits, proves the desirability of the method. It shows that our fruit-growers could well afford to spend a little more money in making their fruit package more attractive.

Now, gentlemen, I have just about closed on this matter of cold storage, and I was going to take up the question of spraying, or this matter of tobacco, just as the committee desired.

By Mr. Corbould:

Q. Are you giving any attention to horticulture in the province of British Columbia?—A. I have never had the opportunity during the time of my connection with the Experimental Farm, of visiting the province of British Columbia, and the attention I have given it has been merely through correspondents. I have a number of very intelligent correspondents in different portions of the province, and I know something of it in that way, as well as by corresponding with Mr. Anderson, the statistician.

Q. From your remarks I gather you have only given attention to Ontario, Quebec and Nova Scotia. Well, we have in British Columbia essentially a fruit growing province, and I do not hesitate to say we can grow fruit with any other province in the Dominion?—A. British Columbia proved that at the World's Fair. It had the biggest apple there for three weeks at one time.

Q. What the fruit-growers and the farmers want there, is more knowledge of how to grow fruit and the best kinds of fruit to grow. We have been growing tobacco there for nearly twenty years?—A. I had samples from there last fall.

Q. As to fruit there is one particular matter, and that is that we don't know how to pack. It is one of the most essential things in fruit growing to know how to pack. If you send fruit into the market nicely packed, it will sell. When I went into that province the custom was to knock a box together and pile all the fruit in, good, bad or indifferent. There has been a large improvement during the last few years, but still there are a good many points the province needs instruction in, particularly in regard to what kind of fruit to grow, how to grow it and how to pack it; and we cannot help thinking, Professor, that not only in your department, but in every department of the Experimental Farm, we do not get that attention that we deserve. I think only one department, that is the dairy department, has visited the province so far, although we have had a great many promises; and I hope that you will represent to your Minister the necessity of some advice being given to British Columbia as regards fruit-growing. We expect to have a very large market, and we expect to be able to supply the North-west, where at present it is unable to be grown at all, with fruit. If you take a box of cherries, a box of plums, or a box of apples to Calgary, they are picked up before you can get them to the market, often.—A. I might say to Mr. Corbould that the fact must not be overlooked that the Government has an experimental farm at Agassiz, and Mr. Sharpe, the superintendent, is endeavouring, although he has a good many lines of work to carry on, to do all that he can for the fruit interest, as well as the other agricultural interests of the country.

Q. I quite agree with that. He is very efficient in every way.—A. And the results are of very much service to the country. British Columbia, however, is peculiar in regard to its climate. It varies so much in such a short distance that results gained in one place are very often not applicable only a short distance away. I am glad to be able to say further in connection with our work, that Mr. Fletcher, the entomologist and botanist has been authorized to visit British Columbia this summer and he will start in a few weeks. It is his intention while out there to meet the fruit growers of the province and discuss methods of preventing injuries caused by insects, as well as to study all lines of work pertaining to his department, and I have no doubt he will be able to give you a good deal of information. Of course we all like to do as much as we can in every province of the Dominion, but we have a good deal of territory to go over and the

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matters of time and expense must be considered, British Columbia being a very distant point. But I am sure the Director of the farms as well as the officers take just as much interest in that province and endeavor to do as much for her as it is in their power to do. I may also say that I am looking forward to the pleasure of a visit to British Columbia before very long.

COMMITTEE ROOM No. 46,
HOUSE OF COMMONS,
WEDNESDAY, June 12th, 1895.

The Committee on Agriculture and Colonization met at 10.30 a.m., this day, Mr. Sproule, Chairman, presiding.

THE CHAIRMAN.—Mr. Craig is before us this morning to continue the subject that he was dealing with at the last sitting of the committee.

MR. JOHN CRAIG, Dominion Horticulturist, resumed his address as follows:—

Mr. Chairman and Gentlemen.—I feel gratified that you thought my subject was of sufficient importance to give me another hearing, and I am pleased to be again before you this morning. There are two subjects that I wish to bring before you, namely, the cultivation of tobacco and the practice of spraying for the prevention of fungous diseases. With your permission I shall speak of tobacco first, and afterwards deal with the question of spraying, in connection with which I wish to give you the results of some experiments conducted last year.

I detailed last year, when I had the honour of appearing before you, the results of our experiments in tobacco growing at the Experimental Farm here at Ottawa. I told you that we grew some thirty varieties of tobacco—a certain number of plants of each variety—and we treated them in different ways with the object of ascertaining, first, the best method of growing the tobacco in this vicinity, and, secondly, with a view of finding out which varieties were most suitable for cultivation in this locality. To make the experiment more complete, and, therefore, more satisfactory, I told you that it was our intention to have specimens of the cured leaf—which were cured at the farm at Ottawa—to have specimens of this cured leaf sent to a manufacturer in Montreal, in order to obtain manufactured samples with his opinion of the particular use of each variety. Now we have arrived at that point at the present time. I may say that so far as growing the plants here and obtaining a good crop is concerned our experiments demonstrated fully, last year, that this was quite practicable in this locality, and if it is a paying crop in this locality, where we have climatic difficulties to contend with which do not exist in the west and in certain sections of the east as well, how much more then could this crop be made a profitable one where these favourable conditions prevail? With a view of bringing before you the importance of this industry, I have ascertained from the Dominion statistician the amount of tobacco leaf imported for manufacturing purposes into Canada, on an average, each year during the last twelve years. According to his figure the average for the last twelve years was 12,300,000 pounds of tobacco leaf imported into Canada per annum,

By Mr. Girouard (Two Mountains):

Q. How much?—A. 12,300,000 pounds.

By Mr. Semple:

Q. Is that the total for the last 12 years?—A. It is the average annual importation for the last 12 years.

I do not say that we could grow that amount in Canada, because as the result of our experiments, which I shall tell you about later, I do not think that the climate of Canada will produce a leaf possessing the qualities necessary to produce a fine cigar.

But we can certainly increase our area of production so that the amount imported may largely be reduced. With regard to the amount of native tobacco grown, we find that, according to the Census of 1891, there were 4,277,936 pounds grown in Canada and it may be surprising to our Ontario friends to learn the fact that, of this, 3,958,737 pounds were grown in the province of Quebec.

By Mr. Dugas :

Q. What was the quantity altogether?—A. 4,277,936 pounds.

By Mr. Carpenter :

Q. Might I ask you, Professor, about the samples referred to the experts? What did they say about them, as compared with the imported articles?—A. I shall speak about that very soon.

Q. Oh, I thought perhaps you were overlooking that?—A. No, I shall take it up immediately. I thought first I would like to give you an idea of the importance of this industry. I do not intend to speak at length on this point, simply to show you that it is possible to grow tobacco profitably in Canada, and that there is a demand for it, and further that the province of Quebec produces more than three-quarters of all the tobacco grown in Canada. I may say that last year, I received a sample of tobacco from British Columbia and the quality appeared to compare very favourably with any that I had seen. As far as strength was concerned, it seemed to be remarkably powerful in this respect. When it was tested in a pipe, it was found to be extremely potent. I do not know that it could be used by itself. It would probably have to be blended with other brands. In addition to those figures I have given you, there were 290,800 pounds of cut tobacco imported.

By Mr. McDonald (Assiniboia):

Q. That is already imported?—A. Yes, in the form of smoking tobacco, cigarettes, cigars and snuff. This, then, is a brief statement of the position of the tobacco industry in the Dominion at the present time.

By Mr. Semple :

Q. Where is the tobacco imported from, mostly?—A. From Virginia, Maryland, Georgia, and all that southern belt of States which form the great tobacco growing region of the United States. It is also considerably grown in Wisconsin, and to some extent in Massachusetts, and also in Pennsylvania; in Pennsylvania, however, more than in Massachusetts. I wish to show you dried leaves of the varieties which I have found not only to succeed best at the farm, but according to the report of the manufacturer to be best adapted for the production of a good burning leaf or a chewing tobacco as the case may be. [Mr. Craig here exhibited a number of samples.] These first set of leaves on the right, show the best varieties of smoking tobacco which were grown at the farm, according to the manufacturer's report. They are White Burley, Climax and Quesnel.

By Mr. Dugas :

Q. Was this manufactured in Montreal (holding up a specimen produced by Mr. Craig)?—A. All the samples were manufactured by Messrs. J. M. Fortier & Co., of Montreal.

There is a sample of White Burley put up in plug form for smoking. Mr. Fortier says it is best adapted for plug smoking, but it is also valuable for cigarettes. It is a good all round variety and probably one of the best. On looking at my tables of yields of last year, I find that the White Burley gave me at the rate of 1,468 pounds to the acre.

By Mr. McDonald (Assiniboia):

Q. What is this leaf worth now?—A. I cannot say what the value of the leaf is just now, between 8 and 10 cents, I think.

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By Mr. Dugas :

Q. Between five and six, I should say?—A. It may be as low as five and six cents at present.

Q. Quesnel is between 25 and 30?—A. Yes, I understand the Quesnel brings a much higher figure. I think that the greater portion of Mr. Walker's crop was sold last year at nine cents per pound. I visited his farm this spring. He still had some ten or twelve tons of dried leaf, which he had held over owing to the fact that he thought at the time of selling his main crops that he was not getting as much as he ought to have. I do not know how the price stands at present.

By Mr. McGregor :

Q. They offered him eight cents?—A. For the rest. Now with regard to this Quesnel, it seems to have been a variety that has been grown for a considerable length of time in the province of Quebec and has, in a measure, become acclimatized. It does not produce as many pounds of dried leaf to the acre as the larger growing kinds, but it does produce a leaf which is prized by the manufacturers for making up into smoking tobacco; as a pipe smoking tobacco, Mr. Fortier recommends it highly. Here is a sample of the Quesnel in plug. It makes a dark coloured tobacco in plug form, but it is said to be of very good quality. The next series of varieties are those which are prized for chewing as well as smoking.

By Mr. McDonald (Assiniboia) :

Q. What was the return per acre of this Quesnel?—A. The return of Quesnel was 750 pounds per acre, about one-half of that secured from the larger leaved variety. But I may say I did not plant this in such a way as to give it quite a fair comparative chance. It is not so large a growing variety as the other, and it was planted at the same distance apart, whereas I could have planted considerably closer and thus a larger yield could have been obtained. All the varieties were planted $3\frac{1}{2}$ by four feet apart; whereas the Quesnel could have been planted $2\frac{1}{2}$ by 3 feet apart, in which case I could have got a larger number of lbs. per acre.

In the next series are the Pryors, Blue and Yellow. These are both used for smoking and for chewing. The next series are three varieties that Mr. Fortier found made a cigar of very fair quality. I have not tried it myself, but perhaps some of the members who had the opportunity of testing them at the last meeting may be able to offer expert opinions as to their quality. I should be pleased to get them. These (pointing to samples of leaf) are the Connecticut seed leaf and the Pennsylvania seed leaf, two varieties of tobacco which grow to a large size and the heaviest yielders of all the kinds that were grown. Pennsylvania seed leaf yielded at the rate of 1,736 pounds per acre, and the Connecticut seed leaf yielded at the rate of 1,800 pounds per acre. Yielding so largely and being useful for cigar purposes, they are two of the most profitable varieties, especially for western Ontario.

By Mr. McDonald (Assiniboia) :

Q. Does it take long for these to grow? Do we require a longer season for the Connecticut seed leaf than for the Quesnel?—A. Yes, we do as a rule; but we find here that our season is sufficiently long to bring to a proper state of maturity, both the Connecticut seed leaf and the Pennsylvania seed leaf, if we start the plants in a hotbed in spring.

By Mr. Carpenter :

Q. Those cigars you distributed the other day, were they wrapped in Canadian leaf?—A. They were made from Canadian leaf.

Q. Were the wrappers Canadian?—A. Yes, the wrappers were Canadian as well as the filling; they were filled and wrapped with the Canadian leaf. These were put up absolutely and entirely from our own products, so that the test would be a fair one. The result shows that, growing for cigar purposes, the Connecticut seed leaf and the Pennsylvania seed leaf are two of the best varieties. For cigarettes, that small leaf

over there (pointing to sample), the Havana Vuelta Abajo is the best variety. Then, there are four other varieties: the Canadian, Yellow Mammoth, the Oronoka Yellow and the Oronoka White. These are grown in the southern States for chewing purposes, and Mr. Fortier reports also that, as grown in this locality, they are the best adapted for this purpose. They all yield heavily and can be profitably grown. The Yellow Mammoth is perhaps a little late for this locality, and, I think, will be perhaps rather late for most parts of the province of Quebec, but for western Ontario it should reach perfection. The Canadian yielded 1,210 pounds per acre, and the Yellow Mammoth gave me 1,676 pounds per acre. I think, therefore, taking the yield per acre, the cost of production and the other factors which enter into the making of a success of any industry, we can consider the tobacco industry is one which can be recommended to the farmers of the contiguous provinces here, with every reason to believe they can profitably grow a certain area annually, and that it is good farming practice to set apart a portion of the farm for growing tobacco each year.

By Mr. McMillan :

Q. What was the extent of the crop grown this year?—A. We had altogether two acres, and the quantities of each kind varied from one-twentieth of an acre to a thirtieth of an acre.

By Mr. McDonald (Assiniboia) :

Q. What effect does this have on land? It is very exhausting, is it not?—A. Exhausting on the potash of the soil—that is the constituent which it takes from the soil most largely. Any kind of soil which will grow a corn crop is suitable, so long as it does not bake and become too hard during periods of drought. If you have a supply of wood ashes, you can easily return to the soil the potash which it takes out in considerable quantity. In my report of last year these points were discussed, including the curing and the harvesting of the leaf.

By Mr. McGregor :

Q. Have you any idea, Mr. Craig, as to the difference between the price of the seed of the Virginia and the same seed in Southern Canada?—A. On the seed itself?

Q. The value of the product?—A. I don't know how the two products compare as to market value, I have not looked into the commercial side of the question to any extent.

By Mr. Carpenter :

Q. Can you tell me the average selling price of the product last year; for instance, when it was ready for market in its crude state. That is the only way we can get at the profit on it?—A. The price varies a good deal. I know individual growers who got as high as 15 cents a pound for ordinary grades, while Quesnel brought as high as 20 to 25 cents.

Q. From 15 to 22 cents?—A. It depends very largely on the quality and variety of tobacco. To get the best price it should be grown carefully and harvested carefully; and the price obtained therefor will depend largely upon the care exercised in growing and harvesting as well as the condition of the market. If the leaf has not been carefully topped and the suckers removed throughout the season the size and quality of the leaf will be impaired, and selling price reduced.

Q. I understood you to say that the average yield was 1,200 lbs. per acre in Canada?—A. I think that taking the varieties only which I have mentioned specifically, it would perhaps be a little above that. The highest yield secured was 1,800 lbs., and the lowest 750. The average of all kinds would thus be about 1,200 lbs.

By Mr. McGregor :

Q. In Southern Ontario it runs higher than that.—A. I have no doubt, Mr. Walker's foreman told me that on their hundred acres, the crop averaged more than one ton to the acre.

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By Mr. Semple :

Q. Have you estimated the cost of raising one acre?—A. I have a record of the cost of raising, harvesting and curing our own at the Experimental Farm, which is much above the ordinary expense involved. Speaking roughly, I should say it would probably run from \$30 to \$40 an acre. Of course this matter of cost always depends very much on the amount of the particular crop that you grow. If you go into tobacco cultivating extensively the cost per acre will be very much reduced. For a small area the cost is proportionately increased.

By Mr. Girouard (Two Mountains) :

Q. Does that estimate cover the whole cost of sowing the seed, cultivating it, harvesting and curing?—A. Yes; the whole thing. The process of drying the leaf, without special drying houses, if the weather is favourable, usually takes about two months. It may be dried in much less time than that with artificial heat; under ordinary conditions from six weeks to two months is required. The manufactured samples you see before you, were over two months in drying. The room was not particularly well adapted for the purpose, and consequently a much longer time was necessary than would otherwise have been needed had we had a suitable building.

By Mr. Dugas :

Q. Is the climate of Canada adapted for the curing of tobacco?—A. Yes; certainly in the interior. In coast climates where there is more humidity, the difficulty of curing properly is much increased.

By Mr. Rowand :

Q. What about the labour of cultivating tobacco?—A. The labour of cultivating it would about compare correctly with the labour which should be put on a crop of cabbages.

By Mr. McGregor :

Q. Or corn?—A. Yes; or corn. In the growing of tobacco you would need to cultivate the ground once in ten days. Then you have the labour of topping and taking out the suckers, which would probably equal the cost of cultivating it.

By Mr. Carpenter :

Q. Then there is the curing?—A. Yes; the harvesting and then the curing.

Q. Have you tried to arrive at a probable estimate of the cost per pound of growing tobacco?—A. No. I have not figured it out to the pound.

Q. Would it cost seven or eight cents a pound when placed on the market?—A. Not as much as that, I should think.

Q. Then there would be a good margin left after cultivating, if you estimate the cost at \$40 an acre.—A. The estimate of \$40 an acre is not based upon our own experiments, but upon the experience of large growers. Taking the estimated yield of the Connecticut seed leaf, and supposing the selling price to be 10 cents per pound this would give \$180 an acre. If you take \$40 from that, for the cost of growing the crop you will have \$140 an acre for your trouble. This of course is much more than would be secured on the average, but might be secured under favourable conditions.

By Mr. Rowand :

Q. Did you use fertilizers?—A. We used barnyard manure.

Q. Did you use the manure the same as for roots?—A. The ground received the same treatment as if prepared for a crop of corn.

By Mr. McMillan :

Q. How would it do to cure the tobacco in sheds?—A. It might do, but in open sheds it is subject to changes with the changing conditions of the atmosphere. It

would be better in a building which can be closed so that the leaf can be kept from outside influences. Tobacco is particularly sensitive to the influence of the atmosphere, and absorbs moisture very rapidly. I had an opportunity this spring of visiting Mr. Walker's tobacco farm in Essex county, near Windsor. It is probably the largest in the province. The curing buildings are large parallelogram shaped structures situated a few hundred yards apart and ranged in a line down the centre of the field. Each barn is from 80 to 100 feet long, by from 30 to 40 feet wide, fitted with swinging doors 15 inches wide and short distances apart on the sides and gables. These doors are opened or shut according to the state of the atmosphere during the drying process. The plants are grown in hotbeds on the south side of the field and sheltered by wooden walls on the north side. What particularly struck me was his method of fertilizing the ground. He is specially favoured in that respect, as he possesses large stockyards from which he can get a large quantity of manure. I was informed that he could obtain sufficient liquid manure to keep a three-inch stream running upon the land from November to April. It is collected in a large cistern into the yard and then forced out the field by means of a steam engine after the arrangement of waterworks. Hydrants are placed at regular distances apart over the field, one is opened at a time until the portion of the field in the vicinity of the hydrant is thoroughly saturated. The next one is then opened. This process goes on till the whole area has been irrigated with liquid manure. Mr. Walker has obtained, by means of this kind of treatment and good cultivation, over a ton to the acre for the 100 acres.

By Mr. Macdonald (Huron):

Q. Then he raises a succession of crops on the ground?

Mr. MCGREGOR.—He has had eleven successive crops from the same ground.

A. Mr. Walker has been taking tobacco crops from that piece of ground for ten years past. My visit to this tobacco farm was a striking lesson to me illustrating what could be done if one had a sufficient quantity of manure. Of course we could do the same thing by following a proper rotation of crops.

By Mr. Grieve:

Q. It would be quite an extensive undertaking on Mr. Walker's part?—A. Well, he says it pays.

By Mr. McMillan:

Q. I am afraid it would cost more than \$40 an acre to fertilize the land for tobacco growing. It costs us \$30 an acre to grow roots?—A. It would compare well with roots, the cost being about the same; but supposing it costs \$60 or \$70, considering the yield of some of the varieties, as for instance Connecticut seed leaf, it would give you a good return even then.

By Mr. McGregor:

Q. Last year the average price was only 9 cents a pound?—A. Well, if we can get \$30 clear to the acre, it will compare very favourably with any other farm crop which we can grow.

Q. Do you find any one of those plants more hardy than the others?—A. Quesnel and the Canadian are the two varieties most at home right here. The other varieties grow luxuriantly, and unless started early may be too late. Mr. Walker grows the Connecticut seed leaf and the White Burley. Where we secured 1,800 pounds to the acre, he harvested 2,600 pounds to the acre, from the same variety.

By Mr. Semple:

Q. What is the best method for planting?—A. The young plants should be treated in this locality the same as tomatoes. Mr. Walker does not treat his in quite the same way. I find it necessary to prick out the plants in the hot bed in order to make them stocky before setting them into the field. The pricking out does not cost much when the plants are small, as a man can handle a great many in a day. It is of great importance to give them a good start in the field.

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By Mr. Grieve :

Q. How far apart do you plant them?—A. Three to four feet. I would strongly advise pricking out, that is transplanting in the hot bed, in order to give the plants a good start. The same methods will apply in Quebec as in Ontario, because you have about the same amount of summer heat in Quebec as we have in Eastern Ontario.

STATISTICS FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE.

The final estimates of the average farm price of tobacco, 1st December, 1893, for fifteen States that produced tobacco, are as follows:—

	Cts. per lb.
Massachusetts	16
Connecticut	14
New York	15·2
Pennsylvania	13·5
Maryland	7·6
Virginia	6·2
North Carolina	8·0
Arkansas	10 0
Tennessee	8·8
West Virginia	10·2
Kentucky	7·6
Ohio	6·5
Indiana	7·3
Wisconsin	6·3
Missouri	7·6

I stated last year that I had in contemplation, and I gave you at the time, an outline of some experimental work in spraying for the prevention of fungi, which was being carried on by myself in connection with the Fruit Growers' Association of Ontario. We have been advocating strongly the beneficial effects of this practice for some years; farmers, while rather slow to take it up, have yet evinced an increasing amount of interest each year. Last year the Fruit Growers' Association of Ontario thought it wise to institute experiments in conjunction with myself, and with them I planned a series which we carried out during the season. That work has all been detailed in the annual report and in the special bulletin which I have laid before you, but I have placed on the chart, here, some of the principal results obtained in spraying apples to prevent the apple spot, in order to emphasize the value of the experiments. I may say that the work was not confined to the prevention of diseases which affect the apple, but was extended to those which affect peaches, plums and pears. I will give you briefly the results which were gained in spraying these other classes of fruits. Affecting the peach tree, we have in Ontario a disease called the "Curl Leaf" which, apart from the yellows, is probably one of the most serious diseases in peach growing districts. When the experiments were planned they were arranged with a view of showing how this disease could be prevented. Orchards in the Niagara district and in the St. Catharines district were under treatment. In both of the orchards treated the results were favourable, although the season was unfavourable to securing the best results owing to heavy rain-falls at frequent intervals. At the same time, the Curl leaf was not so bad as in former years, and my results were not as striking as they might have been. But they were sufficiently favourable to encourage the fruit growers in that locality, as a result of that object lesson, to take it up themselves this year. We also tried to prevent the Peach Rot, which is identical with that of the plum, and were successful in doing so, but I found that we could not use the same strength of Bordeaux mixture—which was the agent used in all the experiment, I had in charge—upon peach foliage as upon apple. The peach foliage was more sensitive and more easily injured and, as a result of that work, I recommended that instead of four pounds each of copper sulphate and lime,

that three pounds each of copper sulphate and lime, and three ounces of Paris Green should be used in spraying peaches. In this spraying calendar already mentioned that information is given.

RESULTS OF SPRAYING PLUMS AND CHERRIES.

Affecting plums there is a disease which causes the leaves to fall off just about the time the fruit is ripening. You will also notice that the leaves appear as if a charge of shot had been fired through them, causing the presence of a great many small round holes each with a red edge just on the inside. This is caused by what is known as "the shot hole fungus" or septoria. It is prevented by the same fungicide that used to prevent the rot in the peach and plum. With a view then of preventing both these diseases, the leaves and fruit were sprayed with Bordeaux mixture and the results carefully noted. As an effect of spraying, I found at the picking season that 100 plums off the sprayed trees weighed three pounds and nine ounces, and 100 average plums off the unsprayed weighed two pounds and one ounce. It was not only a matter of difference in weight. In the one case they were large and finely coloured in the other they were small and would only sell for second class. Then as to the foliage, the sprayed trees carried green, luxuriant leaves, and in the case of the unsprayed trees the leaves at harvesting time had nearly all fallen off. Thus not only was the fruit benefited by the treatment but the trees were invigorated and brought into a condition to bear a good crop of fruit next year. With regard to cherries, some results were so striking that I was almost afraid to publish them.

Experiments for the prevention of rot were carried out in the orchards of Messrs. Broderick and Gregory, of St. Catharines, Ont., and E. J. Woolverton, of Grimsby, Ont.

Spraying began with Bordeaux mixture on May 1st, when the blossoms were beginning to open. Three additional applications were made with the same mixture with the addition of Paris green. Records of yields were obtainable from Messrs. Broderick and Woolverton. The former gives the yields of two trees of Yellow Spanish as nearly alike in every respect as possible at the beginning of the season.

Sprayed tree yielded 90 pounds of sound fruit.
Unsprayed " " 30 " " "

Mr. Broderick adds that the lower branches of the treated tree were well loaded with sound fruit, while there were a good many cherries at the top of the tree which was not thoroughly covered in spraying. This emphasizes the necessity of great care in applying the fungicide to all parts of the tree.

Mr. Woolverton's results were rather startling in their emphatic conclusiveness. He reports as follows:—"Gave cherries three applications of Bordeaux mixture with four ounces of Paris green to 50 gallons of water on the following dates, blossoms having fallen, May 10th, May 26th and June 4th, also one application of Ammoniacal Copper Carbonate on July 4th." Note; June 4th "cherries already show good results; the tree unsprayed is much inferior in fruit and foliage to the one treated."

July 9th. "Picked fruit on unsprayed tree, yield, 17 pounds." July 10th. "Picked part of fruit off sprayed tree, amounting to 112 pounds; the remainder not quite ripe." July 17th. "Picked remainder of fruit on sprayed tree, 18 pounds; total yield, 130 pounds."

"Spraying cherry trees with Bordeaux mixture not only prevents rot, but seems to prolong the growing season, as will be seen from the above dates of picking." He further says that the advantage from spraying these trees is apparent from the following figures which are absolutely correct. Cherries from sprayed trees netted \$9.25, and were a choice sample. Cherries from unsprayed trees netted \$1.20, and were a medium sample.

These are actual results, obtained from two large trees, the advantage being on the side of the unsprayed, in point of size of tree and bearing capacity, at the time spraying began. One of the lessons this teaches is that, in the case of cherries, early spraying—that is, before the buds start—is not so important as the thorough and frequent application of the fungicide during the growing period of the fruit.

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RESULTS OBTAINED FROM SPRAYING APPLE TREES.

I am very glad to state that our results were so convincing in treating apples that it will do away with any dispute that may arise on this point hereafter. I will first read you an extract from the report of one of the experimenters. This work as I told you was carried out with the assistance of fruit growers in the Niagara district. Mr. A. H. Pettit, of Grimsby, writes: "I now inclose you a statement of the results of the spraying experiment with Bordeaux conducted in my orchard during the past summer, and in doing so I must express my great satisfaction with the results attained; it has shown the effects in such a marked degree. The experiment you conducted here this season has demonstrated to me and many other fruit growers that spraying with Bordeaux, properly applied and at regular intervals, will be of great practical value in destroying the fungus that is, I believe, causing the unfruitfulness of our orchards. The sprayed trees, aside from the large increase in crop, presented a fine healthy foliage, while those by the side of them, unsprayed, showed a very unhealthy appearance and no fruit. * * * * I believe, sir, that the value of this experiment, so practically demonstrated, will give a wonderful inspiration to our fruit growers to fight straight along this line, and I trust your report will be so convincing and as widely distributed as possible, in order that every fruit grower will reap the reward and your associates' researches and experiments to destroy the insects and diseases that are affecting our fruit trees and our fruit, and I trust that if there are any other doubting fruit growers, as to the benefits of spraying, you will convert them at once, even should it be the means of flooding the universe with clean, choice, Canadian fruit."

Probably you will notice from this chart which I may say is compiled from the average results of the trees treated in different orchards and under different conditions, so that it is much more reliable than if it were the result of a single experiment conducted at one place. You will see that the purple line indicates the amount of first-class fruit obtained from spraying. Northern Spy, Greening, Baldwin and American Golden Russet.

TABLE showing average returns from the different Experimenters.

Variety.	How Treated.	GRADE OF FRUIT.		
		First.	Second.	Third.
		Per cent.	Per cent.	Per cent.
A. G. Russet	Sprayed	38.03	37.43	21.53
do	Unsprayed	17.58	53.58	28.83
Baldwin	Sprayed	75.15	21.40	3.44
do	Unsprayed	25.81	74.19	.....
Greening	Sprayed	62.79	25.23	12.97
do	Unsprayed	6.66	35.35	57.99
Northern Spy	Sprayed	52.25	41.08	6.66
do	Unsprayed	11.83	42.40	45.76
Average	Sprayed	57.00	28.00	11.00
do	Unsprayed	18.00	51.00	33.00

The same variety unsprayed only yielded 18 per cent of No. 1 fruit, which shows a gain of 20 per cent for the sprayed. Now then take the Baldwin, and we find the remarkable result of 75 per cent of No. 1 for the sprayed, and only 25 per cent for the unsprayed. It is unnecessary for me to go over the figures in detail. The results are so striking and have been every year so conclusive that it only remains for us now to encourage the farmers by information and by example along this line, in order that the practice may become general and that they may be able to grow a larger quantity of fruit of better quality.

PROSPECTIVE INVESTIGATIONS.

I might say that the work which I have laid out for this year includes some experiments which are a continuation of some of these investigations commenced last year. I want to find out not only what the effect is in regard to both quantity and quality of the fruit during the year in which the spraying is done, but also the collective effect from year to year in treating the same trees. It is reasonable to suppose that if we get that good foliage this year, even if there is no fruit, that a much better crop will be received the next year, and thus I expect the beneficial results will be cumulative in this way. For this reason I think it is a desirable thing to continue these experiments on the same trees from year to year, and carefully note the results. I have therefore made arrangements with Mr. Pettit, from whose evidence I read, and one or two other gentlemen in the same locality, to continue experiments during the present season.

By Mr. Carpenter :

Q. How often was this fruit sprayed?—A. It was sprayed four times.

By Mr. McDonald (Assiniboia) :

Q. What is the cost?—A. The cost is about \$8 an acre.

INCREASE OF RECEIPTS, BY SPRAYING.

The effect of the improvement *in quality alone* upon the gross receipts from an acre of bearing apple trees may be shown as follows:—Supposing the yield to be 50 barrels, we find according to results gained that spraying would give us \$56.75 worth of No. 1 fruit, \$31.50 worth of seconds, and \$6.97 of thirds, or a total of \$95.22 per acre. The same unsprayed would give No. 1 fruit \$26.75 worth, \$37 worth of seconds and \$13.64 worth of thirds, or a total of \$77.40, leaving a balance of \$17.82 in favour of the sprayed per acre. This is also supposing that all the “seconds” and “thirds” could be disposed of, which is very problematical. The cost of spraying an acre of apple trees five times with dilute Bordeaux mixture need not exceed \$6.00 and may be under \$5.00; there should be a net profit of \$10.00 on the basis of equal yields, but improved quality. But as a result of these experiments, and looking now at spraying *as affecting the yield*, we find that the sprayed trees gave 74.14 per cent of the total yield, this return added to the improved quality of the fruit, gives a difference in the net receipts of \$51.53 in favour of the sprayed acre. I do not think this side of the argument need be pushed farther, though it would probably prove interesting to know the effect of this on the crop of the province. Each grower will find it to his interest, however, to make a calculation for his own satisfaction on this basis.

By Mr. Carpenter :

Q. What stage had the fruit reached when you gave its last spraying?—A. The last spraying was made about the 10th July, and in the Grimsby district the fruit would be about half grown or perhaps a little more than half grown at that time.

By Mr. McGregor :

Q. It has a good effect generally in preventing insects, has it not?—A. Yes, we can apply Paris green for the prevention of insects at the same time, so that we really have a double-barrelled gun.

PEACH CURL.

Now, in the Essex district, the peach industry is becoming very prominent and is going to be very important in the near future, as I may say it is at present. The phenomenal success of a few fruit growers who started there as pioneers in this work, directed the attention of others to the success of peach culture and they are now being

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largely planted. The Yellows have not appeared in that district, but a disease I have already referred to under the name of the "curl leaf" has appeared to a somewhat injurious extent. I referred to the result of my experiments, last year, as not being entirely conclusive in preventing this disease. This year, with the co-operation of Mr. W. W. Hillborn, of Leamington, who was the former horticulturist of the farm and of Mr. R. R. Blake, of Cedar Springs, I am testing the value of another fungicide, which has been recommended by a German scientist. It is called Lysol, and is a chemical substance manufactured from coal tar. It resembles in character and process of manufacture the creosota and carbolic acid compounds. It belongs to that set of substances. I have arranged with Mr. Hillborn to give this a very thorough trial and to make the trial as comprehensive as possible, not only upon peaches but upon plums. I had a letter from him yesterday in which he says the curl leaf has not shown its appearance on the sprayed trees so far, but it is too soon to speak of the results of that test.

In Quebec we have taken pains to give some object lessons in different portions of the country. On the Island of Montreal, a farm has been selected on which an object lesson in spraying has been given, which will be carried out by the owner of the orchard during this season and which will no doubt result beneficially to the surrounding residents. Also in the L'Islet County, in the far eastern portion of Quebec, where plums and apples grow, the same plan is being pursued. Curiously enough they grow there varieties which are not heard of further east, and although they have a long cold winter, yet they have such an amount of snow that by setting the plums closely planted in orchard rows they are able to grow them quite successfully. About a month ago I was instructed by the Hon. the Minister of Agriculture to go down there and select an orchard in which an object lesson in spraying was subsequently given. The experiments will be carried on during the season, so that it will be useful to that district.

SPRAYING APPARATUS.

Now, with regard to spraying equipment, we have been trying every year to simplify the matter because the introduction of this practice will very much depend upon the ease with which it can be done. Since appearing before you on the last occasion, I have been spraying our orchard and have taken a photograph of our field apparatus just as it appeared when at work. These prints illustrate the outfit. I have the pump here which I shall also show you. You will see that this pump is an ordinary force pump fitted in the head of a barrel and the barrel placed in a dump cart. To make it more convenient the cart is floored on a level with the top of the body. These boards help to hold the barrel in position and also give a platform for the man to stand upon, so that it serves a double purpose in this way, and I have found it a very cheap and handy arrangement.

By Mr. Carpenter :

Q. You are using a double line hose here?—A. I am using a double line of hose, yes. I want to show you what I consider an easily rigged and cheaply equipped pump. You will see that this is a pump supplied with an air chamber which thus keeps up a steady and constant force. Then at the outlet or discharge pipe is a "T" and to each end of the "T" is attached a nipple and then a valve and to that is another nipple to which the hose is attached. The hose is 8 or 10 feet in length, and then a brass tube is connected with the hose and to the end of the brass tube we attach our nozzle. That gives us an apparatus which enables us to throw two streams to a considerable height. You will notice that I have two kinds of nozzles on these. The one in my left hand is called the "McGowan." The reason I have two kinds of nozzles is this : The McGowan throws a coarse spray to a considerable distance. The one in my right hand is called the "Vermorel." In spraying a tree the McGowan is directed to the top of the tree, as it gives a coarser spray. The Vermorel makes a much finer spray which does not carry as far, and is directed to the bottom or lower branches of the tree. In the photographs which I have here, one man with the two jets stands in the position as you see, and with the horse walking slowly it is possible to spray one side of a tree without stopping.

By Mr. Carpenter :

Q. What is the cost of the operation ?—A. It requires two men to do that work, as you notice. The total cost of the apparatus is \$15 as it stands. This is a special apparatus, the fittings of which were put in by myself. Including the gas pipe the total cost is about \$15. The pump used is made by the Ontario Wind Engine and Pump Co., Toronto.

By Mr. McNeill :

Q. That is for the pump alone?—A. Yes. The expense of the barrel is purely nominal ; 75 cents at the outside.

By Mr. Rowand :

Q. Does the \$15 include the nozzles too ?—A. It includes everything except the barrel ; as I say, you can get a gasoline or coal oil barrel for 75 cents. Of course you want a barrel with both heads ; a hole is cut in one end or the side to let the pump in.

By Mr. Carpenter :

Q. We find the difficulty in keeping the mixture stirred. Have you devised anything for that ?—A. There is an attachment to the handle of this pump consisting of a rod with a dasher below, that is dropped into the barrel. Then, on the other end of the rod is a wooden dasher, so that with every stroke of the pump the lower portion of the liquid is agitated.

By Mr. McGregor :

Q. I suppose the moving of the cart helps it also ?—A. Yes, to some extent, but not sufficiently, however, as the Bordeaux mixture is heavy and settles readily.

By the Chairman :

Q. Have you tried the patent of Holmes & Holliday, of Clarksburg ?—Yes. They make a very good pump.

Q. How does their agitator work ?—A. By means of a return pipe into the barrel. There is no agitator that acts as efficiently as it should when depending on the force obtained by the return pipes. This one operates on that principle, the liquid being stirred by the force of the pump.

By Mr. McGregor :

Q. If you keep the cart moving it will stir the liquid pretty well ?—A. Not sufficiently. I have some photographs here illustrating the results of the spraying carried on last year. I think, perhaps, I ought to say something about pears before closing. Some of the most striking results that we have obtained have been in treating the fungous diseases which attack pears. You will see by the photographs that I have here two trees, one sprayed and the other not sprayed. The sprayed tree is simply bending down under its weight of luxuriant foliage and large crop of fruit ; the other has hardly any foliage at all and little fruit. Another point which must be remembered. Where the orchard area is quite large the trouble of preparing this mixture each time is considerable, and it may be that the fruit grower does not spray at the right time because he has to prepare his copper sulphate and to slack his lime each time. It is disagreeable work at all times but the trouble may be reduced by preparing at the beginning of the season a stock solution of these two mixtures. Take a barrel and dissolve in it a quantity of copper sulphate using a pound of proper sulphate to a gallon of water. That will keep throughout the whole summer. Then take another barrel and slack in the same way a pound of lime in a gallon of water. That will keep throughout the season. The two will not keep throughout the season if poured together, but we can do it in this way by keeping the lime in one barrel and the copper sulphate in another. Knowing how

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much we have put in, and taking four gallons of the one and four gallons of the other we know we have the proper quantity for the barrel, as shown in that photograph. The barrels can be placed under a shed and the fruit-grower can put the two mixtures together as he needs them.

By Mr. Kaulbach :

Q. Can you give any information for the cure of black knot on the plum?—A. There is no cure, as you may call it. It has been proved during the past year, however, that the Bordeaux mixture will deter the spread of the black knot to some extent. The only remedy is to cut out the knot and destroy it as soon as it is noticed.

Q. What do you apply on the wound?—A. I would apply either red oxide of lead or turpentine.

Q. How would clay do?—A. Clay helps to exclude the air, but the other substances would act also as fungicides and kill any spores of the black knot which may be left. In using turpentine or coal oil you must exercise great caution, because if not carefully applied they will injure the healthy tissue as well as the diseased wood.

By Mr. Carpenter :

Q. You recommend cutting off the diseased portion?—A. That is the only practical remedy at the present time—cut off and destroy by fire all the diseased portion. The best time to do this is during the month of June. There are two periods at which the spores of this disease are distributed. We have a group of summer spores which will be dissipated by the wind in a few days, and it is therefore essential that we should destroy them before they are driven off. Then there are the winter spores, which are carried off by the winds in winter and spring.

By Mr. McGregor :

Q. Would the black knot of the soft maple go to other trees of a different variety?—A. The black knot of the plum and cherry is quite distinct from any of that which affects trees of other kinds.

Q. It could not be carried, for instance, to an apple or plum tree?—No. The black knot can be carried from the plum to the cherry, or *vice versa*, or from the choke cherry or wild cherry to cultivated forms.

By Mr. Carpenter :

Q. What is the result of your experiments with the pear blight?—A. We have no other preventive remedy than to cut off and destroy the diseased portions. Owing to the character of the disease and the rapid way in which it develops, we have no means of preventing the germs of the disease from affecting an entrance into the tissues. The disease begins with the newest growth of leaves either on the terminal shoots or main branches. When the main branches or stems are injured, it is through tufts of leaves growing upon spurs that the disease effects an entrance.

By Mr. McGregor :

Q. Would whitewashing affect it?—A. It might act as a preventive.

Q. We used to wash with lye in our country?—Washing with lye is a good thing. It acts as a preventive of insects also.

By Mr. McMillan :

Q. Is there any connection between the fungus attacking the pear and the fungus attacking the leaf on the same tree, because I have observed with some Flemish Beauties that we have, that where the spot appears on the leaf there is also cracking in the fruit?—A. It is one and the same disease which causes the spot on the leaf and the cracking of the fruit. The pear blight is quite distinct from that which attacks the fruit, but you will always notice that where the leaf is spotted the fruit is cracked, as you say.

Q. I notice if it is sickly it is more liable to be attacked?—A. There is no doubt that it is more liable to be attacked when the tree is sickly.

By the Chairman :

Q. What is the best time to wash trees?—A. The best time to wash trees for bark lice or sucking insects is the second week in June in this locality.

By Mr. Carpenter :

Q. What is your mixture?—A. I find the best mixture to wash them with is one which has been recommended by Professor Saunders. It consists of a saturated solution of soda—that is to say, all the soda the water will dissolve—thickened to the consistence of paint with soft soap. Apply to the trunk and main branches of the tree with a whitewash brush. A man will go over it very rapidly. It will not cost you more than a quarter of a cent a tree. It is a very desirable thing to do.

By the Chairman :

Q. Should it be dissolved in soft water?—A. It is not necessary; hard water will do.

By Mr. Carpenter :

Q. It is mixed with soft soap?—A. It is mixed with soft soap till it is as thick as paint.

By Mr. Ferguson :

Q. Hard water would not affect it because they are both carbonates?—A. Quite so.

When this is applied to the tree it dries and forms a glossy covering over the bark; trees washed with that will keep a green appearance from year to year. The farmer excursionists who pay visits to the farm—we had a large excursion there this morning—frequently ask what makes the bark of the trunks of our trees so green, and the reason is this annual washing with an alkaline solution.

FERRO CYANIDE OF POTASSIUM TEST, FOR BORDEAUX MIXTURE.

I might refer to a test for finding out how much lime is necessary to neutralize the free acid in the copper sulphate, in making Bordeaux mixture. Now, if you do not have enough lime present the Bordeaux mixture will burn the leaves of the trees. This is on account of the free acid which is in the copper sulphate and which has not been neutralized by the lime. If you wish to find out whether all the free acid has been neutralized you should take some yellow prussiate of potash dissolved in water and add a drop to your Bordeaux mixture. If it turns brown there is free acid and it is dangerous to use in that condition, and it is therefore necessary to add more lime. But if the prussiate of potash remains colourless—it has a light yellowish colour—there is sufficient lime and you can use it without fear of injury to foliage. This is a convenient thing to know. By the use of this test it is unnecessary to record the quantities of copper sulphate and lime kept in the stock solutions. You can make your mixture by testing with the prussiate of potash and if it shows the brown reaction, keep adding lime till the cyanide of potassium gives the proper reaction.

By Mr. Ferguson :

Q. It must be a composite mixture because it will not dissolve all that lime?—A. Yes, a mechanical mixture because lime will only dissolve in water in the proportion of one part in 750 and a solution would not have sufficient lime.

This, Gentlemen, concludes what I had intended to present to you this morning, and I am very much obliged to you for your attention.

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PROVISIONS FOR THE EXPORT OF FRUITS.

With regard to the resolution which Mr. Carpenter presented to the committee at your last meeting, I may say that Mr. Carpenter asked me to think the matter over and give him my opinion on any points which might occur to me in connection with that subject. I have therefore prepared a brief memorandum which I have already shown to Mr. Carpenter, and which he has asked me to read. It is as follows:—

There are many of our early fruits more or less perishable in character, which cannot be profitably disposed of in our domestic markets. These fruits include peaches, early pears, plums, grapes and tomatoes.

During periods when the market is overstocked, much loss results from the ordinary method of handling them. The home markets being unable to dispose of large shipments on short notice, much loss results both to grower and buyer, directly and indirectly. This has an unsettling effect on the trade, with disastrous results.

There are two ways of remedying this undesirable condition of things:—

1. By the erection in fruit districts of suitable buildings in which fruit may be stored sufficiently long to tide over a glutted market or a period of weak demand.

2. District cold storage warehouses supplemented by a refrigerator car and steamer service between home and foreign markets. With these equipments growers would be able to market with more profit a greater quantity of fruit, which would allow of the fruit area being increased, without a corresponding falling off or lowering of prices.

DISTRICT WAREHOUSES.

I am of the opinion that storage buildings with a capacity of 10,000 barrels or this equivalent of fruit, and cooled with ice and brine can be erected and fitted at a cost not exceeding \$2,500. Smaller storage buildings cooled with ice could probably be constructed at less than half of this figure.

PACKING AND PACKAGES.

All fruit intended for storage or distant shipment should be picked when fully grown, but before reaching perfect maturity. Pears, peaches and plums should be wrapped in tissue paper and carefully packed in small, light but strong boxes, holding from 50 to 75 specimens each. Fruit will carry better and be stored with greater satisfaction if packed in wooden boxes instead of baskets. In shipping tomatoes the smooth kinds only should be selected.

It may seem a little venturesome to moot the question of shipping tomatoes to the European market, but I think it could be done if they were properly handled. We can grow tomatoes here at a profit if we can get from 20 to 25 cents a bushel, and I think if they are properly handled, they can be shipped to the London market with good results. They should be picked just as they are beginning to colour, wrapped in tissue paper and packed in small cases.

Another kind of package specially adapted to the requirements of a high class grade is the compartment box, constructed on essentially the same plan as the egg case of commerce. This case has already been used to a limited extent by shippers near Montreal for exporting to England carefully graded apples of high quality and of soft texture. In the vicinity of Montreal they grow to a large extent the Fameuse and the McIntosh red apple. These two apples are fine in quality and beautiful in appearance but they are soft in texture. They have been shipped from Montreal in large quantities in the way I have described by packing them in compartment cases and sending them to a dealer who had a trade that would call for this class of fruit. In this line there is certainly an opening for a lucrative trade, as the same kind of package could be applied to select pears and peaches.

I am of the opinion that a trial shipment of these fruits, made in the manner outlined above, aided by cold storage, would be a most valuable experiment, which could be carried out without great cost, and might result in the opening up of a lucrative outlet for Canadian fruit.

There is no doubt at this juncture that advantageous arrangements could be made with a steamer or steamers plying between Montreal and Liverpool, which are now furnishing cold storage for butter, by which sufficient space could be secured for the transportation in proper conditions and in quantities large enough to test the practicality of the scheme.

By Mr. McGregor :

Q. There is another point while you are on your feet. Would you state the proper way to pick apples, if the apple is properly matured to pack it away in the barrel and get the best results?—A. Early apples such as Duchess of Oldenburg and Red Astrachan should be picked consecutively, that is the whole tree should not be gathered at once. To get the most out of the fruit you should go over the tree two or three times, beginning when the first specimens have begun to colour, picking the largest and finest as they ripen; ship the fruit in small baskets and cover these baskets with netting of some kind. By this early picking the remaining apples on the tree will reach a more perfect state of development. In regard to winter apples, the usual method is to pick them all at one time, because there is no object in going over the tree more than once as in the case of summer varieties. After they are picked and graded and packed in barrels, they are placed in a warehouse, where they are allowed to sweat for a day or two before finally placing them in cold storage. If they are immediately placed in a cold cellar, for instance, the difference in the temperature causes a condensation of moisture on the surface of the apple, which brings them into a condition inducing rot. But if this sweating process is allowed to take place in a drier atmosphere they will then be in a condition to go into winter quarters in proper order.

By Mr. McMillan :

Q. Do you approve of picking apples and leaving them in heaps in the orchard?—A. No, I do not. I believe in placing them at once in boxes or barrels so that they can be carried properly. Apples cannot be carried like potatoes. If they are dumped and piled in heaps in the orchard a certain amount of bruising always takes place.

Q. I find there is a long needle-like worm gets into the apples when they are left lying in the orchard and the fruit is more or less punctured?—A. Wire worms and millipedes I dare say would attack them but that would be trifling injury compared with the injury sustained by dumping them in loose heaps upon the ground.

Q. My own belief is that apples should be put into barrels or boxes placed in some building and allowed to lay three or four days before they are packed. Then they should be packed, sealed up and sent off.—A. There is no doubt this sweating process is a very important one and should always be allowed to take place before the barrel is headed and stored in the cellar.

By Mr. McGregor :

Q. People ought not to put their apples on the ground because the ground being damp and the sun warm it will lead to early decay?—A. I might say in regard to picking apples I have found a very satisfactory kind of picking vessel can be made out of an ordinary two bushel sack. Putting a potato or something of that sort in one corner it gives you something to tie to. Then attach a strap to that with a snap on one end and place a hoop in the mouth of the bag to which is attached a hook or ring. Then you can hang it over your shoulder by means of the strap and you have the open mouth of the sack before you. You can then go up a ladder and use both hands in picking and the shape of the bag allows the apples to slide down without bruising. When it is necessary to empty into a barrel, all you have to do is to remove the snap, lower the bag gently into the barrel, which may be done without bruising.

By the Chairman :

Q. In packing apples do you recommend the first layer of apples in the bottom of the barrel being placed on end?—A. Yes. I also recommend that the middle layer be of the same size as the end layer.

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Q. You would not place every layer on an end?—A. If you did, the same as with pears, it would pay and would certainly carry much better. Half barrels should always be placed in layers. I always place two layers with the stem end down in the bottom of the barrel, and with a small package, say a bushel and a half, it would not take long to fill a whole barrel in that way, and when thoroughly packed there is no shaking and the barrel goes to its destination in very much better shape.

By Mr. McMillan :

Q. A gentleman I know, was in the old country when apples were being sold. He saw barrels from the continent taken into the same rooms that did not contain quite two bushels, while ours contained three, and he told me those barrels sold for nearly the same amount as ours. They were more neatly packed?—A. There is no doubt, as Mr. McMillan says, our growers do not realize the benefits that will accrue to them by using a neater and more attractive package for their fruit.

By Mr. Carpenter :

Q. Would you ship them in a small package?—A. I would ship them in a smaller package and put them up more neatly. Pick consecutively. Don't allow them to ripen fully on the tree. Picking hastily and shoving fruit on the market in a hurry always results in considerable loss to the shipper.

By Mr. Ferguson :

Q. In reference to tobacco. I attempted to go into tobacco growing once and the grasshoppers drove me out.—A. Yes. That side of tobacco culture was discussed last year, and I might say the first experience I have noted of the injurious effects of grasshoppers was in Wisconsin. I visited the tobacco regions there some three years ago and I found, in many places, that one of their principal enemies was the grasshopper. Very often four or five rows on the outside of the tobacco plantation had the leaves riddled by the attacks of grasshoppers. They used various devices there, both preventive and remedial. Among others they used what is called a hopper dozer, a sort of sheet iron, shallow pan, which is drawn along the ground. At the back of this pan is a vessel containing coal oil. As this was drawn along the grasshoppers jumped into the coal oil and were thus destroyed. They also used Paris green on the plants. Here, we have thus far had no trouble with grasshoppers whatever, and I think it would depend upon where you grew your tobacco. If you grew it near a pasture field where grasshoppers were plentiful the outside rows might be damaged.

Having examined the preceding transcript of my evidence of the 6th and 12th June, I find it correct.

JOHN CRAIG,
Horticulturist.

APPENDIX.

By request of the committee, Mr. Craig submitted the following memorandum in writing, outlining his views regarding the provisions necessary to successful shipment of early and perishable fruits to foreign markets :—

There are many of our early fruits more or less perishable in character which cannot be profitably disposed of in our domestic markets.

These fruits include peaches, early pears, plums, grapes and tomatoes.

During periods when the market is overstocked much loss results from the ordinary methods of handling them. The home markets being unable to dispose of large shipments on short notice, much loss results both to grower and buyer, directly and indirectly. This has an unsettling effect upon the trade, with disastrous results.

There are two ways of remedying this undesirable condition of affairs.

1st. By the erection in fruit districts suitable buildings in which fruit may be stored sufficiently long to tide over a glutted market or a period of weak demand.

2nd. District cold storage warehouses supplemented by a refrigerator car and steamer service between home and foreign markets.

With these equipments growers would be able to market with more profit a larger quantity of fruit, which would allow of the fruit area being increased without a corresponding falling off or lowering of prices.

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JOHN CRAIG,
Horticulturist.

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COMMITTEE ROOM, No. 46.

HOUSE OF COMMONS,

FRIDAY, 14th June, 1895.

The Select Standing Committee on Agriculture and Colonization met this day, at 10.30 o'clock a.m., Mr. Sproule, Chairman, presiding.

Mr. F. T. SHUTT, Chemist at the Central Experimental Farm, was present, by citation, and being called, addressed the Committee as follows:—

Mr. Chairman and Gentlemen,—Having again been honoured with an invitation to appear before you, I conceive it my duty this morning to present as briefly and as clearly as is consistent with the time that I have at my disposal an account of the work carried on by the chemical department at the Dominion Central Experimental Farm during the past year. Every year is with us a busier one than the last. It is only a matter of a few years since that our farmers were ignorant of the value of the application of the science of chemistry to agriculture. But since the institution of the experimental farms, the farmers throughout the whole Dominion, I might say, have learned to appreciate the value of chemical knowledge as applied to their work, and they have realized that important assistance may be obtained from this science, which it is my duty to present to them. As this appreciation and realization grow, the demands made upon our time become more and more numerous. I shall not take up your time this morning by speaking at any length with regard to the intimate relationship between chemistry and agriculture, and further, I do not think it is at all necessary for me, here, to give any illustrations to corroborate this statement. I am fully aware that you are cognizant of the fact that there is such an intimate relationship, that there is great value to be obtained from the application of exact scientific information to the vocation of agriculture. However, I think that it will be highly satisfactory for you to learn that owing, I presume, to the publication of the annual reports and bulletins of the experimental farms, and of the fact that many addresses have been delivered before conventions of agriculturists throughout the country, that the farmers are availing themselves more and more of these advantages which the Dominion Government offers them through the farms, to improve both their methods and increase their knowledge in their work.

CHEMISTRY A PRIME PROMOTER OF PROFITABLE FARMING.

I think you will all agree with me that in these days of keen competition, in agriculture as well as in other vocations, that it is only those who have made themselves masters of all there is to know with respect to their work, who can hope to place themselves in the front rank. This matter must be as gratifying to you as it is to me, and, in fact, I think it is most encouraging for the future of agriculture. I think all those that are interested in the welfare of our country generally, must be—since this is an agricultural country—equally interested in the welfare of the farmers: and I say that this condition of affairs must be particularly gratifying and satisfactory to them as it is to us who have charge of the work.

I have only one thing to say in connection with that phase of the subject, and that is this: that these ever-increasing demands upon our time will necessitate in the near future an enlargement of the scientific staff in the chemical division. The work has already for some time past outgrown the possibilities of the present staff, which consists of myself and an expert assistant. If we are in any way to keep abreast of the work which is asked of us, it will be absolutely necessary that there should be further expert and analytical assistance in my division.

DIVISION OF WORK IN THE CHEMICAL BRANCH—CORRESPONDENCE.

I will now very shortly bring before you the principal subdivisions of my work, not dwelling at any length upon those which do not require to be spoken of in detail in this committee. First of all, there is the correspondence.

During the past year, the correspondence received and despatched, numbered 2,288 letters, an increase of nearly 800 letters over the preceding year. This fact alone, I think, testifies to the usefulness and the increasing popularity of the chemical work. These letters are, of course, letters of inquiry, and touch upon all branches of agriculture. They contain questions on dairying and horticulture and general farming, anything and everything wherein the inquirer thinks that chemical information will be of assistance to him. For my own part, I feel convinced that this branch of work (that is to say, the correspondence branch) has been the one which has served, more perhaps than anything else, to popularize, and convince the general farmer of the value and usefulness of the experimental farm. From the figures that I have given you, you may see that they have not been slow to avail themselves of the opportunities afforded them. As I mentioned a few moments ago, it is but a few years since that our farmers did not understand anything with respect to the application of chemistry to farming; the correspondence, now amounting to some 3,000 letters, therefore, gives an indication whereby we may judge of the value the farmers place upon the information afforded them by this government institution.

By Mr. Dyer :

Q. One of the other Professors gave us somewhat similar figures. Do I understand you to say that the 3,000 letters would probably be received this year by your department alone?—A. Yes, alone.

Q. Then, each Professor speaks of his own letters only?—A. Yes. I am only speaking of the chemical department. As has been very well said by the press of Canada, our farm in all its departments has now become a bureau of information, and I think we have in that way been a means of awakening the interest of the farmers in the scientific side of their work and of helping them by a process of education which must undoubtedly bring forth fruit in the future.

By Mr. Girouard (Two Mountains) :

Q. I would like to know from you if the province of Quebec has taken advantage of your office?—A. Yes.

Q. Of your department?—A. Yes.

Q. And asked you questions?—A. Yes. I have not a synopsis of the letters received from each province, but the province of Quebec stands very well in comparison with the others.

SUBJECTS OF PUBLIC ADDRESSES.

Of agricultural addresses I have delivered some twenty during the past year. They have been delivered before the principal horticultural, agricultural and dairying associations of Ontario, Quebec, Nova Scotia and New Brunswick. The principal object in view in these addresses has been to impart fundamental elementary knowledge respecting the requirements of farm crops, the nature of plant food, and the sources of plant food, the fertilization of orchards and fruit trees, the composition and value of natural and artificial fertilizers, the value of Canadian-grown fodders for feeding purposes, and the testing of milk, &c. The attendance at these conventions has been most encouraging, both to those who have had in hand the organization of the conventions, and also to the speakers. The number of questions asked at the close of the addresses has shown that the farmers feel that they have in these conventions the opportunity of obtaining much useful information. I am of the opinion that the plan of addressing farmers at conventions throughout the Dominion, as far as our time and appropriation will admit, is one which is doing very much towards bringing, on the one hand, us into touch with the farmers individually, so that we can understand their pressing and peculiar wants, and, on the other, one which brings them directly into touch with the experimental farm system—so that they always afterwards read our reports with greater understanding and with more pleasure and certainly very much more profit to themselves.

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ANALYSIS OF SOILS AND PRODUCTS.

In addition to the original investigations carried on in the chemical department, it is sought, as far as possible, to render assistance to farmers by the examination of such samples as may be taken in for analysis. Of course, no work of this character is undertaken, the results of which would benefit the individual only. It is apparent that such would be impossible; nevertheless, there are many samples forwarded by individuals, the results of the analysis of which and the publication of my report thereon, would not only benefit the farmer who sends the samples, but be of value to a large portion of the community in the district wherein the farmer lives. In such a case, I consider it well, as far as time permits, to make the analysis. I refer, in speaking of such samples, to deposits of swamp muck and peat and such naturally-occurring fertilizers as fish waste and sea-weed. Such materials can be obtained in certain parts of our Dominion—my territory covers from the Pacific to the Atlantic—free of expense as regards the purchasing cost. Consequently, although the analysis may be asked for by an individual, the results will be of value to the farmers in the community.

Under the same category comes the estimation of the feeding and the manurial value of Canadian grown plants and animal products.

WATER FOR DOMESTIC CONSUMPTION.

There is, however, one exception to the rule which I have necessarily made not to undertake work which would benefit the individual only, and that exception is the examination of samples of well-water. I have on several previous occasions, before this committee, emphasized the great need of impressing upon our people the importance of a full water supply upon the farm, not only as conducive to their own health and the health and thriftiness of their cattle, but to the production of pure milk and first-class dairy products. We have accordingly continued this very good missionary work. I may say that we analyze the water free of expense for all those who will collect a sample of their well-water according to instructions which we issue, and forward it to us, pre-paying the express charges. I am aware, however, that the time is coming when the demand made upon us in this matter will necessitate the charging of some small fee for the analysis. However, in the meantime I wish to continue this work upon the lines we are now doing, because I feel confident that it is one of the most useful and important, not only to agriculturists generally, but more especially to the dairying industry. Our report for 1894 gives the data respecting fifty samples of water analysed in our laboratory last year, and I regret to say that as heretofore a large percentage of the samples were such as to make it absolutely necessary for me to condemn them. I do not propose to enter this morning into any discussion of this question further than to say that I am of a very decided opinion regarding the pernicious effects of contaminated water, water contaminated or polluted from the barnyard, cesspools or similar sources, and that I think we are doing a very good work in the chemical department by drawing the attention of our farmers to this matter. I am of the opinion that it is of equal importance that the water should be good as that the food should be nutritious and wholesome. While our farmers understand in many instances, indeed in the majority of instances, the absolute necessity, if economy and profit are to result, that the food should be nutritious and wholesome, they do not realize that polluted water can be dangerous, especially in this matter of affecting the digestive functions. I might say that I drew attention to this matter in a public way at the convention of the American and Canadian Health Association in Montreal, and the publication of that paper in the press was fraught with very much benefit to the Canadian population. It also drew the attention of those on the other side of the line to the fact that we were alive to the question and were looking after the interests of our farmers in this matter.

CLASSES OF SUBSTANCES RECEIVED FOR ANALYSIS.

Of the samples I have referred to, received between 1st May, 1894, and 1st May, 1895, the total number was 270, made up as follows :

To the naturally-occurring belong mucks, muds, marls and matter related	67
Soils	64
Cattle foods	13
Insecticides and fungicides	8
Waters	68
Dairy products	6
Miscellaneous	44
The numbers received from each province were as follows :	
British Columbia	44
North-West Territories	9
Manitoba	8
Ontario	116
Quebec	37
New Brunswick	8
Nova Scotia	26
Prince Edward Island	22
Total	270

It will be impossible for me to refer in any detail this morning to the reports which have been issued on these various samples, but I shall call your attention very briefly to some of the principal classes, and then I shall be very happy to answer any questions which any member of the committee may put to me, either with respect to the work which I allude to, or that which I pass over.

FERTILIZERS,—SWAMP MUCK.

Briefly then, I would refer first to the samples of swamp muck. We have continued our investigations that we commenced some years ago upon these naturally-occurring fertilizers. I use this term "naturally-occurring" in contradistinction to the commercial fertilizers and barn-yard manure. These naturally-occurring fertilizers comprise chiefly the vast deposits of swamp muck to be found in various parts of the Dominion. This material, as doubtless you are aware, is formed by the gradual accumulation of decayed vegetable matter in the presence of water. Consequently it is exceedingly rich in humus, and contains a very considerable quantity of nitrogen, nitrogen being one of the three essential elements of fertility. The value then, from a manurial standpoint, of our swamp mucks, is : first, in the nitrogen that they contain, and, secondly, in the humus which they possess. Very little, however, of the nitrogen which they contain is *immediately available* for plant use. Fermentation must first ensue in the compost heap, which process converts the nitrogen into soluble and available forms. We can see thus that the farmers in many parts of the Dominion, by using proper methods, may obtain a very large amount of this most important element of fertility, nitrogen, at a very small cost, and that they can by means of an amount of trouble which is by no means excessive, convert that nitrogen into forms which are equal in value to those which they purchase in the more expensive forms of nitrate of soda and sulphate of ammonia. We have, therefore, to consider muck as a highly nitrogenous natural fertilizer, and one obtained at very little cost in the majority of instances.

Apart from its manurial value, however, I advise its use on account of its properties as an absorbent. I think it should be used, wherever it is easily obtainable, in the pig-pen, or indeed wherever there may be liquid manure to absorb. By such means a great deal of the valuable fertilizing elements contained in the liquid manure—and I

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may mention that the liquid manure is by far the most valuable part of the manure produced on the farm—by its use the fertilizing constituents in this liquid manure may be saved. Otherwise, this liquid fertilizer would be lost, and probably find its way into the farm well, or render the conditions of the farm buildings and surroundings dirty and unhealthy. The fermentation which ensues after the peat or muck has absorbed the liquid manure, is one which brings about the availability of the nitrogen of the muck itself. To sum it all up then I would say that the fermentation which subsequently ensues after the absorption of the liquid manure converts the plant food in the muck into soluble form, and at the same time prevents much valuable fertilizer from going to waste.

I have received many opinions from various parts of Canada with respect to the use and application of this material. In giving advice I have endeavoured to be guided by the opinions of the most successful agriculturists of this country. To this end I have procured data from practical men. As a result I have come to the conclusion that the best practice is to dig the muck in the autumn, and allow it to be exposed to the frost during winter. This improves it in many ways. It will correct acidity, dry it, and make it a better absorbent and vastly improve its mechanical condition. It should then be drawn into the barnyard and used there, in the cow sheds and pig pens, &c., or it may be used directly in the compost heap, alternating it with layers of barnyard manure or with wood ashes and lime. Of course it would not be well to compost this material with wood ashes and lime and barnyard manure, this would lead to loss of nitrogen; but if barnyard manure is not available, wood ashes or wood ashes and lime will answer. It is not advisable to apply this material to the soil in its crude form; it should be first subjected to the fermentation process. I have one more remark to add on this subject, namely: that the fermentation requires both air and moisture to proceed satisfactorily. Consequently the advice is not to keep the compost heap so soaked with water that the air cannot permeate it. We must have the right degree of moisture, but the air must also be able to permeate the mass, so that the micro-organism of fermentation may have a favourable environment for development. Moisture, heat and air are the three requisites for fermentation.

Q. Don't you think a direct application of this muck to light soils would be an advantage?—A. I think it would be from the mechanical aspect, in increasing the retentive capacity of the soil for moisture and otherwise improving the tilth. I do not think, how ever, that in a light sandy soil there would be much of the plant food of the muck rendered available. It has a mechanical value for both light and heavy clay soil. I always consider, however, more economical to first compost it. Our report for 1894 contains the analysis of 18 samples, collected from Prince Edward Island to the North-west Territories. The average quantity of nitrogen found in the air-dried material was 27½ pounds to the ton. Nitrogen in commercial fertilizers costs in the neighbourhood of 15 cents per pound. I am of opinion that, after being fermented, the nitrogen of muck would closely approximate the value of that in commercial fertilizers. We can, therefore, realize the value of this material.

SEA-WEED.

I now desire to detain the committee for a few minutes on the subject of sea-weed. From the fact that there are very large deposits of sea-weed on both the Atlantic and Pacific coasts of the Dominion, it was thought advisable to ascertain its manurial value. Our analysis briefly shows as follows. One ton of the fresh material was found to contain:

	Lbs.
Nitrogen	9·36
Phosphoric acid	2·18
Potash	40·50

Since the fresh sea-weed contains a very high percentage of water, the above amounts could easily be increased by allowing it to partly dry out on the shore before hauling it to the farm. These figures show that undoubtedly we have a valuable fertili-

zer in sea-weed, as it is particularly rich in potash. It is one that readily decomposes in the soil, giving up its constituents for plant use almost immediately. This quality or property greatly enhances its value.

By Mr. Bowers:

Q. In my county (Digby, N. S.) we think that sea-weed applied to grass land forces the grass, and after a while leaves the land very poor. To use it for several years and then not to apply it for one or two years, the land seems to be entirely run out.—A. In light soils the tendency is for the plant to take up everything that is available. I presume in your case you have been taking out year by year all that you have been putting in. Especially with the light soils under the system you have pursued, you have not been able to build up the fertility of the soil. Light sandy soils do not make a good store house for the preservation of plant food.

Q. Even with medium soils, in grass land particularly, the sea-weed seems to force a great crop of grass, but if you do not follow it up every year the land deteriorates?—A. That is so. I wish it to be distinctly understood that the effects of sea weed are principally those obtained the year of application. If you want an extraordinary crop of grass every year you would need to apply the fertilizer. The grass really feeds on the sea weed and uses it all up.

By Mr. Perry:

Q. How would it do on heavy clay soils?—A. It gives the best results on the lighter soils; soils that are warm and light, not too dry and not too wet. The sea-weed requires to ferment before it is of any practical value to crops and it ferments best in those soils that the air can easily permeate and that have a fair amount of moisture.

By Mr. Carpenter:

Q. Do you recommend it as a top dressing?—A. It should be harrowed under lightly. There is one other point in connection with the use of sea-weed. The effect of using it, it is easy to see, would be to enrich the land more particularly in one element. You would notice that it is essentially a potash fertilizer, and in that sense is not a complete manure unless it is supplemented. I would suggest therefore that it should be applied with bone meal, say 20 to 30 tons to the acre, together with bone meal, or superphosphate would prove an excellent fertilizer for general farm crops. Occasionally plough under a crop of clover or its aftermath to supply nitrogen.

ANALYSIS OF SOILS.

I will now proceed to speak of the original investigations which have been carried on by the chemical department of the Experimental Farm. Hitherto I have spoken of the more important agricultural analyses which have been made, fuller reports upon which appear in my report for 1894. Of original research investigations that have been in progress, the principal, perhaps, is that in connection with the virgin soil of Canada. During the year 1894 we made complete chemical analysis of ten soils, all of which were representative of large areas that had never been cropped or manured, that is to say, they were truly virgin soils. The analytical data and full reports upon these soils are to be found in my report, which has recently been published. It will be practically impossible for me to enter into any detailed notice of them this morning as my time is limited. I may say, however, that they go to show that Canada possesses in her various provinces soils rich in plant food, and comparing most favourably with the best and most fertile virgin soils of other countries. I might mention that among the specimens examined last year were some representative of the fertile soils of our North-west prairies, and of the alluvial deposits on the British Columbian coasts, and particularly the soil formed by the Fraser River. All these soils were marked by the possession of a very large percentage of the essential constituents of plant

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food, and we cannot but regard them as being exceedingly rich soils—soils which will compare most favourably with the very best virgin soils of other countries. The committee will pardon me speaking so briefly on this important subject, but you will understand that this is such an extensive subject that if I went into it in detail and gave all the percentages in these soils it would more than take up the time at my disposal. In connection with the analytical data of the soils to which I have referred, I have endeavoured to point out what would be a rational, economical and profitable treatment as regards fertilizers for these soils.

GREEN CROPS AS FERTILIZERS.

I might again very briefly point out in connection with light soils the value of green manures, more especially when for this purpose legumes are used. I think it was on this occasion last year that in the course of the discussion it was brought out that the legumes are a family of plants which obtain in a large measure their essential and valuable constituent, nitrogen, from the atmosphere. We have in the legumes—I refer now to the clover, pease and beans, a class of plants which appropriate and assimilate a large proportion of atmospheric nitrogen, which may be of use to future crops, by simply ploughing it under. When we examine the most fertile soils in all parts of the world we find they are those which are invariably rich in nitrogen, so that it becomes very good economy to see that our clays and our sandy soils are enriched and kept in good heart by a liberal application of organic manures; in other words, manures which contain both humus and nitrogen. I know of no other cheaper way of doing this, than that of turning under a green crop, more especially when that green crop is of the legumes. On many of our farms we do not keep sufficient cattle to produce enough manure to properly dress the whole land, and, this being the case, I would particularly recommend the turning in of clover.

By Mr. Carpenter :

Q. At what stage do you recommend turning it in?—A. While it is in flower.

By Mr. Semple :

Q. What is your opinion of ploughing under rye?—A. It adds a very large amount of humus to the soil and will improve the mechanical condition of the soil, besides imparting other benefits; but it does not add anything to the soil which has not been in the soil in the first instance, in the way of plant food. It has rendered more available some of the original plant food in the soil. Clover obtains the larger proportion of its nitrogen from the atmosphere, consequently we make a distinct addition to the plant food in the soil by making use of it in this way.

By Mr. McGregor :

Q. What about buckwheat?—A. Buckwheat does not take its nitrogen from the atmosphere either, but for the same reasons already given, it is very useful.

By Mr. Pridham :

Q. What effect would feeding animals on the land have, say sheep or lambs, on the crop following?—A. You would have a certain amount of plant food taken out of the crop by the sheep. Consequently if the sheep were not being fed anything beside the crop you would not add the same amount of plant food to the soil (in the manure from the animals) that you would if you turned the crop under. On the other hand to offset that you have it rendered somewhat more available. The digestive functions of the sheep would render the plant food, which finally passes out as manure, more readily available for crops, but you would not have the same sum total of plant food, because part of it would be retained by the growing animals.

By Mr. McMillan :

Q. Would not the quantity of food taken depend upon whether they were lambs or sheep?—A. The manure from the sheep would be richer in fertilizing constituents. The lambs take more out of the food than the sheep.

By Mr. McGregor :

Q. It would depend upon the quantity of the sheep?—A. Undoubtedly. I would like to say this in connection with green manures. There is a greater benefit, where it is at all possible, in feeding the clover rather than ploughing it under, because then two profits will be obtained. From 70 to 80 per cent of plant food constituents will be returned in the manure, and a profit will be obtained by the feeding of cattle. However, where this is not practicable, I would advise the growing and turning under of all green crops.

WOOD ASHES, LIME AND SALT AS FERTILIZERS.

In conjunction with this method of manuring by green crops I would say one or two words by the way of emphasizing the value of wood ashes. Wood ashes would supplement such a green crop—would supplement it in the fertilizing constituents which it chiefly lacks, and also assist in the decomposition of the humus in the soil. Superphosphate or bone dust would be valuable in supplying additional phosphoric acid. We have thus to consider the green manures as more particularly nitrogenous, supplying the other constituents by means of wood ashes and phosphate.

Q. Would you use any lime?—A. Yes, wood ashes contain a considerable amount of lime, but it would do no harm to add wood ashes with lime at the same time that you turn under your green crop. Speaking of lime, it reminds me that in many of our Canadian soils I find what I may term a minimum amount of lime. Agricultural chemists consider that less than one per cent is too low for the best returns and there are many of our soils which contain less than one per cent of lime. Undoubtedly such soils would be benefited by a judicious, though certainly not an indiscriminate, use of lime.

Q. Would you use salt at the same time?—A. Not necessarily. Salt in itself is not a direct fertilizer. The elements of salt, while they are contained in plants, yet are present in such small percentage that it is not as a rule necessary to supply them in the way of fertilizers. There is an indirect use of salt which renders it valuable, more especially for clay soils.

By Mr. McMillan :

Q. For a heavy clay soil it is one of the worst things you can put in, tending to "puddle" the soil?—A. Salt? That is contrary to most of the opinions in the standard text books. It is generally held to flocculate and thus improve the tilth of clay soils. Salt also liberates potash in the soil for the use of crops.

By Mr. Carpenter :

Q. You would recommend pasturing off clover, I suppose then ploughing under the sod? You attach some value to the roots?—A. Yes, there is a large amount of nitrogen in the roots. The crops could either be cut or fed on the field, perhaps the first plan is preferable in most cases.

Q. You would pasture off the clover and turn under the sod?—A. I don't necessarily mean pasture off it, but feed in some way; as dry feed or ensilage.

By Mr. McMillan :

Q. I think it a wasteful course to pursue, ploughing clover under altogether?—A. No; not necessarily so. I consider that it would be a practical method of adding humus and nitrogen; but, as I explained, there may be an extra profit by feeding the clover and carefully preserving the resulting manure.

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By Mr. McNeill :

Q. Do you consider clover the best crop for that purpose, as a rule?—A. Yes. Pease grow luxuriantly and are also rich in nitrogen, but, taking everything into consideration and the depth to which the clover roots grow, I am of opinion that clover takes the first place as a green manure.

By Mr. Henderson :

Q. Speaking of salt, what quantity should you use?—A. This matter of its value to soil is debatable. I pointed out that it is not a direct fertilizer. We cannot consider the elements which compose salt as being necessary to plant growth, because they are already contained in soils in sufficient quantities for the requirements of farm crops. The question occurs, what is the value of salt in agriculture? On many soils where it has been indiscriminately applied it has done more harm than good. As I mentioned a moment ago, it is held by many that it flocculates clay soil equally well with lime, but we have heard to-day a contradictory opinion.

Q. That is why I asked the question ; to get at an idea of what quantity it would be proper to use. You say it may be over done. You may use too much of it?—A. Yes ; 300 lbs is probably a good dressing. Perhaps Mr. McMillan could give an opinion.

By Mr. McMillan :

Q. Well, we have to put in three and four hundred pounds to the acre. I know of one field that was being summer fallowed close to where there had been a salt block. There was a lot of salt in it. It was a ten acre field and it was thought would be destroyed, but it had one of the strongest fall wheat crops ever seen?—A. What was the character of the soil?

Q. It was a clay loam?—A. From 100 to 300 pounds is the usual quantity.

Q. The only way we use salt at present is with the mangels, which are very much improved by it. We apply from 300 to 400 pounds to the acre before we make our drills?—A. Most authorities are agreed that between 100 and 500 pounds is the usual application per acre. There is one other matter in connection with the function of salt ; it probably renders available the potash in the soil. Mangels and all root crops take up a large quantity of potash. It very probably performs the same functions for a crop of wheat.

SUPPLEMENTARY FERTILIZERS.

I would like to place on record that I consider wood ashes and superphosphate or bone meal more particularly are the correct fertilizers to supplement the clover, and that I think there are many poor soils that could be brought into excellent condition of fertility by the adoption of this method of growing legumes and adding the potash and phosphoric acid in the forms I have mentioned.

By Mr. McNeill :

Q. What proportion of ashes and bone meal would you apply per acre?—A. If wood ashes are obtainable—from 30 to 100 bushels. A good deal would depend upon the character of the soil in the first place, and, in the second, upon the crop which you intend to grow. Bone meal may be applied from 100 pounds to 600 pounds per acre.

By Mr. McGregor :

Q. When would you use the green manure?—A. I would plough the crop under when it is in flower.

Q. When would you apply the ashes?—A. I would apply the ashes in the spring, and the bone meal in the autumn.

Q. When would you use the ashes—after the ground has been ploughed?—A. Yes, and then harrow them in. It is not necessary to harrow to a great depth.

By Mr. McNeill :

Q. What quantity of bone meal would you use?—A. From 100 to 300 pounds.

Q. What does bone meal cost?—A. I have not the price list with me, but I think it is from \$30 to \$35 per ton.

By Mr. Carpenter :

Q. In some sections of the country we have a difficulty in procuring ashes?—A. Where the ashes are not obtainable you can get kainit or muriate of potash. In such forms it is often cheaper than the wood ashes, and you would not require the same amount of kainit or muriate as you would of wood ashes. Kainit is used at the rate of 300-700 pounds to the acre. It contains about 13 per cent of potash. Muriate of potash contains approximately 50 per cent of potash. It is used at the rate of about 200 pounds per acre.

COMPONENTS OF THE APPLE.

We have been enabled this year to continue our investigation into the chemistry of the apple. It was in the year 1890, I think, that I published the results of our analysis of the leaves, results which showed the amount of the important constituents withdrawn from the soil by the leaves, and consequently the partial requirements of the plant for its well being and growth. In the present report I have given the composition of the fruit, showing the important constituents withdrawn from the soil by the fruit, so that where the fruit is sold we may be able to estimate the extent to which the soil has suffered in that connection. The apples which were examined were the Duchess of Oldenburg, the Wealthy, the Fameuse and the Northern Spy. We found that in 1,000 pounds of the mature but still green apple leaves there are of nitrogen 8.87 pounds, phosphoric acid 1.94 pounds and potash, 3.92 pounds. Then I state that, assuming the weight of the leaves produced by a full grown tree to be 50 pounds (this is of course merely an approximate estimate), and that there are 40 trees to the acre, we obtain the following figures:—

Nitrogen.....	17.74	pounds	per	acre.
Phosphoric acid.....	3.88	“	“	“
Potash.....	7.84	“	“	“

These figures, therefore, represent approximately the amounts of the chief fertilizing ingredients withdrawn per acre by the leaves from the soil.

By Mr. McMillan :

Q. That would be mostly returned to the soil when the leaves fell?—A. I presume so.

By the Chairman :

Q. If they are not blown away?—A. Yes.

With respect to the fruit, the result of our analyses go to show that a barrel of apples approximately contains:—

Nitrogen.....	0.9	ounces.
Phosphoric acid.....	0.5	“
Potash.....	3.5	“

Assuming that 40 trees per acre in an orchard 25 years old, yield on an average 160 barrels, the following would represent the amount of the chief elements of fertility that are taken from the soil by the crop in that area:

Nitrogen.....	8.9	lbs.
Phosphoric acid.....	5.3	“
Potash.....	32.8	“

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You will see from this that the apple crop is not what might be termed an exhaustive one. It ought to be a very easy matter to return to the soil a concomitant amount of fertilizing materials to replace those annually removed by the apple crop.

By Mr. Bowers :

Q. These constituents, such as nitrogen and the others quoted—are they taken from the atmosphere by the apple?—A. With respect to the elements I have quoted, none of them are derived by the apple from the atmosphere. Nitrogen, potash and phosphoric acid, the requirements of the plant for life and growth, are elements for which it has to draw upon the soil.

By the Chairman :

Q. Have you found out by analysis what the constituent elements of the apple are?—A. Yes, we have.

Q. I mean have you the figures with you?—A. Yes, I have the composition of the fruit. The composition of the fruit, giving the average of four varieties, is 8.98 per cent of water, 12.4 per cent organic matter, 28 per cent of ash, that is the average composition in the apple. The nitrogen is .0428 per cent. I have calculated from this the amount per acre and have already given you that data.

By Mr. McNeill :

Q. Judging from these facts you have just given us, Mr. Shutt, what manure would you recommend for the orchard, provided that barn-yard manure is not easily obtainable?—A. I should advise a green crop in the first place.

Q. Clover?—A. Yes, because that is, as I have already mentioned, a nitrogen collector, and one which would not only enrich the soil in humus, but also to give it a convertible supply of nitrogen. I think it would also benefit an orchard very much physically, by improving the absorbent power of the soil.

By Mr. McMillan :

Q. Is it settled by science as to whether the clover draws the nitrogen from the air through the leaf or from the soil through the root?—A. From the air that is in the soil, through the root by means of tubercles and the bacteria contained in them.

By Mr. McNeill :

Q. What else would you use after the green crop?—A. I would supplement that by an application of unleached wood ashes; 25 to 40 bushels to the acre. Then 100–300 lbs. of bone meal or super-phosphate.

Q. That would be sufficient to maintain the fertility?—A. That would be sufficient. If the soil were one which was particularly deficient in lime, it might be well to add some lime. I ought to know something of the soil before speaking too definitely as to the treatment, because soils differ so much in composition and in character, but I am speaking now within limits of what would be useful for soils in general.

By Mr. Pridham :

Q. How would you apply the ashes?—A. Spread them over the land. They could then be harrowed in after the ploughing of the green clover.

Q. On the surface?—A. Yes.

By Mr. McNeill :

Q. Would it be necessary to harrow them in or would it do just to scatter them on the surface?—A. They would do without harrowing, especially if it were in a rainy season.

What I have already said as to muriate of potash, is applicable also to kainit. Kainit contains about 13 per cent of potash, and the muriate about 50 per cent. These results are according to analyses. I have made out several formulæ for fertilizers for an orchard, and these are published in my report.

By Mr. Pridham :

Q. In our county quite a few have sown gypsum round their crops, clover, &c. You think that is a good thing?—A. More particularly for clover. It is a good thing in many ways I think. First of all it is a direct supplier of plant food, and in the second place it liberates potash, which is an element particularly wanted by leafy crops, more especially clover and peas. They are crops which are specially benefited by potash, and the effect of the gypsum, or land-plaster, in soils, is to liberate the locked up stores of potash in the soil.

By Mr. McNeill :

Q. Do I understand you have published in your report, formulæ for fertilizers for orchards?—A. I did not insert that part.

Q. The reason I have been asking you these questions is that I find a number of people in my section of country object to having large orchards, on the ground that they cannot supply manure for them, which I think is a very unfortunate view for them to take?—A. I will read one or two now if you like. The following formula consists of commercial fertilizers only, and is as follows :

Nitrate of soda	100 lbs.
Ground bone (fine).....	100 “
Superphosphate.....	125 “
Muriate of potash.....	150 “

Q. That is per acre?—A. Yes.

Q. Could you give any idea of what that would cost per acre?—A. I have not the trade prices with me, but I could figure it up approximately. By buying in large quantities it would be about \$7.

Q. You think the green manure, supplemented with wood ashes, where available, would be sufficient?—A. Yes; and a certain amount of bone meal.

Q. How much bone meal with the wood ashes?—A. From 100 to 200 lbs., because there is a certain amount of phosphoric acid in the wood ashes. The bone meal has 20 to 25 per cent. of phosphoric acid.

COMPONENTS OF THE STRAWBERRY.

The chemistry of the strawberry plant was the next investigation which we undertook, and what was done respecting the apple has been repeated in the case of the strawberry. The varieties analyzed were Sharples, Crescent, Wilson and Manchester. The whole plant, including the root while in flower, was taken for analysis with the following result:—

One thousand lbs. of the plant contain on the average—

Nitrogen.....	5.07 lbs.
Phosphoric acid.....	1.39 “
Potash.....	5.75 “

If we estimate 50,000 plants to the acre, there will be withdrawn from that area of soil :

Nitrogen.....	47.5 lbs.
Phosphoric acid.....	13.0 “
Potash.....	53.9 “

The only further remark which I wish to make in regard to the strawberry plant is that, as the growing, and more particularly the fruiting season, is short, the strawberry

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to bear well must have access to a large amount of immediately available plant food. Unless this demand is satisfied, during this short period, the best returns cannot be obtained.

By Mr. McMillan :

Q. I heard a discussion about ploughing the orchard and keeping it in grass. One gentleman of large experience stated that the orchard which was kept in grass produced the best eating quality of fruit.—A. The opinion of the majority of orchardists is that it is better to plough the orchard. I have no opinion to give on that subject. I do not know of any accurate data in connection with it, but I have never heard that the quality of the fruit was improved by leaving the orchard in grass.

By Mr. Bowers :

Q. What is the best time for fertilizing the strawberry plant?—A. It would depend somewhat on the soil, but if bone meal is applied I would put it on in the autumn. Such soluble manures as nitrate of soda should be applied as a top dressing during the early growing period in the spring. It is a quickly acting manure, and if applied in the winter and rainy weather, and rainy weather sets in, the greater part of the nitrate is lost through being leached out. The best fertilizer for the strawberry crop is barnyard manure, supplemented by one which contains potash.

By the Chairman :

Q. Would wood ashes do?—A. Certainly. That would do very well and, if not obtainable, kainit or muriate may be used. The soils should be much richer than would be considered necessary, on account of the short season. It should have a large store of plant food.

By Mr. Bowers :

Q. You can never get too much manure on the strawberries?—A. I should scarcely like to say that, because if it came a wet season and you had applied a considerable amount of barnyard manure you would have a large development of leaves to the probable detriment of the fruit. The fruit grower must, of course, use his own judgment.

THE FOOD COMPONENTS OF CORN AT VARIOUS STAGES OF DEVELOPMENT.

Before closing, I want to speak on the matter of Indian corn as a fodder crop.‡ It is a very important crop, and for fodder only ranks next to grass. Indeed among winter fodders it takes a first place.

By Mr. McGregor :

Q. What ratio per ton of each does it stand to clover or timothy hay?—A. As an equivalent?

Q. Yes.—A. I have not any figures with me to-day on that point. I am about to speak more particularly on the chemistry of the corn plant itself. However, according to the quality of the timothy and clover, and the quality of the corn crop the value is that one ton of timothy and clover hay is equal to from 2 to 4 tons of the ensilage. I presume in the majority of instances the proportion is nearer 4 tons of ensilage. It would all depend on the quality of the two. I consider it highly desirable that we should ascertain all possible information respecting the growth and requirements of this crop and also ascertain its food value.

By Mr. McNeill :

Q. I would like to ask you as to the food properties of pure timothy and pure clover?—A. Clover is much richer than timothy; it has a larger proportion of albuminoids, and hence the feeding qualities are better.

Q. Can you take that as the test of the nourishing qualities? Is one substance more assimilated than the other? May it not be quite as nutritious to the animal?—A. Foods are made up of several classes of constituents, and these classes have different functions in the animal economy. These albuminoids are known as flesh formers; they replace the tissues which are wasted or used up by the work of the animal. They are necessary for the support of the blood and to build up the frame generally. The starches and the sugars (the carbohydrates) are for the production of heat and energy. The albuminoids cannot be replaced in the diet by fats or starch or sugar. If the animal is to retain life and grow it must have food that will produce flesh and milk and develop heat. It is therefore essential that the food should contain a sufficient proportion of albuminoids as well as of the other food constituents.

Q. What I wanted to get at was this: Supposing that a certain food has a greater quantity of albuminoids than another given food, and supposing that another given food which has not so large a proportion of albuminoids is more easily assimilated, might it not in reality be the more nutritious food of the two in practice?—A. Yes, under certain circumstances, because the value of food, in the first place, depends upon its digestibility and assimilability, as we might call it. The other matter that should be considered is the proportion of its various constituents. The albuminoids are absolutely necessary for the vital functions of the animal; still we could not feed them entirely, no matter if their price were such as to make it possible, because we should be feeding the animal too much nitrogen, and then the excretory organs would be overtaxed and become deranged, and the whole animal economy upset. So there must be a certain balance of proportion in the ration or diet between the albuminoids and the non-nitrogenous substances, fat, starch, &c.

Q. Then, in addition to that, those substances must be digestible?—A. Yes, they must be digestible or they have no value whatever to the animal; and, therefore, you cannot make a comparative statement that a certain food is more nutritious than another food, without at the same time assuming they are of equal digestibility.

Q. That can be found out by practice?—A. Yes, by practice; or, rather, by direct experiment.

For the investigation into the composition of the corn crop, several very well known varieties were taken. They were Longfellow, Pearce's Prolific, Thoroughbred White Flint, and Red Cob Ensilage. This research was commenced several years ago, but owing to the large demands upon our time we have not been able to finish the work until this year. Samples of these varieties were taken from two plots—an upper and a lower plot—at the following stages of growth—tasselling, silking, early milk, late milk, and glazing.

By Mr. Carpenter :

Q. Is the Mammoth Southern included in that test?—A. No. At the same time that these samples were taken for analysis, the produce of one-twentieth of an acre was weighed; so that, from the chemical data and the weight of the fodder so obtained, the value of the corn at the different stages of growth, the value per ton and per acre could be calculated.

By Mr. McNeill :

Q. Just what I mean to say is this: In order to discover the value of it for feeding purposes you would have to know whether it was equally easily assimilated, equally digestible and agreed as well with the animal at the one stage as at the other?—A. We have no experimental data with regard to the digestibility of the corn crop. We examined the corn plant between practically 1st August and about 25th September, and I do not think that within these dates its digestibility was impaired. For the benefit of the Committee I have put my data in the form of tables. I shall be glad, if you wish to follow me in the consideration of this subject, if you will look at the tables while I am speaking.

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TABLE I.—Illustrating the Respective Composition of four varieties of the Corn Plant in the several stages of growth.

Number.	VARIETY.	STAGE OF GROWTH.	IN FRESH OR GREEN MATERIAL.						CALCULATED TO WATER— FREE SUBSTANCE.				
			Water	Ash.	Protein (Albuminoids).	Fibre.	Nitrogen-free extract (Carbohydrates).	Ether extract (Fat).	Ash.	Protein (Albuminoids).	Fibre.	Nitrogen free extract (Carbohydrates).	Ether extract (Fat).
1	Longfellow.....	Tasselling.....	86.87	1.36	1.61	4.47	4.21	1.48	10.35	12.27	34.05	32.07	11.26
2	do.....	Silking.....	86.02	1.13	1.48	4.27	6.18	0.92	8.05	10.61	30.54	44.25	6.56
3	do.....	Early Milk.....	82.84	0.96	1.74	5.13	7.89	1.44	5.62	10.13	29.92	45.93	8.40
4	do.....	Late Milk.....	77.51	1.14	1.96	5.57	12.33	1.55	5.06	8.45	24.76	54.82	6.91
5	do.....	Glazing.....	75.28	1.05	1.78	5.51	14.58	1.80	4.23	7.20	22.31	58.97	7.29
6	Pearce's Prolific.....	Tasselling.....	84.52	1.35	1.87	3.73	7.45	1.08	8.70	12.73	24.12	47.43	7.02
7	do.....	Silking.....	81.90	1.35	1.42	4.93	6.22	1.17	8.99	9.39	32.66	41.21	7.75
8	do.....	Early Milk.....	79.00	1.11	1.37	5.31	8.69	1.62	6.14	7.57	29.37	47.96	8.96
9	do.....	Late Milk.....	79.00	1.02	1.45	5.03	11.78	1.72	4.65	6.90	23.97	56.07	8.21
10	do.....	Glazing.....	72.36	1.14	1.65	6.74	16.03	2.08	4.77	5.97	24.41	57.33	7.52
11	Thoroughbred White Flint.....	Tasselling.....	85.84	1.09	1.38	4.66	6.04	0.99	7.72	9.78	32.90	42.58	7.02
12	do.....	Silking.....	85.27	1.21	1.54	4.95	6.11	0.92	8.24	10.49	33.59	41.45	6.23
13	do.....	Early Milk.....	81.42	1.02	1.47	5.28	9.20	1.61	5.47	7.91	28.41	49.55	8.66
14	do.....	Late Milk.....	77.07	1.31	1.31	6.16	12.40	2.07	4.31	5.74	26.89	54.01	9.05
15	Red Cob Husilage.....	Tasselling.....	85.68	0.99	1.20	4.89	5.89	1.14	8.42	8.41	34.18	40.98	8.01
16	do.....	Silking.....	79.14	1.27	1.18	7.29	10.08	1.13	6.12	5.60	34.54	45.77	7.91
17	do.....	Early Milk.....	76.06	1.22	1.13	7.10	12.47	2.02	5.12	4.71	29.67	52.04	8.46

The above table gives in detail the composition of the fresh or green material at the various stages of growth, and the composition is also calculated to the "water free" substance. In the corn, as in other plants, we have water and we have dried matter. In the first series of columns, we have the composition showing the percentage of water, and in the second series of columns we have the composition of the dry matter, calculated to percentages.

The first fact to be noticed is that the water diminishes in amount from the tasselling to the glazing stage of growth. In other words, this means that the percentage of dry matter increases steadily between those two periods. For instance, if we take the first two corns which are upon that table you will notice there are 13.13 lbs. of food material in the younger corn and 24.72 in that of the more mature corn. In the Pearce's Prolific there were 15.48 lbs. of dry matter or food material in the tasselling condition and 27.64 at the glazing stage. These amounts may be obtained by subtracting the percentage of water from 100.

The second point I draw your attention to in that table is in connection with the percentage of ash. You will notice that the ash contents diminish as the plant matures. On calculating the percentage of ash to the water free substance as shown in the second series of columns of the table, it will be noticed that the percentage of ash shows a most decided decrease during the period of growth between the tasselling and the glazing.

The third point is that the albuminoids, which I have already referred to as the flesh formers, would appear to increase somewhat in amount as the plant proceeds to the glazing condition. This increase is not a large one in quantity, but undoubtedly it represents an enhanced value because of the greater food value of the albuminoids in the maturer conditions of the corn. The nitrogen in the younger stages of growth exists in the form of amides; in the more mature corn the amides are converted into the albuminoids, which are supposed to have a greater feeding value than the former.

Amides are a form of nitrogen which are found in plants during the rapidly growing season. They are soluble and are the vehicles for transmitting nitrogen from one part of the plant to the other. As the plant matures these amides are converted into albuminoids, so that in the maturer corn the nitrogen represents a larger proportion of albuminoids than it would do in the younger stages; and further it is generally conceded that the food value of the albuminoids is greater than that of the amides.

By Mr. Carpenter :

Q. You have not given the glazing stage here in White Flint or Red Cob Ensilage?
—A. Because they do not reach that stage, unfortunately.

Q. Longfellow is a very early variety, and the same way with Pearce's Prolific?—A.
—Yes.

Q. And Longfellow gave the best results?—A. Yes, they show an increase in nitrogenous matter during the latter stages of growth. As the plant matures their albuminoids decrease when calculated to the water free substance. You will find that in the second series of columns under the caption "Albuminoids." It goes down in the next Longfellow from 12.27 to 7.2 and from 12.73 down to 5.97.

By Mr. Dyer :

Q. That establishes Longfellow in your opinion as being the best?—A. Not necessarily, from that standpoint. That corn which will come to the glazing condition is the best corn to grow, not to grow corn which does not come to the glazing condition before the frost arrives.

The fourth point in that connection is that the fibre which forms the framework of the plant—the part that carries by means of its tubes and vessels nourishment elaborated by the roots and leaves, increases in amount as the plant matures. So long, however, as it does not become dry and hard I do not think its digestibility is impaired. It is to be noticed that the percentage of fibre decreases as the season advances, when calculated to the water free material.

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The fifth deduction from this table is that there is a very large amount of carbohydrates—heat producers such as sugar and starch—stored up during the later stages of growth. The increase in the total dry matter referred to is chiefly due to the increased proportion of these constituents—the carbohydrates. In Longfellow this increase of carbohydrates in the green material is from 4.47 per cent to 5.51; in Pearce's Prolific from 3.73 per cent. to 6.74 per cent., and so on. When calculated to the water free material we have for the same varieties, 32.0 per cent in the tasselling stage, increasing to 58.97 per cent. In the glazing condition for Pearce's Prolific the percentage runs from 47.43 to 57.33. This gain will be more apparent when we study the next tables.

TABLE II.—Showing the composition of the four named varieties of fodder corn reduced to an average of the whole, in the several stages of growth.

Average of the following varieties: Longfellow, Pearce's Prolific, Thorobred White Flint, Red Cob Husilage.	IN FRESH OR GREEN MATERIAL.						CALCULATED TO WATER—FREE SUBSTANCE.					Percentage of Dry Matter in Green Material.
	Water.	Ash.	Protein (Albuminoids).	Fibre.	Nitrogen—free extract (Carbohydrates).	Ether Extract (Fat).	Ash.	Protein (Albuminoids).	Fibre.	Nitrogen—free extract, (Carbohydrates).	Ether Extract (Fat).	
<i>Stage of Growth.</i>												
Tasselling	85.73	1.25	1.51	4.44	5.90	1.17	8.80	10.80	31.31	40.76	8.33	14.27
Silking.	83.84	1.24	1.40	5.34	7.15	1.03	7.85	9.04	32.83	43.17	7.11	16.17
Early Milk	80.55	1.08	1.43	5.71	9.56	1.67	5.59	7.58	29.34	48.87	8.62	19.95
Late Milk	77.86	1.05	1.55	5.59	12.17	1.78	4.74	7.05	25.21	54.97	8.05	22.14
Glazing.	73.82	1.08	1.71	6.12	15.33	1.94	4.50	6.58	23.36	58.16	7.40	26.18

By Mr. Carpenter :

Q. Would it not be well to make an investigation and see the relative value of the corn in the glazing stage, and clover and timothy when cured? That is the only way we can get at the relative value of the food?—A. That would be a benefit. There have been several investigations on that point carried on, but I cannot at the moment quote the data.

I will now direct your attention to table 2, which contains the averages made from the foregoing data, and which serve to emphasize the deductions already made. The average composition of the four varieties examined at the various stages of growth may be seen at a glance. The last column gives the gain in pounds per 100 of green corn of the real cattle food as the plant matures; while the other columns give the figures that show wherein this gain has been made. If you take 100 pounds of the green material it shows that in the tasselling stage the percentage of dry matter is 14.27, which is the cattle food. Allow that corn to proceed to the glazing condition and from 100 pounds of the green material you will get 26.18 of real cattle food, thereby increasing in its value, if the digestibility has not been impaired, by almost 100 per cent.

TABLE III.—Showing the weight in pounds of each constituent contained in a ton weight of green fodder corn, at different stages of growth ; also the weight of the several constituents contained in the same corn product of an acre, at the stages indicated, the four named varieties of corn being estimated at an average of the whole.

Average of the following varieties: Longfellow, Pearce's Prolific, Thorobred White Flint, Red Cob Ensilage.	POUNDS PER TON.					TONS AND POUNDS PER ACRE PRODUCT.						
	Ash.	Protein (Albuminoids).	Fibre.	Nitrogen, free extract, (Carbohydrates).	Ether Extract (Fat).	Total Dry Matter.	Ash.	Protein (Albuminoids).	Fibre.	Nitrogen, free extract, (Carbohydrates).	Ether Extract (Fat).	Total Dry Matter.
Stage of Growth.	lbs.	lbs.	lbs.	lbs.	lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.	tons lbs.
Tasselling	25 0	30 2	88 8	118 0	23 4	285 4	0 566	0 684	1 12	1 674	0 530	3 466
Silking	24 8	28 0	106 8	143 0	20 6	323 2	0 596	0 673	1 566	1 1436	0 495	3 1766
Early Milk	21 6	28 6	114 2	191 2	33 4	389 0	0 495	0 655	1 615	2 379	0 765	4 909
Late Milk	21 0	31 0	111 8	243 4	35 6	442 8	0 449	0 663	1 390	2 1204	0 761	4 1467
Glazing	21 6	34 2	122 4	306 6	38 8	523 6	0 466	0 738	1 641	3 615	0 837	5 1297

By Mr. Dyer :

Q. But would it not be reduced in heft?—A. Table 3 will make that matter clear. Table 3 gives the weights of the constituents per ton and per acre in the green corn. These averages are deduced from the foregoing table and the weights per acre obtained by weighing the product of one-twentieth of an acre of each variety at the stage of growth already noted. The number of tons and pounds per acre can, of course, be only regarded as approximate. Every season such data would vary, and the crop upon any one plot will not be the same from year to year. To get uniform crops to experiment with, is exceedingly difficult and, indeed, impossible. These figures, however, give a fair indication of the value of the corn crop at the different stages of growth. A study of this table will prove the wisdom in allowing the corn to come to the glazing condition before cutting either for silo or for drying in shooks. It is then that the plant contains the most nutriment. If allowed to stand after it has reached this stage, the probability is that the digestibility of its constituents will be impaired.

By Mr. McGregor :

Q. By table 3 that dry glazed corn would only weigh 5½ tons to the acre?—A. That would be the total dry matter per acre—5 tons 1297 lbs. You see I have removed out of consideration altogether the water, because it is not the total weight of material we obtain which fixes the value of the corn. We know that the largest total weight is reached by the corn plant somewhere between the early and late milk stage, but that stage by no means represents the greatest value of the corn plant. After that it decreases in weight per acre, but nevertheless increases very largely in food value.

Q. I would like to ask you on this point: Supposing you have a ton of hay which weighs 2,000 pounds. Now, we want to ascertain the value of a ton of glazed corn as compared with a ton of hay; that is, how many tons of glazed corn would weigh a ton of hay?—A. Eliminating those elements which are of no value for food purposes, we have here the total dry matter which for our purpose may represent the real cattle food in the corn. In the tasselling condition you see there are 285.4 pounds of real cattle food in the ton. Calculate that out to the acre, using the weights I have obtained,

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gives us 3 tons 466 pounds of real cattle food, or dry matter. An equal amount of dry fodder from clover and timothy would be richer in albuminoids. I can prepare a table giving the data you require.

By Mr. Dyer :

Q. And at the glazing period it is nearly double?—A. Exactly. The figures are : for the silking period, 323·2 lbs. ; early milk, 389 lbs. ; late milk, 442·8 lbs., and glazing, 523·6 lbs.

By Mr. McNeill :

Q. The dry matter is the only nutritious element?—A. Exactly. The other is all water. We divide it into two parts, water and dry matter.

Q. Supposing you feed hay to one horse and the same quantity of green grass to another, have you the same quantity of dry matter? Would not the horse be fatter on the grass than on the hay if you give it the same amount of dry matter?—A. The total weight of grass would be much more than the weight of hay from the same gross weight, but then the question of digestibility would come in. Undoubtedly the digestibility of the grass, if cut at the right period, would be much greater than that of the dry material. Nevertheless for our purpose we can consider the value for food of these two according to the dry matter they contain. Granting that the digestibility is not impaired, which I believe to be the case, a close consideration of this table shows the wisdom in allowing the corn to come to the glazing condition before cutting either for the silo or for drying in the shooks. Further conclusion from this investigation is that the mineral constituents (the ash), which are taken from the soil, and the nitrogen, that essential element of the albuminoids, are more particularly taken up by the roots during the early stages of growth. The data here presented go to show that it is during the early stages of the growth of the plant that these materials are taken up from the soil.

By Mr. McGregor :

Q. It takes a considerable amount of nourishment from the soil, but that is not the point I wish to make at this particular moment. The increase in weight which ensues during the later stages in growth is not any material taken from the soil?—A. It is in the storing up of the starches and sugars ; materials that are taken by the leaves from the atmosphere. This added material is almost entirely recovered from the atmosphere.

By Mr. McNeill :

Q. Is the nitrogen taken from the soil or the air?—A. From the soil in the case of the corn plant.

Q. And in a case of other plants from the air?—A. From the air in the case of legumes.

Q. Then legumes would not impoverish the soil?—A. During the early stages of the growth of the clover plant it uses the nitrogen in the soil, but as it grows and develops it is able to assimilate the free nitrogen of the atmosphere. Another thing that I might mention in that connection is this : That when you have a very rich soil the clover apparently takes the nitrogen from the soil and not from the atmosphere. It is only when partially starved that it will work for itself. If you feed this clover with similar forms of nitrogen, it does not exercise the power which it has for taking up atmospheric nitrogen.

Q. So that it is specially suitable for impoverished soils?—A. Exactly. The soil derived constituents of the corn are taken up during the early stages of growth more particularly, and therefore it points to the economy, if we wish a rapid and luxurious growth of corn, of supplying it well with ash constituents and nitrogen at the first. This points to a good condition of the soil and to the economy of well manuring the crop. The soil should be in good tilth and contain plenty of manure, in order to give

the plant a good start. With respect to the manuring of this crop, it is well to supplement barnyard manure with some forms of potash. The chemical data point in that direction. If we were using from 10 to 20 tons of barnyard manure, it would be well to use in addition to that 100 lbs. of muriate of potash, or from 15 to 20 bushels of ashes, which would supply, approximately, about the same amount of potash.

Q. That quantity to each acre?—A. To each acre.

Q. Supposing you had not the barnyard manure and the ashes, could you substitute some other fertilizer equally valuable? What about phosphates, for instance?—A. Supposing you do not use barnyard manure, then I would recommend muriate of potash, 150 to 200 lbs.; superphosphate, of a good brand, about 175 lbs. and nitrate of soda about 100 lbs. This is also to the acre. If you could get wood ashes and bone meal, the formula would be like this:—

Wood ashes	30 to 40 bushels.
Bone meal, finely ground	100 to 200 lbs.
Nitrate of soda	100 “

It would be preferable to put on the nitrate of soda in the spring, as the top dressing.

By Mr. Carpenter :

Q. If barnyard manure can be obtained, how would you apply it—in the green state or otherwise?—A. That is a debatable question, and I do not think I ought to enter into a discussion on it at this late hour, although I am perfectly willing to discuss it. The committee will readily understand, however, that it would not be well to discuss it in a fragmentary manner so as to leave any misunderstanding.

Q. It is a very important question which I think should be threshed out before this committee?—A. I am perfectly willing to discuss it another day if the committee so desires.

By Mr. Semple :

Q. Have you any information about sunflowers, such as you have given us about corn?—A. I can give data respecting the value of the stalks and heads with seeds of sunflowers, but have not the information, or rather the figures, with me to-day.

COMMITTEE ROOM No. 46,
HOUSE OF COMMONS,
TUESDAY, 25th June, 1895.

The Select Standing Committee on Agriculture and Colonization met this day at 10.30 o'clock, a.m., Mr. Sproule, Chairman, presiding.

Mr. F. T. SHUTT, was present by recall, and said:—

Mr. Chairman and Gentlemen,—Towards the close of my evidence on the last occasion that I was before the committee, several questions were asked which, owing to the lateness of the hour, it was thought well that I should defer replying to until I should be called before you again. Consequently, I do not appear before you this morning with a specially prepared matter, but rather to reply to such questions as were asked by members of this committee and also to answer any others which may be put to me.

DIGESTIBILITY OF THE FOOD CONSTITUENTS OF INDIAN CORN.

Of the questions which were submitted to me at the last meeting, there was one put by Mr. McNeill, with regard to the amount of digestible matter per ton and per acre in the corn crop, and also in the corn crop compared with other coarse Canadian home grown fodders. You will remember that I pointed out that our analytical data

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show very clearly that, in the later weeks of the growth of the Indian corn crop, there is a large accumulation of material which I designated as "dry matter." After bringing the proof of this before you in tabular form I said I thought there was no impairment of the digestibility in the food constituents of the corn up to the glazing period in the crop, so that this accumulation of material was one of real value. The digestibility of the corn after glazing period is probably impaired, and further it is most probable that after the corn has reached that stage there is no further accumulation of food materials. I am, in this connection, not speaking from my own data, but from that which has been obtained in several of the Experimental stations of the United States; their data go to show that after the corn has reached the glazing period there is no longer an assimilation of plant food, but that there is a migration of the food materials, from the stalk and the leaves to the kernel. The practical point is that, in cutting corn for our silos or for preservation in the dry condition, we should leave the plant until it has reached the glazing stage. We then have the largest amount of food constituents per ton and per acre. The question asked me was: What is the amount of digestible matter in these various stages of growth referred to in this investigation? The answer to this is furnished in tabular form, thus:—

TABLE IV.—Showing the number of pounds per ton and the number of pounds per acre, products of digestible matter contained in corn fodder at the different stages of growth.

Stage of growth.	Digestible matter in one ton.	Digestible matter per acre.
	Lbs.	Lbs.
Tasselling	186·2	4,220
Silking	211·0	5,069
Early milk	256·5	5,873
Late milk	285·9	6,012
Glazing	339·2	7,308

We saw that there was a steady increase in the percentage of dry matter. Taking these figures, and taking the co-efficients of digestion, as usually allowed by the best authorities in agricultural chemistry, I have calculated the digestible matter per ton and per acre at the various stages of growth. These digestion co-efficients are really percentages of the food constituents which are digested by the animal; they are the outcome of actual experiment. For instance, if out of 100 lbs. of albuminoids or flesh-forming constituents, in one fodder, 50 per cent is digested by a milch cow, then the co-efficient of digestion, under the circumstances, would be 50. From our averages we find that one ton of fodder corn at the tasselling stage of growth contains 186.2 lbs. of digestible matter. At the silking stage the amount would be 211 lbs.; in the early milk 256.5; in the late milk 285.5 lbs., and in the glazing stage 339.2 lbs.

After it has reached the glazing stage, I am of opinion that there is little, if any, further assimilation of plant food by the plant. Now, using the same co-efficients of digestibility as before, we calculate the following as the amounts of digestible matter per acre: At the tasselling stage 4,220 lbs. of digestible matter, albuminoids, carbohydrates, etc. At the silking stage the amount will be 5,069 lbs.; the early milk 5,873; in the late milk 6,012, and in the glazing period 7,308 lbs. You will observe that there is a continual increase from 4,220 to 7,308 lbs. within the last five weeks of the life of the corn plant. These are figures which corroborate the statement I made when I said I believed we should find the digestible matter increase up to that period of growth.

TABLE V.—Showing the average yield in weight per acre of various fodders and esculent root plants; also the proportion of digestible matter, per ton and per acre product, contained in each.

Fodder.	Average Ontario Crop, 1881-89.				Average Experimental Farm Crop, 1890.			
	Yield per acre.		Digestible Matter.		Yield per acre.		Digestible Matter.	
			Per ton.	Per acre.			Per ton.	Per acre.
	Tons.	Lbs.	Lbs.	Lbs.	Tons.	Lbs.	Lbs.	Lbs.
Fodder corn, glazing	16		339	5,424	21	1,154	339	7,308
Clover and hay, dry	1	800	1,034	1,448	1	1,520	1,034	1,820
Fodder oats, green					10		208	2,080
do rye, in head					10		266	2,660
Carrots	10	820	173	1,984	23	1,061	173	4,070
Turnips	11	1,460	179	2,066	27	745	179	4,846
Mangel-wurtzels	12	1,620	145	2,231	36	531	145	5,258
Sugar-beet	10		296	2,960	23	82	296	6,820
Potatoes	3	1,074	440	1,556	6	1,200	440	2,904

Another question was the percentage of digestible matter in the corn fodder as compared with several of our ordinary coarse fodder crops and roots. I have had a table prepared which shows the average yield of fodders in Ontario, and the amount of digestible matter per ton and per acre in the average Ontario crop. I have taken the average for nine years (1881-9) as returned by the Bureau of Statistics of the Department of Agriculture at Toronto and compared it with the average Experimental Farm crop in 1890. The table which I have prepared is almost self explanatory; little is needed on my part to make it plain to you. I should, however, explain that there were no figures representing the average corn crop in Ontario during the 9 years mentioned, because fodder corn during the early part of that period was not grown extensively. Accordingly, I placed it at 16 tons per acre, our own yield being much higher. It appears, however, that the average yield in Ontario is nearer 11 tons than 16 tons. With the exception of the fodder corn, all the other figures are taken from the annual report of the Bureau of Statistics. In the nine years in question, therefore, the figures are as follows:—Carrots, 10 tons, 820 lbs.; turnips, 11 tons, 1,460 lbs.; mangel-wurtzels, 12 tons, 1,620 lbs.; sugar beet, 10 tons; potatoes, 3 tons, 1,074 lbs.; clover and hay (dry), 1 ton, 800 lbs.; These are the average yields per acre. In the second column is to be found the amount in pounds of digestible matter per ton and per acre. You will notice that corn easily stands ahead in the amount of digestible matter which is produced per acre. In the case of clover and hay, containing only some 14 or 15 per cent. of water, the digestible matter per ton is very much higher than any of the other fodders here discussed.

COMPARISON OF CROP YIELD PER ACRE.

I would call your attention, since the table is before you, to a comparison of the yields per acre, as obtained on our Experimental Farm at Ottawa and the average Ontario yield. In every case the average yield is very much less than that upon the Experimental Farm. I am of the opinion that with good farming there is no reason why the yields throughout Ontario should not equal a fair average yield as obtained upon the Experimental Farm. Undoubtedly the great profit in farming lies in obtaining a crop over and above what might be called an average crop, because the expenses of tillage and harvesting are practically the same whatever we have, a large crop or a small one. Of course, when we come to discuss digestible matters we shall likewise find the amounts produced on the Experimental Farm are very much in excess of those obtained on the average Ontario farm.

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By Mr. McNeill:

Q. I would like to ask whether of late years you have found carrots yield more in proportion than this table seems to show?—A. I cannot answer that question without referring to our data. The answer is easily obtainable by reference to the Experimental Farm reports.

Q. In some reports the yield of carrots is very much heavier than the yield of turnips, being nearly double in one year. I observe in one report that the yield of carrots would be nearly double that of turnips, whilst in this table the turnips are 27 and the carrots 23?—A. I think that is explainable from the fact that for several years our turnips were subject to a disease which very much lowered the yield. For several years that disease was prevalent and we were not able to check it, consequently, the yield of turnips was much less than it would have been normally.

Q. The carrots beat the mangolds also?—A. Not unusually, they generally stand as they do here in this average Ontario crop. I presume in the relation of 10 to 12—that is carrots to mangolds. In the last column of this table we see the digestible matter which is produced per acre by these fodder crops. That is a very instructive column, and will allow you to make a comparison of their true value as food materials. In case of the fodder corn, using the figure which I have already given you, we find that there are over 7,000 lbs of digestible food produced per acre. In the case of the carrots something over 4,000 lbs, turnips nearly 5,000 lbs, mangolds, 5,250 and sugar-beets, nearly 7,000 lbs. These figures, of course, it is not to be thought will be the same year after year. Naturally, as the seasons change, the yields will to some extent fluctuate, but, nevertheless, we have on this table the means of comparing, approximately, the amount of food material which is produced by these different fodder crops.

By Mr. McMillan:

Q. Will there not be a difference in roots raised on different qualities of land in respect to the feeding matter contained according to the weight?—A. The composition of roots does vary slightly, but not to any very great extent. It is principally in their being more or less watery, that is to say, containing a little more or a little less “dry matter.” The larger the root, as a rule, the more water, and consequently the less dry matter that it contains and the poorest in food value. The same is true with regard to sugar-beets, so that we find smaller sugar-beets contain a larger percentage of sugar than the larger sugar-beets.

Q. We have been in the habit of raising roots on clay and mucky lands and we found the roots raised on clay land contain most food, according to the quantity produced per acre?—A. We have no data which shows the comparative composition of roots growing on clay and mucky land. Where they are forced to grow very large, they usually contain a somewhat smaller percentage of food material than they do where they are not grown to such an enormous size.

By the Chairman:

Q. In collecting your data regarding turnips, do you always take the Swedish turnips?—A. Well, with regard to that average Ontario yield I cannot say. The turnips are all put in together. There is no differentiation made at the Bureau of Statistics.

Q. I mean, by the statistics you get from the farm, where the yield is 27 tons to the acre?—A. All the turnips are included in that.

Q. Swedish, white and all?—A. Yes.

By Mr. Girouard (Two Mountains):

Q. What do you mean by the glazing state of the corn?—A. When the skin on the kernel of the corn becomes hard, and a glaze appears upon it.

By Mr. Featherston:

Q. It takes the glaze as soon as it gets hard?—A. Yes. The tasselling stage is when the tassel comes out of the top of the stalk. The early milk period is when the

sap or juice of the kernel may be easily expressed as a limpid, opaque liquid. The late milk stage is when the contents of the kernel are becoming doughy, and it is "glazing" when it begins to harden. Just about that time the leaves on the base of the stalk begin to turn yellow.

By Mr. McMillan :

Q. I suppose they have not experimented at the farm with ensilage which is 8 or 10 days after the glazing stage. Through an accident one of our silos was a little later than usual in being filled and we found we had a very fair quality of ensilage. Mr. Hodgins, going out last week from this meeting, told me there was a farmer in his locality prevented last year from cutting his corn for 8 or 10 days after the usual period. He said he never had such ensilage and was going to leave it all until that stage. That has been our own experience?—A. I think if there is an error in that, the error is on the right side. It is far better to have a corn which is a little over ripe than to cut it before the glazing stage. I, myself, would be quite willing to run the risk of a little frost rather than cut it before the glazing period. However, we can easily see that, if left to any great length of time afterwards, the fibre must become woody and to some extent indigestible.

By Mr. Grieve :

Q. Does being frozen hurt the corn to any appreciable extent?—A. No. I think not, as long as it is frozen. The trouble is, that when the frost goes out, decomposition and decay set in very rapidly. If cut and immediately put in the silo, good ensilage may be made from corn not too badly frozen.

By Mr. Cargill :

Q. That is if frozen before cutting?—A. Yes.

Q. Do you mean to be frozen like that before cutting?—A. I think if it could be put at once into the silo very little deterioration will be found to have taken place.

By Mr. Girouard (Two Mountains) :

Q. You mean decomposition?—A. The danger is in the decay, which immediately sets in when the frost leaves the tissue.

By Mr. Cargill :

Q. I am very glad to hear that, because I have always been of the opinion that very serious deterioration took place if it were stricken by any frost at all before being cut, and we have always been very anxious to have it cut and put into the silo before the fall frosts came?—A. I could have brought the testimony of several farmers in New Brunswick last year who appealed to us as to what it was the best to do. They had frosts early in September and they were advised to get their corn into the silo as soon as possible. When I was in Fredericton at the convention in February last, I met several of these men and they told me that their ensilage had turned out very satisfactorily. The object in getting an early corn is not altogether to avoid the early frost. A corn will not arrive at its maximum growth until the glazing period, and it is at that time that it has the most and best food.

By Mr. Featherston :

Q. But the frost leaves it as soon as the sun comes out.—A. It ought to be cut and put in the silo at once. If it is left some days standing there will be a further loss of plant food. One of the reasons why an early corn was advised was that it should come to this glazing stage while there was yet time to harvest it. The contention is that chemical data shows until the corn arrives at that condition it is exceedingly watery, that it does not contain the same proportion of real cattle food per ton that it would do

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if it could come to this glazing condition ; and secondly if it does not come to that stage before the frost, there is no possibility of its ever reaching the glazing stage. We thus lose many pounds on every ton of real cattle food when we grow corn that the climate does not allow to come to this glazing condition of growth.

COMPOSITION OF THE SUNFLOWER.

I believe Mr. Semple asked me with regard to the question of sunflowers, as used in addition to corn for ensilage purposes. In my report for 1892, page 121, will be found the figures which show the composition of the stalks and leaves of the sunflower plant and of the heads with seeds taken together, the head being cut off with one or two inches of stalk, in a way similar to what would be done for silo purposes, then analysed together with the seeds which it contained. The following weights and measurements were then taken :—

	Lbs.	Oz.
Stalks and leaves.....	6	10
Heads with seeds.....	3	11
Seeds alone.....	1	4 $\frac{3}{4}$
Receptacle and petals.....	2	6 $\frac{1}{4}$
	Feet.	Inches.
Height.....	6	10
Diameter of heads.....		8 $\frac{2}{3}$

The sunflower stalks and leaves contain but very little nutriment, being low in albuminoids and fat, and containing a large percentage of water. In the heads with seeds, however, a marked difference is to be noted.

By the Chairman :

Q. What is the food value of the head?—A. In the head with seeds there is a very large amount of food constituents, principally of fat and albuminoids. They contain less water than the stalks and leaves, the albuminoids are nearly three times higher, and the fat six times greater than in the stalks and leaves. Thus we find that of albuminoids there are about 50 lbs. to the ton, and fat in the neighbourhood of 100 lbs. to the ton. It will be seen, therefore, that the addition of the sunflower heads containing the seeds, to the corn in the silo, will be to enrich it more particularly in those two constituents, first, fats ; and second, albuminoids. The albuminoids are not present in the same proportion as they are found in the horse bean, and it was for this reason that the addition of horse beans was suggested to make a complete fodder, the bean being more particularly rich in the nitrogenous or flesh-forming constituents known as albuminoids.

LEGUMINOUS PLANTS.

By Mr. McNeill :

Q. Is there much difference in the composition of the bean and the pea in that respect?—A. With regard to the composition of the pea plant I have no data, such as in the case of the corn. I have, however, in my report for 1892, given an analysis in detail of the broad Windsor bean, the English horse bean, and the telephone bean, which is a climbing variety and which can be grown with the corn, using the corn as a stick or pole to climb upon.

By the Chairman :

Q. You told us something last year about a valuable pea which had been cultivated at the farm?—A. Do you mean the *lathyrus sylvestris*?

Q. Yes. Did you make any further analysis of the food value of that pea?—A. An analysis of the *lathyrus sylvestris*, or Wagner's wood pea, as it is called, is to be found

in my report for 1893, together with several other legumes. It belongs to the leguminosae family, to which the pea, the bean and the vetches belong. They have the peculiar capacity or ability to assimilate the free nitrogen of the atmosphere, and thus add to the store of valuable nitrogen in the soil when ploughed under.

By Mr. Featherston :

Q. Is it the action of the large leaf that attracts the sun?—A. Not for the assimilation of nitrogen. That takes place by certain tubercles in the roots. The assimilation does not take place by the leaves.

Q. It must be in the land?—A. It is from the air which is enclosed in the soil that the roots take their supply of nitrogen, by means of these tubercles in which are living bacteria, that is, small microscopic plants.

By Mr. McMillan :

Q. The air is in the soil before the roots take it up?—A. The air is held mechanically in the soil. In between the particles of the soil, air is everywhere present, and it is this air which the plant utilizes.

Q. The soil has not the power of extracting the nitrogen in the air; it only enters by the roots?—A. The soil has nothing to do with it? It is by means of the bacteroids in the tubercles upon the roots of the legumes that the free nitrogen is assimilated.

By Mr. McNeill :

Q. As it is being assimilated, more nitrogen from the air is being gradually stored in the plant?—A. Yes. We say from the atmosphere. It is, however, in the soil when taken up by the plant.

It is not always that these legumes take their nitrogen from the atmosphere. It is only when they are in a state of partial starvation. If you supply a clover plant with abundant supply of nitrogen by growing it in a soil which contains a large amount of available nitrogen, such as might be used by any other plant, then the clover plant will feed on that nitrogen, and will not exercise its ability of extracting that element from the atmosphere. So that it does not always follow that by growing a field of clover you are taking much nitrogen from the atmosphere, but when the plant finds the mineral food that it requires and does not find the nitrogen in the soil, then you have a luxuriant growth and you have the larger part of the nitrogen taken from the atmosphere.

By the Chairman :

Q. Do you say that in the report of 1893 you gave the analysis of the wood pea?—A. Yes, it is in my report of 1893. Analyses are given of the wood pea and several others, five of them altogether. With regard to the *lathyrus*, I say it is a plant of recent introduction and one that will do well on poor soil. Undoubtedly it is one that yields a large amount of green fodder per acre.

Q. Have you the weight there?—A. No. When I did this work we were only trying it on a very small plot, and I do not think it would be safe to multiply it into an acre and give that as the average yield. Certainly during this second year of growth it produced a very large mass of leafy stems. I suppose the plant was about four feet high. It flowers very profusely during the present month. The analysis which I gave you shows that it is extremely rich in albuminoids. We found some little difficulty at first in getting the cattle to eat it, but that difficulty may be overcome in time. It is reported that in England it is relished by the cattle both in the green stage and also as hay. I do not know that we are in a position to report definitely upon it, but certainly I consider it a promising fodder crop. It yields a very heavy crop per acre and the analysis shows that it is a valuable food.

By Mr. McMillan :

Q. What is that?—A. That is the *lathyrus sylvestris*, or wood pea. It has been introduced of late years and the seed may now be obtained from seedsmen.

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By Mr. McNeill :

Q. Do you think the horse bean is very much more valuable to mix with the green corn than the wood pea would be? It is very difficult in some parts of the country to grow the horse bean at all?—A. The trouble is, I think, to get the pea in the green condition at the time you are getting the corn in. Undoubtedly, if one could manage it, there would be a large yield of green fodder which would probably be quite as rich as the bean fodder, if the pea was cut while in the pod, as is the case with the bean, but I think the practical difficulty would be in having the crop green just at the time when you wanted to put the corn into the silo. I have no definite information on that point, however.

Q. You have told us about the percentage of food constituents, and you have also told us of the percentage of digestible matter. Now, do you find any considerable variation in those quantities?—A. By the digestible matter I mean the total amount of digestible food constituents, that is to say, the digestible carbo-hydrates, starch or sugar, and the digestible fat, and the digestible albuminoids or flesh forming matters. Put together, they make the total per ton or per acre as the case may be. The total percentages are certainly liable to vary.

Q. Suppose that you take a ton of pea straw and a ton of hay, and suppose that you found in the pea straw that there was a greater amount of digestible food material mixed with certain proportions of other materials. When you found there was more of that in the pea straw than in the hay, you would think that you had not such a nutritious food in the latter as in the former?—A. The food value of any fodder does not depend altogether upon the total amount of its constituents. That is one factor we have to take into consideration. Another important factor is the percentage of that food which is digestible, because it is only the food that is digested, that is assimilated and made use of for the sake of producing heat or replacing the tissues or the laying on of flesh and the production of milk.

The digestive power differs with the same animal according to the temperature or the state of health. There are a great many other factors which affect digestibility. Consequently we have to take the average in discussing this question. If, as far as we know, the animal is in a normal state of health, and we ascertain by experiment the percentage of those food constituents in that fodder that are voided in the dung we are able to deduce the co-efficients of digestion. That has to be done for every fodder.

By Mr. McGregor :

Q. Have you tried sunflowers?—A. No, I do not think that there are any data on record with regard to the digestibility of sunflowers. Do you refer to the head?

Q. No, the seed.—A. We can only argue from analogy. I presume that a large amount of the seed is digestible.

Q. Sunflower mixed with corn makes a very nice mixture?—A. It aids in producing a more complete ration. It supplies fat, in which the corn is lacking. Cattle cannot be fed on carbo-hydrates alone, nor on albuminoids, nor on fats. The most economical and profitable ration is a well-balanced one, one that contains the right proportion of these three constituents, carbo-hydrates, albuminoids, and fats, to create energy and repair the waste that is continually going on in the animal.

By Mr. McNeill :

Q. Might you not be misled altogether as to the nutritive quality of a food, by simply considering the quantity of digestible matter that might be obtained by analysis from that food? If that digestible matter be combined in such a way as to be in fact indigestible, the food may not really be so nutritive as a food which has less digestible matter in it?—A. I think the result of digestion experiments would show that.

Q. That is what I want to understand?—A. The experiment would give you as a result the actual amount that has been digested of those constituents.

Q. How are those experiments carried out?—A. In the first place by feeding the animal for a certain number of days with the food intended to be experimented

with, before the experiment begins. Knowing the composition of the food and the amount fed to the animal, the solid excreta are weighed and analysed; it contains the undigested food constituents. The balance or the part digested, consequently, has been assimilated, and used for the purpose of developing heat in the animal, or for the performance of the other vital functions. It is on this principle the experiments are conducted.

Q. When you spoke of digestible matter, you meant discovered in the way of that experiment?—A. Exactly. There are also artificial ways of arriving at the data. We cannot, however, strictly compare them with the data procured in the way I have described. We make an artificial digestive fluid in the laboratory by means of pepsin and hydrochloric acid. Such a fluid is as near as possible in composition to that secreted by the glands in the stomach. This is after all an artificial method, and while it may approximate the truth, I should scarcely place the same dependence on the results of such experiments as when working with animals. However, they give us very useful information at times.

By Mr. Cargill :

Q. Supposing you had a crop of corn and you allowed it to reach the glazing stage in the fall and then cut it for silo. Then you have another crop which you allow to remain out two weeks longer and it is struck with the frost and then you put that into the silo. How would you ascertain the difference in the food value of these two fodders?—A. The only way in which it could be done would be by practical feeding experiments. Suppose you took two lots of three cows each for testing purposes and fed one lot with the corn which had been put into the silo in proper condition, and the other animals with the corn that was frozen. Each lot would receive the same amount of meal, roots and hay, in addition to the same amount of corn fodder in the one case frozen and in the other unfrozen. The weights of the animals would be taken before commencing feeding; the milk would be weighed and analysed and the weights of the cattle taken after the experiment to show gain or loss. If it were made a digestion experiment, the solid excreta, which shows the undigested matter, would be analysed and from all this data would be deduced the feeding value and the digestibility of the frozen corn as compared with the unfrozen. You see all the other circumstances would be alike in the two instances. The only factor which is a varying one would be the one of corn.

Q. Have any experiments of that kind been made at the Experimental Farm?—A. I am not aware that any trial has been made comparing frozen with unfrozen corn.

Q. So that you do not know the difference in the two crops?—A. We have no data.

By the Chairman :

Q. Have you made any examination of the feeding qualities of ensilage made out of greener corn, that is, not so ripe as compared with the ripe corn?—A. We know this much: that water has no food value, and that in the younger corn the percentage of water is very much greater than in the more matured corn, which means much less dry matter or real cattle food. You could not expect the same return from twelve pounds of dry matter as from twenty pounds—amounts respectively in tasselling and glazing corn.

Q. Does it make any difference in the feeding value of the ensilage, owing to the ensilage being more or less sour? I understand that when made from younger corn, the ensilage is much more sour?—A. Undoubtedly. The corn of the younger stage has a tendency to produce a more acid ensilage than the corn of more matured growth. Sour ensilage has had its food value deteriorated. Neither is it as wholesome as sweet ensilage.

By Mr. McMillan :

Q. Is there not this fact to be taken into consideration also: Take a working ox. If he is let be at rest and fed, would he not take less of the nitrogenous element

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than when working?—A. Yes. When an animal is simply fattening he is not making any great demand on the food. A young and growing animal takes more from the food than an animal which is matured. An animal which has matured and is at rest takes less from the food, so that more of the plant food constituents pass out in the dung. This fact must be taken into consideration when discussing the question of digestibility.

COMPARATIVE FOOD VALUE OF ESCULENT ROOTS.

By Mr. McNeill:

Q. Is there a greater percentage of food constituents in mangels or in turnips?—A. I can give you the results of my analyses.

Q. I mean food constituents; not digestibility?—A. I may say that, with regard to roots, we usually allow the total percentage of the food constituents to be digestible. We look upon the dry matter as entirely assimilable and digestible. In my report of 1891 certain analytical data is given. We find there the pounds of digestible matter in the ton. The dry matter in carrots, of different varieties, varies from 184 to 196 lbs. to the ton. Turnips (greystone), 81 lbs. Purple top Swede, 205 lbs. per ton. In the case of Golden mangel, 189 lbs.; Golden Tankard mangel, 162 lbs. of digestible matter per ton. Mammoth Long Red mangle, 172 lbs. per ton.

Q. I saw it stated in an old country work that the mangel is much more nutritious?—A. Their percentage of water is, as a rule, higher, especially in the larger mangels. In carrots it is 90; in turnips, 90; in mangels, the percentage runs up to 91.9, or practically 2 per cent more. In mangels, therefore, instead of 10 per cent of dry matter we have only 8 or 9 per cent, as compared with the carrots and turnips. A good deal, however, depends on the soil and the season.

By Mr. Cargill:

Q. Do I understand you to say that it requires a greater quantity of the component parts of food to feed a mature animal. Would a steer two years old require more food than a four year old, in order to make a proportionate increase in weight?—A. Yes, I presume such would be the case. What I say is this: the functions of food are several. One is to maintain the vital heat and develop energy. Another function of the food is to repair the waste which is continually going on, and to store up muscle and fat. The mature animal has not got to form bone. It has reached maturity and requires only a minimum amount of food, because it has only to maintain life. The young animal has to assimilate food for the purpose of adding to its muscular and bony development. A working animal has to make extra calls on the food, because it is the food which is supplying the energy or force necessary to enable the animal to do the work. It is therefore the working and the young animal which makes the largest demands on the food.

Q. Supposing you took a four year old steer and a two year old one, and put them in the stable in the same condition—you propose feeding them both for beef—do you say that the four year old steer will eat less food in order to give a proportionate increase of beef than the two year old steer?—A. That is scarcely an analogous case. They are both lean. The larger animal would probably require a relatively larger amount to make it fat than the smaller animal. The older animal would probably have much the larger frame. I think the demands per 1,000 lbs. of live weight would be less in the case of the older animal, but not necessarily so in every instance.

Q. I understood if the animal was mature, there was no bone to be made, consequently all the food used would go to making beef?—A. That is partly true. The larger animal would not make any great demand on the mineral part of the food, but it would still require the nitrogenous portion of the food as well, the fats and carbohydrates.

COMPARATIVE EXHAUSTION OF SOIL IN BEEF RAISING AND DAIRYING.

By Mr. Pridham :

Q. What difference is there in the feeding of an animal giving milk and one being fed for beef?—A. A cow producing milk would require the most food, and would make the greatest demand, because in the milk we have the caseine, which must be taken out of the food, and which is formed at the expense of the albuminoids of the food.

By Mr. McNeill :

Q. Which is the most exhausting to the farm? Suppose you are feeding for fattening purposes or for milking, which manure would be the richer?—A. I could not at the moment give figures to answer that question, but, speaking generally, I should say that against good dairy cows, beef cows take much less away from the farm than dairy cattle.

MR. McMILLAN.—I have it very strongly impressed upon my mind that the animal that is merely making beef and that is fully mature only takes about five per cent of the real fertility of the food consumed, whereas milking cows or a young animal will take all the way up to 45 per cent. That is quite consistent with what I have seen.

By Mr. McNeill :

Q. Suppose you were feeding two year olds on the one hand or keeping a dairy farm on the other, which would be the most exhaustive?—A. I fancy that a good dairy herd would exhaust the soil more than the same number of two year olds, though the difference would not be as large as if we were comparing dairy cows with more mature animals. The thrift and production of the cattle would have to be carefully considered before that question could be answered definitely.

By Mr. Featherston :

Q. Then a mature animal does not take as much from the farm for the amount of food you give him as a younger beast?—A. Yes. He is not taking much fertility away from the farm, compared with fertilizing constituents contained in the milk of a milch cow.

Q. Would it be more profitable to feed an animal that will grow both flesh and muscle with the fat? I suppose the more digestible matter there is in food, the more profitable it will be to grow it?—A. Undoubtedly.

Q. Suppose we got a plant that would be all digestible?—A. You would then have to take into consideration the amount grown per acre. That is the point to find out: how much real cattle food you can produce per acre. It is not merely a question of the amount of digestible matter in a fodder; one must ascertain how much of that fodder you can produce per acre. The whole of the fodder might be digestible, but if you are only able to produce a small quantity per acre it would not be a profitable fodder.

Q. What the animal does not assimilate is returned to the farm as manure?—A. Yes.

By Mr. McNeill :

Q. Are the figures you have given us taken from chemical analyses or from actual-experiment?—A. No, those are from my own analyses.

Q. Not digestibility experiments?—A. I have taken it for granted that the authorities are correct, and used my own analytical data.

Q. The authorities have given the digestibility?—A. They have given the digestive co-efficient. We have never obtained such data on the farm. There have been no digestive experiments conducted in Canada. This work requires a large staff to attend to it and requires a great deal of time. We have not had any opportunity as yet, with our multiplicity of duties, to attempt that, and what we do is to use the co-efficients of digestibility obtained at scientific institutions of a like character.

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Q. After all, is that not what we want to get at? Is that not bottom rock, so to speak?—A. Yes, in connection with chemical work. However, until we have this data of our own, we must be content to use that of other experiment stations in Germany, England and the United States.

Q. That is really what we want to know. It is not what the food constituents may be, but what the animal can assimilate?—A. Undoubtedly, and that is the reason why I have in these two last tables given the digestible matter of the corn and other crops per ton and per acre.

Having examined the preceding transcripts of my evidence of the 14th and 25th June, I find it correct.

FRANK T. SHUTT,
Chief Chemist, Dominion Experimental Farms.

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THE EVIDENCE

PART 2

BRANDING OF CHEESE

Agriculture and Colonization.

COMMITTEE ROOM 49,
HOUSE OF COMMONS,
FRIDAY, 31st May, 1895.

The Select Standing Committee on Agriculture and Colonization met this day at 10.30 a.m., Mr. Sproule, Chairman, presiding.

THE CHAIRMAN.—The object of this meeting is to hear from the different cheese boards of trade, the exporters, and others who are interested in this industry, what their views are in regard to the bill for the branding of cheese. I understand that the Brockville Board is represented here, and the Montreal Board, or perhaps I should say the exporters, and the Eastern Townships have also a representative here. It would perhaps be advisable that the gentlemen who are here should select some one to present their case to the committee. The meeting is open for that purpose now, and we will be very glad to hear what they have to say. I might state that the Minister of Agriculture is here for the purpose of hearing the representations made. With regard to the bill that is before Parliament it is proposed, if it should become law, to make it compulsory upon all manufacturers of cheese to brand on their products, the date or the month in which they are made, and the name of the country as well, both upon the cheese itself and upon the boxes.

Mr. McLENNAN.—Did you get answers to the circulars that were sent out asking the cheese men for an expression of opinion on the branding of cheese? The gentlemen who speak may be in a better position to give their views after knowing the opinions of those who are interested in the cheese trade throughout the country.

Mr. CASEY.—Do I understand circulars were sent out to the cheese factories?

The CHAIRMAN—Yes. I might say that in accordance with the resolution of the committee I had 2,500 circulars sent out to manufacturers of cheese in the various parts of the Dominion and that up to the present we have received about 570 replies. They have been coming in very rapidly of late, and there have been opened and examined up to the present 345 of these answers. Out of this number 314 are in favour of branding, 16 against, and there are 9 that are doubtful, the wording in the replies classed "doubtful" being such that one could not very well tell which way they meant to reply. So many came in last night and yesterday, that the clerk tells me he has been unable to examine and tabulate them all, as I instructed him to do for the benefit of the meeting to-day.

By Mr. Sanborn :

Q. These answers are from the factories?—A. These answers are from the factories.

Mr. TAYLOR.—Will you please read the circular and one or two replies?

The CHAIRMAN.—The circular reads as follows:—

COMMITTEE ON AGRICULTURE AND COLONIZATION.

HOUSE OF COMMONS,
OTTAWA, 8th May, 1895.

SIR,—It has been brought to the notice of this Committee, that impositions have been perpetrated upon purchasers and consumers of Canadian Cheese in England, by having had sold to them cheese made in the month of July, represented to be of September make. It is contended that repetitions of such imposition would no doubt

endanger the present high standing of Canadian Cheese in the English markets, and jeopardize the existence of the present large and increasing sales of our cheese in these markets, as well as lower it in the estimation of our own people and thereby induce outside competition in the home market.

To avert this danger and to avoid loss of demand to the Canadian producers, it has been proposed to enact a statute which will make it compulsory upon all makers of cheese in Canada, to brand each cheese as well as the box containing it, with the date of manufacture.

You are hereby asked to be so good as to say, under the following head of "Reply," whether or not, in your opinion, such an Act would be beneficial as a means of safeguarding the interests of the cheese industry.

Please give briefly your opinion, to which affix your name, employment and post office address, and inclose the same with the whole of this sheet within the directed envelope herewith, for mailing.

A prompt return is respectfully solicited.

Yours faithfully,

T. S. SPROULE,

Chairman of Committee on Agriculture and Colonization.

This is one of the replies :

"With regard to the branding of cheese would say that I am strongly in favour of branding being done in order to place our reputation fairly and honestly before the purchaser and prevent fraud by unprincipled or dishonest dealers, thereby maintaining the good reputation and confidence of the dealers and consumers in the future, which it has taken years of persistent labour to acquire."

This is signed John Gilroy, Lynn, Ontario.

Mr. ROOME.—I don't think this should come up before the meeting to-day. We have met for the specific purpose of hearing these gentlemen from the Cheese Boards who desire to express their views, and the matter of the circular we can take up at any future meeting.

Mr. CASEY.—We want to know what they have been asking.

Mr. ROOME.—Still that has nothing to do with the meeting to-day. We want to hear the views of the gentlemen who are here.

Mr. ANGERS.—Let us hear a reply that is opposed to the branding.

THE CHAIRMAN.—I have another reply here, one that is opposed to branding. It is as follows :

"I think the branding of the date of make and manufacture of cheese is quite unnecessary, as the English buyer is quite able to look after his own interest, and my belief is that, if cheese is misrepresented as to make, there is more of it done by the English wholesale buyer than in this country. If Parliament was as much interested in the cheese industry as they try to make the farmers believe they are, they would act pretty much the same as they have done to the butter trade.

"Yours respectfully,

"R. GRAHAM,

"Cheese Manufacturer, Crewers Mills, Ont."

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Most of them forget to put their post office address in their reply. The meeting is now open to those representing the different Cheese Boards who wish to express their views. I might ask the representatives of the Montreal Board to speak, coming as they do from a large and important city.

Mr. ARTHUR HODGSON, of the Montreal Board of Trade, being called upon, said:—

Mr. Chairman and Gentlemen,—With your permission, I would like to hear some of the views of the country men first. Personally, we are much obliged for you reading out the answers received. The merchants of Montreal feel that the interests of the factory men are the same as their own, that if you legislate in any way affecting the interest of one you affect the interest of the other, that as the merchants of Montreal prosper the factory men in the country will prosper, and that both our interests are one. Now, I might say that at a meeting of the Association which is represented here by Mr. McPherson and myself we passed a resolution, which I hope you have received, in favour of the branding of cheese.

At a meeting held in Montreal on the 29th of May the following resolution was proposed and carried unanimously: “That in view of the meeting to be held in Ottawa on Friday, May 31st, 1895, of the Select Standing Committee of the House of Commons on Agriculture and Colonization, for the purpose of securing an expression of opinion from the various Dairy Associations of Canada, this Association hereby places itself on record as strongly in favour of the branding of the date of manufacture on all cheese made in Canada, such being the unanimous wish of the entire cheese trade in Great Britain, and further that this Association Committee on the subject do proceed to Ottawa to attend the meeting mentioned above.”

I might mention that the main object our Association had in passing that resolution was this: We have to remember that the outlet of the produce of this country depends upon England, that cheese eating people in Canada are at a minimum, and, speaking as a merchant, in our figures as to the future course of markets we have no occasion to take into consideration the consumption of Canada. Therefore, we need not think of any outlet for the production of cheese in Canada except so far as the English market is concerned. Now, most of us in connection with the Association in Montreal were in England this winter, and, without discussing the pros and cons of the merits of the case, there is no doubt that there is an idea in the minds of Englishmen, whether rightly or wrongly, that impositions have been practiced on them, and I think it is to our interest that we should, as far as we can, consistently with the interest of the factory men and the merchants, do everything to take away any feeling of suspicion (Hear, hear). We are all more or less of a logical turn of mind, and it seems to me that if any other course is taken than the adoption of branding, the Englishmen will feel that their reasons are all the stronger for believing that impositions were practised upon them. If nothing is done and the dates are not put on the boxes, or if there is any opposition to its being done, the Englishmen will be more convinced that they have hit the nail on the head. We have to take into consideration the feeling of the market where the cheese have got to go. I think it is quite a possibility that the branding of cheese may affect the sale of some months' make, but I think in time that will rectify itself. In justice to the cheese merchants of Montreal who have been wrongfully accused of imposition, I think it is right to mention that when I arrived in Canada it was the exception to get a cheese that had not the date on, and it was at the request of these Englishmen that the date was not put on. Now they turn right round and ask for it to be put on. If they want it to be put on, I see no reason why we should not do so, but I think it is only a matter of time before you will have a request for the date to be removed. Anyone who has had experience of selling cheese in England is more or less mystified at their wanting it, but of course if the reasons they offer are just, they require attention. The cheese in England are sold on the merits of quality. They are bought from the Montreal shipper on the month's make and the Englishmen are willing to pay a premium for June and September months' make, but when the cheese reach England they are not disposed of, on months' make, but simply on the question of quality. The groceryman will come into a merchant's

warehouse in England and say he wants 20 boxes of cheese. He will not ask anything about month's make; he will perhaps be guided by the shipper's brand, or he will iron them himself and buy them on the quality. We feel in Montreal very strongly that a refusal to brand would be a handicap to our cheese, or rather it would be interpreted as a reflection on the Montreal merchants if this branding is not adopted. But if it is adopted one good result will be that it will remove any suspicion on the part of Englishmen, that any person in Canada wishes to do anything opposite to the wishes of the merchants in England.

Mind you, while I maintained at the beginning that the interests of the merchants are the same as the interests of the farmer, I wish to go a step further and admit that the interests of the English merchants are the same as the interests of the Montreal shippers and the factorymen all over the country. The three are united in their interest. If we did not have the English market for an outlet, we should have no trade, and the more all the three work in harmony the better it will be for the butter and cheese association. I might mention here, if I am in order, with your permission, Mr. Chairman, that the only danger we see as merchants in Montreal is that of the responsibility for the branding. We think that in the passing of a bill affecting this matter of branding, great pains ought to be taken to avoid any complication at the point of shipment. This I think is of the utmost importance, and I might perhaps explain what is the system followed in a great many sections of Canada as regards the shipping of produce, if this is in order at the present time. If the cheese boards of this country were all conducted on the same principle, the matter would be easy and simplified. For instance, if all the boards were conducted on the principle of the Brockville Board, where the goods are sold subject to Montreal inspection and approval of quality, the course would be much easier; but the fact remains that there are scores of factories—I was going to say hundreds, and perhaps even more than that, who refuse to sell their cheese until the buyer pays for the goods, and the consequence is that in many instances the merchant has to pay the money down for the goods before he receives them. I see in the bill (I have a copy of it here), that a penalty is attached to any person who shall sell, offer or expose or have in his possession for sale, any cheese or butter which is produced in Canada unless the word "Canada" and the year and month of manufacture thereof, the registered number of the factory and the initial letter or letters of the province in which the factory is situated are branded, stamped or marked upon the outside of the box and, in the case of cheese, on the cheese itself.

By Mr. Cochrane :

Q. Will you explain what you mean by the merchant paying for the goods before they are delivered?—A. Supposing my man in the townships were to buy a hundred boxes of cheeses from a factory. He buys. Then taking the quality for granted, as he has been there a month before and he knows the maker and he can rely pretty much on the quality. He says "all right, I will buy your cheese," and the goods are sent in to Montreal and he brings in his bill of lading to the buyer at the shipping point and gets his money before the cheese reach Montreal. It seems to me that under this bill you are virtually making the merchant the policeman of this Act, because it says in section 5, no person shall sell, offer or have in his possession for sale any cheese which is not branded. Now, supposing I received in all honesty some cheese from some factory, the buyer, knowing the quality is all right, waits for the farmer to bring in his bill of lading to him at the county bank, and he gets the money. The goods afterwards arrive in my warehouse and some of them do not happen to have the date on. I sell the goods in all innocence to some other dealer and I should like to know who is to pay the penalty? I would suggest that the man who is responsible for the branding in the first instance should be responsible for seeing that the dates are upon the cheese.

Q. The man who makes them?—A. Yes.

By Mr. McLennan :

Q. The bill provides for it to be branded before leaving the factory?—A. Yes, but how are we to see whether it is done or not? Suppose I happen to receive a thousand

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boxes of cheese into my warehouse. Some of us will receive twenty thousand boxes of cheese a week in Montreal in the busy time. It is impossible to see whether the cheese are branded or not. The theory of the bill is all right, but the practical part is unjust to the merchant, and it would be impracticable for the merchant to carry it out. I would suggest that the word "merchant" should be changed to the word "factoryman." It is the factory men who will have to carry out this law. The merchant will do what he can and he will report whenever he is required, but if you make the merchant responsible with the factory man, it is putting a burden on the merchant which he has no right to have placed upon him. The only objection I have ever raised at some of the boards which I have attended, against the branding of cheese, and it is a very natural one, is that until the prejudice of the English people is overcome they will have to sacrifice the July make or other month's make. That may be the case for a couple of years or so, but I believe the objection is largely magnified. The only way to overcome this prejudice is to ship over the cheese made in July, which they will see is better than that made in June. The only objection therefore which is raised in the country will soon be overcome in the course of time. On behalf of the association which I represent I may say that we shall be glad at all times to advise or assist in the furtherance of this matter; but we do hope that this committee will be particularly careful on the point of not handicapping the merchant. If you handicap them with inspectors, and so forth, and prevent the shipping of goods promptly, you handicap the farmer and it is just as much in the interest of the farmer as the merchant that this Act should be framed for the benefit of both. A few practical hints from the shippers as well as the factory men will obviate any difficulties.

By Hon. Mr. Wood (Brockville):

Q. Would not the word "knowingly" before the word "sell" meet your views?—

A. Where is going to be the onus of proof? It will be very easy to say there was no inspection.

Q. Could you not uncover all these boxes when you get them at the factory?—A. That is hardly the point that I wish to make. It is not the difficulty of being able to open every box. I have a system myself by which I have every box in my warehouse opened, but the cheese are paid for before they are opened.

Q. Well, supposing they could be opened and they were found to be not branded, in that case it would be easy to show that they did not reach you branded.—A. Is it right that the merchants should have to assume any responsibility in the matter when the system of selling in Canada is such that the merchant may have thrown on his hands cheese that he has paid for and for which he may be subjected to fine for their not being branded, while at the same time he is in no way to blame?

Q. Suppose it were brought out before the police magistrate in Montreal that the cheese were not branded before it reached you. You prove that and go free?—A. By this Bill?

Q. Yes.—A. My belief is that it would be unfair to make the merchant responsible at all.

By Hon. Mr. Angers, Minister of Agriculture:

Q. You seem to be protected further by the words in the Bill "before leaving the factory," showing that the obligation is on the cheese maker.—A. At the first glance that would seem to be the case, but in the practical working of that, the difficulty occurs. Competition among the buyers of the country has reached such a pitch that the common expression is: some of the buyers are willing to say anything with a view to procuring cheese. We might prove in our warehouse that the cheese had not been branded when they arrived there, and yet the cheese maker might be able to bring six or eight men to say that they were branding. There would be a good deal of contradictory swearing.

By Mr. Cochrane:

Q. What redress would the cheese makers have against the cheese buyers? The cheese makers might be let off scot free, and yet the shipper might impose on the con-

sumer from the fact that they were making a little money?—A. My experience of Englishmen is that if you succeed in imposing upon them once you cannot do it again. At the same time that is the natural position; the merchants are likely to suffer. There is one other matter in connection with this Bill that I would like to mention. It has been suggested in the measure that the factories should have a registration number, and that this number should be branded on the cheese. I may mention, in regard to the practical working of this, that so far as the registration of every factory is concerned the merchants have no objection at all. The English people, however, like as few marks on the cheese or on the box as can be put there. In fact, the fewer marks the better. They want protection, but the fact is you will find the circular from the London Cheese Association simply requests the branding with the dates, and they sent out a neat impression of the kind of brand they considered helpful to the trade. I have a number in Montreal and shall be happy to send them to members of the committee if you so desire. I think, gentlemen, it will be helpful to have a list here in Ottawa with the address of each factory and let each man have his number, so that if a difficulty arises we can locate it at once, but it is detrimental to have the number branded either on the cheese or on the box. I will tell you why. Every shipper puts the name of the factory on the invoice; they do not want it on the box. Eight or nine years ago the English steamers wanted the name of the factory on the box, now, since we have to put on "Canadian produce," which is one brand, each man in England has his own brand. As certain factories have helped to build up his brand he expects to deal with those factories, but he does not want to have the name of the factory on the box. He may have a gilt edge brand, and supposing he has the number of the factory, as well as the weight of the box, together with the words "Canadian produce," the box will be simply loaded down with brands. And the fewer brands or marks that are put on the boxes or the cheese the better for the Englishmen in England. I am only now giving the opinion which is unanimous in England on that question. They want the cheese, but they do not want any more brands put on than can possibly be avoided and I think you will gain your point if the Dairy Commissioner were to keep a roll showing the registered number and issue a certificate so that we shall be able to trace any delinquents at once.

Mr. COCHRANE—They do not want to sell our Canadian cheese as English.

Mr. HODGSON.—That is obviated by the fact that every cheese has to be branded, "Canadian produce."

By Mr. Cochrane :

Q. I thought I understood you to say they did not want that?—A. They do not want the registered number of the factory on the box, but simply want the boxes marked as mentioned on their bills, because it makes so many marks, and the fewer the marks on the boxes the better they like it.

By Mr. McNeill :

Q. With the word "Canada" plainly branded?—A. The London Association sent out a brand that I think it would be hard to beat. The word "Canada" is there, and the date underneath. It is I think about half-inch letters, block type, and would be very easily read, and I think you will find it very hard to beat that brand.

By Mr. Taylor :

Q. As I understand it, every cheese now shipped from Montreal contains the brand "Canadian produce" on the Canadian boxes, and "The produce of the United States" on the American boxes?—A. That is correct.

Q. Do you recommend a continuance of that system? Is it considered in the interest of the Canadian producer that that brand be continued so as to identify Canadian cheese from the American when it gets to England?—A. I think it is to the interest of Canadians, and I think the reasons that were given at the time when that branding was adopted were sufficient to warrant it. There is a class of cheese made in the United States, speaking more particularly of Wisconsin, that really are, and have been, passed off as Canadian, and which were a disgrace to any country (hear, hear); and I think the causes that warranted the English asking for the brands were fully justified at the time, and if you remove it now, it would be injudicious.

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By Mr. Cochrane :

Q. There is one question I would like to ask Mr. Hodgson with reference to his experience with July cheese. July cheese are in no danger of being held over, if the price is not satisfactory, and put on the market in the fall?

A. No, but that is a little foreign to the subject, and I did not mention it at the time. The Montreal merchant has received a good deal of blame for carrying cheese in refrigerators. Well, gentlemen, the people who are more to blame for that are the English people, and I will tell you why. They have not in England the same facilities for carrying cheese as we have in Canada. Our refrigerator accommodation is better than in England, and the consequence is, it is the custom for some merchants in England—I know one man with whom I trade, who has got over 200 shops—to lay in a large quantity of cheese here, and have it as he wants it. Now, the Dairy Commissioner, whom we all feel proud to know, is at the head of this industry, will inform you that if the cheese are held at the proper temperature, they will carry, on the whole, without depreciation of quality, so that the fact of holding the cheese in refrigerators, so far as the quality is concerned, will not improve the quality, neither on the other hand will it in any way cause it to deteriorate. But there is a prejudice against “Julys” which can only be overcome by being able to prove to the Englishman that we can produce in England as good a quality in July as June, and, believe me, the only way that prejudice can be overcome, will be to brand these cheese “Julys.”

Our worthy Dairy Commissioner is in error in one thing. I have not heard of the Bristol or London Association sending any circular to cheese makers. It is the agents who have received the circulars. There is no doubt whatever that the English people know their own minds, and their request for branding has been placed very strongly before their agents out here. I would like to make myself clear also on another point. As a representative of the Butter and Cheese Association of Montreal, I wish to say that the resolution we passed at our meeting was not intended to mean that we wished the omission to brand to be a penal offence. There is no expression to that effect in the resolution at all. As an individual I quite agree with the Dairy Commissioner's remarks and I think I would be voicing the sentiment of the association, although I have not their authority to state so, that we have not asked for branding to be made compulsory. We simply wish that some action should be taken to allay these unpleasant suspicions. The Commissioner has mentioned here that he was not surprised at the attitude of the merchants of Montreal. The merchants of Montreal have been blamed, we think wrongfully, but whether rightly or wrongly is not a matter for discussion, and we wish, as a reasonable people, to do all we possibly can to allay these suspicions. I think it would be wrong to make the omission to brand a penal offence. We, as agents of the English receivers, will do what we can to buy cheese that have the date on, and if this act suggests that the branding ought to be done, or if an act is passed that branding has to be done, of course that will be all right to us, but I don't believe in making it a penal offence to leave cheese unbranded. When I first came to Canada, as I said before, we received instructions to leave off the date. We have now received instructions to have the date on, and we wish to carry out those instructions, but I should like to make it clear that we are not asking for the omission to brand to be treated as a penal offence. The intention is merely to allay these unpleasant suspicions. There has been a good deal of remark about the branding of cheese as “Canadian” or “Produce of Canada.” I think most of us at the time this act was first put in force suffered a good deal of unpleasantness in England. There is no reason for parliament to legislate any further on that subject. Any box of cheese that lands in England not marked “Canada” is taken possession of by the Customs House officer and is confiscated forthwith. Some of us, when the act first went into operation, were put to inconvenience in Canada, through the errors of the men in the warehouse. It is clearly defined in England that any single box of cheese arriving in England not branded with the Canadian brand is seized and confiscated for good.

Having examined the preceding transcript of my evidence, I find it correct.

ARTHUR HODGSON,

Butter and Cheese Exporter.

Mr. D. A. McPHERSON, of the Montreal Board of Trade, was called and addressed the committee.

Mr. McPHERSON.—I can only express the sentiments of my friend Mr. Hodgson, who is here with me to-day representing the Montreal Butter and Cheese Association. Everything and anything that Mr. Hodgson has said in connection with this matter of branding, is in accordance with the wishes of our Board and Association in Montreal. I will occupy your time but shortly. I would just like to touch on the general sentiment of the whole country on this question, so far as I have been able to gather it. As we all do in the trade, I have come in contact with the feeling both in the east and the west, and wherever cheese is produced in Canada. I have met up to the present a great many cheese manufacturers, that is to say farmers, who have come to Montreal to sell their cheese, and I have talked this matter over with them, and without a dissentient voice, may say such gentlemen as I have met were all of one accord in favour of the bill, and they would like to have their cheese branded. I do not think you can get any better representation of the sentiment throughout the country on this question, than through the circulars you have sent out and the answers you have got back. I would like just to refer to the sentiments which might be inferred to be entertained by the Brockville Board. I was very much pleased with the opinions expressed by the gentleman who came here representing the Brockville Board. I thought they would be very much stronger against the bill from what I had seen in the press, and from what occurred at the last meeting of the board with reference to this subject. Some other cheese boards have also expressed themselves against the branding of cheese. You must infer from that that they are not representing the sentiments of the patrons on this question. The cheese buyers and the cheese sellers meet on that board. Each of these cheese sellers represents from one to three hundred patrons, who are not there to speak for themselves. If this circular were sent out to them individually, fully 90 per cent. of them would reply in favour of the branding, just as they have done in the replies you have on hand. It may be that my agent, without instructions, in the Brockville market or in any other market, with a view of getting at the seller, may say "Mr. Seller, if you brand the cheese, I will not give you as good a price," and that sort of conversation spread about among the Brockville Board or any other Board, produces a feeling which is naturally against the branding of cheese. From that you get the statement published in the country papers that that section is against the branding of cheese; but I am satisfied, from the replies to the circulars you have sent out, that if the patrons or the sellers of the cheese were appealed to, their answer would be in accordance with those you have already received.

By Mr. Roome :

Q. Do not the sellers represent the patrons?—A. The sellers represent the patrons, certainly, but I do not think if you consult the sellers here that they will represent the farmers.

Q. They ought to know better than you would as a seller in Montreal?—A. Well, you have an expression of opinion in the replies to the circular you have sent out.

Q. The circular asked for information?—A. And you have 90 per cent of the replies in favour of branding.

Q. Still the circular did not lay the case before them?—A. I think the circular did lay the case before them. I do not see how it could be put much plainer.

Where I think you get the true sentiment of the farmers is through the meetings of the Dairymen's Associations held through the country at which this subject comes before the leading farmers of the various districts. Everyone of them is interested and if you take the resolutions passed by the Ontario Dairymen's Associations and also by the Associations of the Province of Quebec, you will find their opinion is strongly in favour of this branding bill. It is there you get the general sentiment of the country, the franchise of the country. With respect to the manner of branding, I should just

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like to make one remark as to the branding on the box as well as on the cheese. Mr. Hodgson has explained the matter fully, and I just throw out this little suggestion on that point that we want as few marks as possible. If you get the date and the section in which the cheese is produced put on the cheese when it is made in the factory, the factoryman will incur no additional expense. But it would be altogether unnecessary, I think, to have the same names on the boxes, for the reason Mr. Hodgson explained to you. If you have the name of the section and "Produce of Canada" stencilled on the box and we as shippers have put our brand on, the fact is that when all these brands are put on there will hardly be room for anything else. There can be no fraud perpetrated if the brand is on the cheese, but the box is often broken in transit. We have to recover a great deal of the cheese and get new boxes put on, because so many of them are broken before they get to us. Consequently that cheese would go forward without brand if you depended upon the box, but no fraud can be perpetrated if the brand is on the cheese, whether it is on the box or not.

It will certainly be necessary to put it on the package in the case of butter, because you cannot put it on the butter. The President of the Brockville Board says that the brand should be put on the top of the cheese. That will be impracticable because in certain sections they do not put a top cloth on and you could not put it on the rim.

Mr. REDMOND.—They nearly all put a cloth round the top.

Mr. MCPHERSON.—Yes, but only a few sections in the Province of Quebec put a top cloth on. They are beginning to do it, but some of them do not do it yet.

Mr. REDMOND.—They would soon get over that.

Mr. MCPHERSON.—As regards the prejudice against July cheese in England I can say from having been over in England that July cheese are looked upon by the merchant and the consumer as of good value while we send over the quality we have been sending. I might also say that the premium has nothing to do with the price of July cheese. It is a standing fact that the cheese beginning at 9 or 10 cents a pound, or 6 or 7 cents as it is this year, gradually increases so that the prices of our fall cheese are worth a premium of a cent or a cent and a half over the summer goods.

Now, there can be no fraud perpetrated or injury done to the Canadian producer if the date of the manufacture is established and indelibly put on the cheese, but I as a Montreal shipper have no hesitation in telling you that I have seen cheese shipped out of Montreal myself—I am not the shipper I am proud to tell you—August cheese with the September brand on the side of it.

By Mr. Wilson :

Q. A large quantity?—A. I recognized the fact because the goods were shipped out of my warehouse. The shipper put the brand on the boxes when they left my warehouse.

By Mr. Hodgson :

Q. Was not that the exception?—A. Certainly it was the exception. I mentioned that to show that I knew of one case in which August cheese had been branded September make.

By Mr. McGregor :

Q. On the whole, you think that the cheese going to the English market should be branded with the date?—A. It should be done, and it will increase the value of our product in future.

Having examined the preceding transcript of my evidence, I find it correct.

D. A. MCPHERSON, of D. A. McP. & Co.
Produce Exporter, 22, 26 William St., Montreal.

THE CHAIRMAN.—We will now hear from the Brockville Board of Trade. Will the gentlemen who are present to represent that board be so good as to proceed now with their remarks?

Mr. J. P. REDMOND.—I have the honour to be the president of the Brockville Board of Trade. I might say, as far as the Brockville board are concerned, they are not unanimous. That is as to the whole of the bill before Parliament. There are several clauses in it, as far as the branding of cheese with the word "Canada," and the section from which they come. They are unanimous that the cheese should be branded as well as the boxes. I want a little more than that word "Canada" put on. The feeling of our people is that we from Ontario have the best reputation in Canada for making fine cheese (hear, hear), and we would like to have that fact known in England (hear, hear). With all due respect to our friends from Quebec (I think I see some of them here) and in other parts of the Dominion, they are making very fine cheese, but still it could not be expected they could equal Ontario, because they have not been as long at it, they have not put as much skill and science and as much money into it as we have, and therefore they cannot do so well, but they are coming on fast. I want the bill to go a little further; I want the name of the province put on.

Mr. McLENNAN.—The bill provides for the initial letters of the province being put on.

Mr. REDMOND.—Does it provide that? I have only glanced over it since I came here. However the initial letters are not enough, it is not very hard to brand the word "Ontario" in full. Let it be distinctly known the cheese has come from Ontario. When we went to Chicago, at the World's Fair, we stood first, I think, in the province of Ontario.

Mr. CHOQUETTE.—Quebec.

Mr. REDMOND.—I beg your pardon, I think I have the best right to know, because I was there during the Exposition. Then coming down a little closer, Mr. Chairman, I would like to go even further than that, I would like the section of the country branded on the cheese (hear, hear). We come from eastern Ontario. We claim we took the most medals at Chicago fair from eastern Ontario, and we want that distinctly known too.

Mr. McLENNAN.—That is provided for in the bill, to put the initial so that you can tell every factory on every cheese manufactured.

Mr. REDMOND.—That is a round about way of going. I would rather have it put so that a man need not wait to consult the Dairy Commissioner of Canada, who did not desire to do so. That would be a round about way, if he wanted to buy cheese in a hurry.

Mr. HODGSON (Montreal).—I would like to mention that the shippers in Montreal always have to quote a section of the country when they sell. When I send out my quotations, I have to quote "Brockville" or "Belleville," and I think the system of trading from Montreal will obviate all your difficulty. I dare not, if I get orders from Brockville, put in any Quebec cheese, from the fact of having the name of the factory on your invoice. I can assure you that the Englishmen are just as well posted as to the quality that comes from Brockville or any other part of Canada as you yourselves, and they will order by sections.

Mr. REDMOND.—I have to depend upon your doing it. Why not make it compulsory and then I shall be sure it is done. You may do it, you are an honest dealer, but other men may not do it, and we may suffer from that fact.

Mr. HODGSON.—I was speaking of the association, not personally.

Mr. REDMOND.—I would like the cheese to be branded not only on the boxes but on the cheese itself with the words "Ontario, Canada," and the section of country as well. It would not be much to put on the brand where the cheese comes from. Coming now to the most important point, Mr. Chairman, and that is the disputed point with us, as to dates on cheese, I might say, as I am here as a representative, I must

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state what the feeling of the Board is, and then I will give you my own view and you can make what you like of it. Our Board voted almost unanimously that the cheese should be branded, in so far as regarded the points I have been speaking on—the country, and the province and all that kind of thing—but they were opposed to putting a date on the cheese. Some gentlemen said: “Let the cheese sell on its reputation, on its own merits and never mind the date.

By Mr. McLennan :

Q. Why are you opposed to the date?—A. They say, just as I think Professor Robertson said the other day, at Brockville, that there is some prejudice against some months' make. Every man who understands anything about the manufacture of cheese knows that we cannot make the same quality of cheese in every month of the year. There is some prejudice against that made in the hot weather. Some seasons we make very fine cheese in July. Other seasons when it is hot and dry we cannot make as good. But however that may be, there is a prejudice in the old country in favour of September and against July. I know that from 25 years' experience with old country dealers. If they see the cheese branded “July” they will say: “I do not want July cheese I want September.”

By Mr. McMillan :

Q. This is a very important point you are at, just now. Now, you say that there is a prejudice against July cheese and that Professor Robertson says there is a prejudice against July cheese, and yet you say the July cheese is sometimes better than June. If it is better, then certainly the marking of that July cheese as July cheese is the only way in which you can overcome that prejudice, and if you are not going to do it in that way how are you going to place that cheese upon the markets of Great Britain? Are you going to represent it as the product of another month, as September cheese? Is that fair dealing?—A. No; it is not. I agree with you exactly as to that. In what I have been saying I have not been presenting my own views; but I am here as a representative and I thought it my duty to give you the opinion held by the majority of the Board. I will give my own views directly, and other gentlemen, perhaps, will oppose me; but, whatever may be the case in Prince Edward Island, Manitoba and other provinces, in Ontario we are making a finer cheese in July than we used to. We have got better appliances and better cheese makers, and with the improvements introduced by dairy schools we are making finer cheese in June and July than ever before. If they are branded, and the Englishman finds a cheese of fine quality branded “July,” I think that the prejudice against July cheese will die away. Some of the buyers have said that they will not give so much for the cheese if they are branded with the date on. I do not wish to reflect on any of the gentlemen here, but as a representative I am bound to say what I have heard, and to give other people's views. Now, I will turn to the other side and give you my own views. I agree with the gentleman who has brought in this Bill that the cheese should be sold on its merits. We want our own cheese known, because I come from a section of the Province that makes the finest cheese in Canada, indeed I think the finest in the whole world. We have done that in competition with the whole world; and I think it is not asking too much to have our own cheese known, and not only the Province but also the section marked on the cheese. I think there is no way to overcome the Englishman's prejudice against July cheese so quickly as to have the date branded on our cheese, and let him know the fact that our July cheese is of fine quality. I do not believe in practising deception upon any man, much less upon men who have to consume our cheese. Therefore I think it would be better to have the cheese branded, and if there is anything like prejudice I think there is none that will not be removed when it is found that we make a fine cheese in July. Formerly, in the warm weather, we did not make as good cheese. It was a gassy, porous cheese, that did not take as well. Now, if the weather is good, we make nearly as good a cheese in July as in the other months of the year. Some gentlemen told me last year that they made as good cheese in July as in any part of the season, because the grass was good and the weather was fine. Let the people who are to consume our cheese know what they are getting and it will be no

worse for us in the long run. These are my views and the views of many others, but they are not the views of the Board. My own opinion is that the Englishmen have a right to know what they are getting. I believe it will build up our trade better and safer than it is now.

There was a discussion between Mr. Hodgson and another gentleman as to how the penalty should be inflicted. The question was as to who should pay the penalty in case the cheese were not branded. I think, as a factoryman, that the responsibility should be thrown upon us. I would not like to see the responsibility thrown upon any dealer in Montreal. If any man neglected to brand the cheese when he was making it, then I think he should suffer for it.

There is the further question to be considered of how the cheese should be branded and where. The cheese should be branded on the top. It will be very difficult for the shipper to take the cheese out of the boxes to see if they are properly branded, but if they were branded on the top, as soon as the lid was taken off the brand would show and it would be very easy to go through a lot of cheese and see whether they were properly branded or not. I do not know of any other point just now that I wish to bring before the Committee, but I am very much in favour of the Bill and I hope it will become law. I believe it will be of advantage to our trade. It is the best trade for our farmers in Eastern Canada and I want to make the best of it. The market is depressed just now, but it will probably advance very soon. Mention was made about dishonest dealers. I would hate to say that, because so far as I have had to do with them I have found them very good men, that we have had to deal with, but I think it is a very wrong thing to deceive the old country people in the way that has been stated. It has been suggested that you might deal with this Bill by leaving it permissive. So far as the date is concerned, you might leave that permissive, but my view is that to put the date on is the best. Still, if it were left permissive, it would meet the views of many of our people. For myself, I think it is better to put it on and let people know just what we are producing and what they are buying. I believe in the end it would be for the benefit of our trade.

By Mr. Cochrane :

Q. When you speak of branding the date, do you mean the month or the day of the month?—A. I think the month would be enough. To brand the day on would be rather too fine.

Having examined the preceding transcript of my evidence, I find it correct.

J. P. REDMOND,

*President, Brockville Dairymen's Board of Trade,
Farmer and Cheese Manufacturer.*

MR. O. BUSH, member for Kemptville in the Ontario legislature, was then called, and addressed the committee.

MR. BUSH.—The only question on which there seems to be a difference of opinion is as to the question of branding the date. So far as saying that it is Canadian cheese, that is universally agreed upon by all classes. I cannot be so sure as Mr. Redmond that we should brand on the cheese "Ontario" or "Brockville section." I believe we are all Canadians, and I think the brand "Canadian" is enough. (Hear, hear.) Now, as to the question of the date. Some three weeks ago, when this question first came before the Brockville board, I think if we had taken a vote on it then, nearly every member of that board, including 200 salesmen, would have voted for the bill, but after it was considered and discussed at our last meeting I think it was an almost unanimous conclusion against an act being passed for the compulsory branding of the date at which the cheese were made.

The reason is this : we believe as producers the cheese should be bought and sold on their merit. The seasons vary. One year we may produce a better quality of goods

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in June than in July, and a better quality in July than in August, but as a rule August cheese has the preference. But, as I say, the seasons vary, and the quality of the cheese that is made we can attribute, in great measure, to the condition of the grass and the weather. For instance, during the last ten days, I believe, we have been making as good cheese in this part of the country as can be produced in any season of the year. My cheese makers tell me, and I have come in contact with many others who have said the same thing, that the quality of the curd is the very best. There is this important fact, however, to be borne in mind: if we brand this cheese as "May" cheese, we shall have to sell it at a reduced price. At the Brockville board, cheese sold for $6\frac{1}{2}$ cents last week; yesterday it fetched $7\frac{5}{16}$ cents per lb. I would like to explain to the committee that our cheese in this eastern portion of Ontario—what we call the Brockville district—is sold subject to inspection in Montreal. Now, if I sell 500 cheese, and they go to Montreal in a few days, if the quality is fine, what more do they want, whether they were made on the 1st of May, the 7th of May or the 10th May. There is one thing that must not be overlooked also in connection with this matter, and that is that, last year, the Englishmen bought their cheese a little too dear. Last year you might have got 200 cheese makers in our district in favour of branding the cheese. Yesterday, and a week ago yesterday, if the matter had been put to a vote I do not believe there would have been an assenting voice. The feeling was unanimous, however, that the cheese should be branded "Canadian," but as to the date of the make that was something which they agreed should not be on the cheese.

By Mr. Taylor :

Q. Was not the discussion at Brockville generally in the direction that the Montreal board was opposed to it? How do you reconcile your statements with those of Mr. Hodgson, in which he says that in Montreal they wanted this done?—A. I understood Mr. Hodgson, when he was in Brockville two weeks ago, was opposed to branding the date, and now he is in favour of it. I was told that he was opposed to the branding.

Mr. HODGSON.—Will the committee allow me to make a personal explanation? I had the pleasure of being at Brockville a fortnight ago, and the logical reasons given against branding were correct and true. As a merchant, I think the difficulties the factorymen have to meet should be placed before them. There is no doubt about it that the farmers are going to have to pay for this branding of the cheese until this prejudice is overcome. If any of you gentlemen spoke to the Brockville dairymen and explained the matter to them, naturally they would be opposed to the brand ng. If I may ask a question, it would be this: Is this going to help the country this season or next? I say not. Take my word for it, there is no doubt about it that the onus is going to rest with the factorymen until the prejudice is overcome.

Mr. BUSH (Continuing).—I was rather amused at the statement of Mr. Hodgson, when he said that some years ago the Englishmen did not want the date and that now they want it. I do not believe in submitting to the dictation of the English dealers. They are looking after their own interests; they are not looking after the interest of the Canadian producer. I have heard it stated by men who know something of the position of affairs in England, that they have seen English cheese out of Canadian boxes, in other words that they are selling English cheese as our product. The object of the English dealers is to make money; they are not considering our interests but their own. What concerns us is to make the best cheese and then sell them as finest goods, for the best price, regardless of the month which they were made.

By Mr. Cochrane :

Q. How would it injure June cheese by putting the month on each box?—A. Because there is a prejudice against it in England. It was stated by Mr. Hodgson that June cheese placed in cold storage will neither deteriorate, improve or go back. Now, with cheese selling at 7 or $7\frac{1}{2}$ cents the representatives of the combination of factories may say: We will store our cheese; we will not sell them. By keeping them over for a month or six weeks till the price advances, would it not be to the interest of the farmers of this country, instead of giving the advantage of the increased price to the English dealer?

By Mr. Taylor :

Q. How is it that all the cheese shipped from Montreal last year were branded September make. We have been informed that the cheese shipped from Montreal was branded September make?—A. They were not.

Mr. HODGSON.—I must object to the statement that the cheese shipped from Montreal were branded September make. The fact is that 60 per cent of the cheese that was sent from Montreal had not the month branded on at all. It caused the trade much amusement when they saw the statement made in the House. The Englishmen do not want the month on the box ; the fewer brands the better. If the cheese shipped from Montreal were not September they were not branded as September. If we are here to defend our character, I think this explanation should be given.

Mr. TAYLOR.—The statement I made in the House was that somewhere between the warehouse and the vessel the cheese were branded September make.

Mr. HODGSON.—The exceptions prove the rule. I was speaking of a general practice of conducting business in Montreal.

Mr. REDMOND.—Was any other month put on them ?

Mr. HODGSON.—Certainly not ; none of the cheeses shipped from Montreal last year had the month on them.

Mr. BUSH.—I have had a good deal of experience with Montreal dealers and have been there frequently, especially last fall. I do not believe that what Mr. Taylor says was done, was practised there to any extent. I have a higher opinion of our Montreal cheese buyers.

By Mr. McLennan :

Q. You say you want to place the cheese on the market on its merits. If the cheese is marked as to the date, what is there to prevent you placing it on the market on its merits. What objection can there be to having the cheese marked, specifying what it is, and placed upon the market and sold on its merits? Why do you draw the distinction between the two?

Mr. BUSH.—When they are dated you are placing an instrument in the hands of the buyer to argue with the man who produces the cheese : “Those are old cheese, and I cannot give you the price,” and they may be just as good in quality. We have been shipping from the Brockville district for years. We sell our cheese at that port and they go forward every week. Here is a point : Supposing I sold Mr. Hodgson on the Brockville cheese board 500 boxes of fine cheese, I guarantee the quality and weight in Montreal. Those cheese go to Montreal. I meet Mr. Hodgson there. He tests those cheese and he says the quality is all right. What is the difference whether that cheese was made in June or July, as long as the quality is all right? That is the point, as long as the quality is all right ; and I tell you this thing has been asked for by the English dealer from the very fact that they buy our cheese in July, store them in this country and get the benefit of the increased prices.

Q. You have not answered my question, why does it make any difference in the ordinary condition of the cheese, in placing cheese on the market on its merits.

Hon. Mr. ANGERS.—If you put the month on, it augments the prejudice against it.

Mr. BUSH.—You know there is a prejudice. August and September cheese have the preference over that of July or June, but last year our July cheese was really better than our August cheese. I think that was universally admitted last year. Probably this year it might not be the case.

By Mr. McGregor :

Q. Did you get the price accordingly?—No, we did not. Any cheese we sold last year as July cheese we had to take a quarter to a half a cent less than the price, that was the result. I have nothing more to say than simply this : I believe there has been a feeling growing in the country during the last ten days or two weeks against this branding of cheese with the date, and I believe it is nearly universal. Personally, I believe it is against the interests of the producer.

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By Mr. McLennan :

Q. How do you account, Mr. Bush, for 95 per cent of the answers being in favour of it ?—A. They answered the question that was asked, and the question came to them in a general way as to whether they approved of the branding of cheese—did they approve of the branding of Canadian cheese ? There was no distinction made between the date and the branding. Those answers are given without careful thought, the people have not come together and discussed it, and probably the farmers have not been studying the matter up. They think it is a grand idea to brand cheese, and they do not look into the merits of the bill. But I venture to say, when you get the farmers of this country to come and discuss this question fairly and candidly, in nine cases out of ten, they would vote against the branding of the date on cheese.

By Mr. McNeill :

Q. You say there is a very strong prejudice to be overcome. If we branded the cheese with the date of manufacture there would be a prejudice against the earlier made cheese, that is what I understand you to say ?—A. There has been in the past. I think that is being overcome to some extent.

Q. If there be a prejudice such as you speak of still existing, will it not injure our reputation as a cheese-making country if there be a doubt as to whether it is September cheese that is being bought or not ?—A. I do not believe it. Suppose Mr. Hodgson sells the English buyer 10,000 boxes of cheese of fine quality ; when those cheese go over, if they are fine, that is what they want.

By Mr. McLennan :

Q. Before you go further I would like to ask do you say July cheese is better than September cheese ?—A. Not as a rule.

Q. You say that all the farmers, notwithstanding they sent those answers, in nine cases out of ten would be against the branding of cheese. Are we to understand that you propose to say that the farmers and the owners of cheese factories who sent those answers in, did not know what they were doing, and have not intelligence enough to judge for themselves as to what answer they should send in, and what they would like to have ?—A. I do not intend to say that at all, but you may remember the nature of one answer that was made here to-day.

By Mr. Cochrane :

Q. That was a man opposed to it.—A. And you heard the arguments that he used. I am satisfied that many of those who sent answers have not looked into the merits of the bill. Take the fact of the branding of cheese. Two or three years ago you will remember the British agitation because of the impression that American cheese passed through here and was branded as Canadian. It was a suspicion on the reputation of Canadian cheese that has been remedied.

Q. Was that not a fact ?—A. It was a fact, and it was doing a great deal to injure the reputation of Canadian cheese.

Q. Is it not a fact that when you buy July cheese you get July prices, and that there is not as much paid for July cheese as there is for June ?—A. Not as a rule.

Q. Or September ?—A. Not as a rule.

Mr. HODGSON.—July cheese has often got a higher price than June. There were higher prices for "Julys" last year than "Junes."

By Mr. Cochrane :

Q. That is from the fact you wanted the cheese ?—A. From the fact that they got a higher price.

Q. But as a general rule you buy July cheese at July prices ?

Mr. BUSH.—Just one word. I do not believe that in the last three or four years deception has been practised as much as it was years ago, the reputation of our Canadian cheese has been greatly going up.

By Mr. Cochrane :

Q. What do you mean?—A. The selling of June cheese for August.

Q. Taking your argument, as I understand it, if the cheese are branded the producer is going to lose from the fact that we are going to brand July cheese. Now, what I want to know is: is it not a fact when you buy factory cheese you pay July prices for July cheese?—A. It is often done. I have had men come to my factory, and looking over my cheese they would say: "I want to know each month in which they were made." I would not tell the buyer. I would say: "Judge that for yourself. There are 500 boxes of cheese which I will guarantee fine, and I want a fine price." Now, it is for him to judge himself, but one-half the buyers in this country could not tell, nor Englishmen cannot tell, a June cheese from a July cheese.

Mr. REDMOND.—It would seem, if the practice was adopted last year of selling "Junes" for "Septembers," it is having an effect of turning back upon us now. I believe it is just because that deception may have been practised last year that we are getting six cents instead of the ten cents that we ought to be receiving.

Having examined the preceding transcript of my evidence, I find it correct.

O. BUSH, *Manufacturer.*

THE CHAIRMAN announced that he had been handed a request from the Listowel Board of Trade advising a postponement of this Bill for another year.

Mr. TAYLOR.—The Minister of Agriculture informed us that there is a general law for the punishment of fraud in trade marks. Is not this cheese industry of sufficient importance for putting a special clause in the statute to make it a penalty for putting false dates on cheese, irrespective of the General Trades Marks Act? Could not some such clause be included in the Dairy Products Act?

Hon. Mr. ANGERS.—If Parliament comes to the conclusion that it is in the interests of the farmer to enact some such clause—and not altogether in the interests of the shipper and the dealer on the other side—the Government will be willing to do its utmost to make the measure as perfect as possible.

Mr. C. H. SMITH, of the Brockville Board of Trade.—"Mr. Chairman and Gentlemen,—As one of the delegates from the Brockville Cheese Board of Trade I would like to say a few words. While my good friend the President of the Brockville Board has given you his idea about this branding, he has also given you in a rough way the idea of the Board. Mr. Bush likewise gave you his idea. I do not think, however, that either of those gentlemen have voiced the sentiments of the Brockville Dairymen's Board of Trade so clearly as has the Minister of Agriculture and Mr. Robertson. I think these two gentlemen have voiced the sentiments of the Brockville Cheese Board accurately. Major McLennan hangs fire on placing our cheese on its merits by stencilling the month. I am here as a manufacturer of cheese, and I think we have men here in the trade from Montreal who will agree with me in reference to the quality of the cheese. You have heard something said about the climate and conditions of weather and grass. I claim to-day that we have been making cheese during the past seasons which, if branded "June" "July" or "August" as the month of make, would not be placed on the market on their merits. Last year our July cheese was of better quality than cheese which we made in August or the first week in September. As Professor Robertson has pointed out, everything depends on the conditions. It seems to me that while we are here as delegates we want to look at this matter fairly; we want to deal honestly with the farmers and buyers at home and honestly with the buyers in Europe. It has been pointed that the English buyer is asking for this legislation for his own convenience. If it is your pleasure to pass certain legislation in reference to this question, we will only know by experience the result. I think, gentlemen, from what the Minister of Agriculture and Professor Robertson have said that they have given you the sentiments of the Brockville Cheese Board of Trade, even better than we can do it.

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By Mr. Cochrane :

Q. Are you a maker of cheese?—A. I am a maker of cheese as well as owning a number of factories.

Mr. HONGSON.—I may state that the Montreal Association asked me to mention that if you want any further assistance in this matter they will be happy to furnish it, either by sending up a deputation or otherwise.

Having examined the preceding transcript of my evidence, I find it correct.

C. H. SMITH,

Cheese Manufacturer.

MR. H. S. FOSTER, President of the District of Bedford Dairy Association, was then called. He said: I feel hardly qualified to discuss this question of branding before this Committee because I see that this is a matter in which the English market is very largely concerned, and I question whether we are qualified as producers to discuss it in an intelligent way. My impression was, in the first instance, that it was best to establish as much confidence as possible between producer and consumer, and I thought by the branding of the month's make on the cheese we would be able to establish such confidence, but I see now that there is a very decided interest in England that want the cheese branded, and there is another faction here that do not want it branded. I think, for my part, I should be inclined to leave the question to be decided by the Dairy Commissioner, Mr. Robertson, who knows the circumstances both here in Canada and in England. Then there is the question of the branding on the cheese the name of the province in which it is produced. We have Professor Robertson here, who has been promoting the manufacture of Canadian cheese. That is what we want branded on it, the name "Canadian" more than the particular province in which it is produced.

In the Province of Quebec, representing as I do the Eastern Townships there, we are interested in establishing the greatest confidence possible in the minds of the English consumer, and I trust that the matter will be considered very carefully and looked at in all its different phases before any action is taken. The matter is not one to be dealt with hastily and should be very thoroughly considered before any legislation is passed. I feel convinced that a prejudice exists in England against July cheese, but if we can overcome that by showing that we can produce as good a cheese in July as in August, that is a very important fact to have placed before the English consumer, but to go to work and decide the matter hastily I think would be a mistake.

Certified as true copy of the stenographer's report of Mr. H. S. Foster's statement before the committee in reference to the branding of cheese.

J. H. MACLEOD,

Clerk to Committee.

Mr. JAMES W. ROBERTSON, Dominion Dairy Commissioner, was called.

He said: Mr. Chairman and Gentlemen,—This is a question which has given rise to a wide difference of opinion, mainly owing to the standpoint from which it is viewed. The agitation in favour of branding began in England on the part of men who, while interested in our Canadian trade, have the greatest interest in the desire to make all the money they can by buying from us as cheaply as they possibly can. It will be therefore seen that, while our interests and theirs are closely allied, our interests are not identical with theirs.

The practice of branding cheese with the day of the month and the name of the month was common before 1880 and thereafter. At some time later the English importers sent instructions to their buyers in Canada not to have the name of the month put on the cheese. The practice was, therefore, discontinued at their instance; it was

for their profit, not for our good. One of the speakers to-day said: very likely the English merchants will ask to have the practice of branding resumed and discontinued again for their own profit. Canadian cheese has won a capital reputation by its quality and intrinsic merit—not by any marks on the boxes except that of “Canadian.” The Canadian reputation has come from the intrinsic quality of the cheese. This important fact should be borne in mind. Now, if the English merchants who buy our cheese desire the month of the make branded upon it, they will send directions to their buyers or agents in Canada to have the month put on, and not a single factoryman will object, if requested by the buyer who usually handles his cheese. The law here and in England is absolutely prohibitive of any kind of misrepresentation by dates; so that if that particular shipment referred to in evidence, when August-made cheese was branded September, had been found out, the persons concerned were liable to prosecution under the Merchandise Marks Offences Act. If I had come across a case of that kind I would not have hesitated a single moment in putting the law in operation against the person, because it was a fraud or attempt at fraud.

The sentiment in favour of branding cheese is based on this: the branding which was made compulsory in the past has been beneficial. When the “Dairy Products Act, 1893,” was passed, providing for branding with the word “Canadian,” apparently it helped our cheese trade. Now, those who advocate the extension of the practice to include the date perhaps argue that, as the branding was good in that regard, it will do good in the second regard also. It will be difficult, however, to make the farmers realize this, unless the matter is thoroughly explained to them. Personally, I am opposed to making this branding of dates compulsory; I am opposed to all legislation that is coercive in regard to commercial affairs, except for the prevention of fraud.

By Mr. Cochrane:

Q. Is not our wheat already branded?—A. It is graded by inspection, not by any date upon it. Another point I want to make here is this: It is generally admitted on all hands—it is an admission on both sides, and it is not merely my own opinion—that, by branding the month on the side of the cheese, we are going to pay for it through the nose for one season. It is admitted that compulsory branding will entail a sacrifice on our part, and for what? To overcome a prejudice. And shall we gain anything by it? After we have overcome the prejudice we have only put another instrument into the hands of the Canadian and English purchaser to bring down the price. It would not be long before we heard the buyers saying that July make was not as good as that of another month. Let me show the fallacy of seeking to brand the cheese “July” at all. The quality of cheese is not determined by the month or the year in which it is made; the quality is determined by conditions of weather and grass and temperature at which it is cured and stored. A moment’s reflection, however, will convince the committee that conditions of weather and grass do not follow the calendar. Why, then, should a law be passed requiring a designation which will be taken as descriptive of quality, when the conditions to enable the cheesemaker to obtain that quality were not perhaps present at the time? I have known the conditions for cheesemaking in September to be worse than in July; I have known the conditions in July to be better than in June.

I need not remind you that the English retail purchaser does not go by names of months; he goes by what names stand for. Cheese ordered from Montreal dealers are not asked for “of September make” but “of September quality”; and it is a fact that what is known as September quality sometimes cannot be made in September in some parts of Canada. I hold, therefore, that it is a mistake to seek to compel the putting on an article of a name that will give a wrong impression of its quality. If cheese be made in July or August when the conditions of September weather may prevail and the product be equal to September make, why should not that cheese thus coming right up to the standard of September quality be sold on its merits without being handicapped by a brand against which there is still a prejudice? The prejudice against our summer-made cheese is not general and is founded upon the kind of cheese which was made fifteen-years ago. It should be our object to let it die out as quickly as possible. If, then, we

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adopt this Bill and require compulsory branding we shall put ourselves in the position where we shall have to begin the fight over again at a time when the prejudice had perhaps otherwise died away. I can quite understand why the exporters from Canada must necessarily take a stand in public in favour of branding the month on the cheese. They have been charged by the English Produce Exchanges with misrepresenting the make of the cheese. They have been so charged in the press—I think wrongfully. No doubt if they had stood up and said, “Don’t put on the date,” it would have a tendency to confirm the opinion which the English Produce Exchanges have formed. The prejudice to which I have alluded against summer-made cheese has been always regarded and has been used in the past as a hammer with which to hammer down the price of our cheese; and I think it would be folly upon our part if we were to put a hammer into the hands of the English importers to our detriment. Considering the progress which the cheese industry in Canada has made, and knowing the prejudices with which we have to contend, I see no reason against letting our cheese go over without the date upon it. There is no misrepresentation in that. The cheese is sold on its merits, and the object of the shipper is to get as good a price for it as can be obtained on the market. I am free to confess that branding would tend to repress the practice of buying on speculation.

If the date is to be put on the cheese and also on the box it will cost more money and more trouble, and therefore the shippers unanimously object to the branding of the boxes. The two go together and stand side by side. Let me say this also: it would be a restriction on some of the speculative buying, and it might be unprofitable to repress speculative buying in cheese. I don’t know about that. I am not here to express an opinion beyond saying this: that the speculative buying of cheese during the last four years has given the Canadian producer more money than he would have got otherwise for his whole season’s make, although this spring those in the cheese export trade have not been making money out of cheese on account of speculative buying. (A voice—quite right.)

There are two cheeses made in Great Britain for one in Canada, yet do you hear anything of the English merchants asking the British parliament to enact legislation to compel the English producer to brand his cheese with the months of July and August?

MR. D. A. McPHERSON.—Yes, there is an act before parliament now to that effect.

MR. ROBERTSON.—Then it has only come up recently, and you will find that there will be no desire on the part of the English farmer to have his cheese branded July and August. If the imperial parliament would set us a good example in this regard I would feel disposed to follow in their wake. We would have their example, and a little example is much better than a great deal of precept from the men who are buying our cheese. I would say this also in regard to the act before the Dominion parliament: I would go very slow in the matter of creating a new offence in our country. I have been in favour of recommending the factorymen to put the name of the month on their cheese for the last six or seven years. I have never once said anything opposed to that, but always in its favour as being a desirable thing to do—if the buyers want it. But that is quite a different thing from making it an offence for a man not to do it. I would say, “Brand the month on every box when the cheese buyer asks you.” Is that not far enough for you to go? Make it permissive and then make it prohibitive against fraud by misrepresentation. Before I leave this part of the subject I may say further—

By Mr. Taylor:

Q. When you say prohibitive against fraud, do you mean making an offence of putting the wrong date on cheese?—A. Yes, putting the wrong date on; that is a misrepresentation of dates. It is an offence now; and to prohibit that is quite a just kind of legislation. Let me say, in passing, that our butter trade is coming to the front and is likely to be a very important trade in the near future. We have quite easily at our command now preserving materials and refrigeration by means of which we are getting our butter on the English market in a fresh-made condition, with the quality unimpaired. We would excite a prejudice against it in England in having our butter branded “June” on the sides of the tubs. Is it wise to say that butter is three months old?

HON. MR. ANGERS.—In England they want the butter fresh all the time.

MR. ROBERTSON.—When the butter is fresh in taste if not in regard to age. If we do that we will find ourselves shut out of the market, because neither the Australians nor the Danes brand the butter they make and we would be only handicapping ourselves. I think it would be most disastrous to the butter trade to have that done. The view I have taken before, in speaking to the Minister of Agriculture, was this: Since there is so much difference of opinion and so much at stake it would be wise to postpone the legislation for at least one year. By that means the farmers and shippers in this country and the importers in England can come to an understanding; and meanwhile an unmistakable expression of opinion can be given, that Canadians are bound to prevent fraud in their cheese-making and cheese-selling; and that any man who sells July cheese for August cheese would be guilty of a misdemeanour punishable by law.

HON. MR. ANGERS.—That is the case now.

MR. ROBERTSON.—There is no necessity for having our cheese stamped to the prejudice of the producer.

By Mr. McMillan:

Q. If there is no stamp how are you going to distinguish between July and August make?—A. If there be fraud it is only committed by the wrong date, and that can be proven in the ordinary course of law.

Q. That would be only as to quality and not to date of make?—A. If a certain date were specified in the agreement of sale it could be traced to the maker.

By Mr. O'Brien:

Q. I understand from your argument that you would be opposed to any branding of cheese whatever, as regards the date?—A. I would be opposed to the branding of cheese being made compulsory and the neglect being made a penal offence.

Q. Would you brand September cheese any more than July?—A. Not by law. I would not make it compulsory. I am in favour of the factorymen branding their cheese if they choose, but I would not favour compulsory branding that may entail loss, with no good result to the producer. Besides this, I object to all branding that would involve making the neglect to brand, an offence, unless fraud was committed or likely to be committed in the branding itself or in the neglect to brand.

Q. "We don't want the principle of compulsion in reference to all matters of merchandise, in reference to all trade matters." I understood Mr. Robertson opposed compulsion. I took those words down when he was speaking, perhaps he went a little further than he intended?—A. I was dealing at that time entirely with the branding of the date. Now I am coming to another part of the Bill. Speaking of that, I think it is desirable to have the word "Canada" or "Canadian," and I would suggest that.

HON. MR. ANGERS.—That is the law now.

MR. ROBERTSON.—The word "Canadian" is one that is used in the trade journals. Our cheese is known as "Canadian." In the meantime I think it would be advantageous to have every factory register its name and location in some department in Ottawa and to have a registered number issued for that factory, in order that any of its goods in Great Britain could be traced back to the source of manufacture. It would be of value in that sense and it would have a special value here, which I think would accrue to the producer.

By Mr. McLennan:

Q. How would you trace it unless you brand a number on the cheese?—A. I would brand a registered factory number on the cheese. I would do it so that factory number 950, making a cheese of such superlative excellence that it would be likely to fetch in England 2 cents a pound more than the cheese of factory number 949, which is not so excellent, would presently find a similar differentiation in price according to quality here. When the grocer in England, who ultimately gets them, finds they please his customers immensely, he can get the name of the factory, give it to his shipper and his

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buyer, and start a new competition, the result of which will be to improve our cheese trade. I do not think the shippers would be injured by this after it was in operation. The only other remark I have to offer is in regard to the penalty for violation mentioned in this Bill. I would make the penalty at first as light as possible. It is not an offence, in any sense, that should be counted as a great misdemeanour involving a heavy financial punishment.

These are my views as Dairy Commissioner.

If the dates are branded on the cheese the consensus of opinion is that our farmers will pay through the nose for doing that for two years. My opinion is that after they have paid through the nose for doing it they will gain nothing that is worth anything to them. Therefore, if we lose for two years and gain no good, we subject ourselves to inconvenience and trouble. In the second place, I think it would be disastrous to our butter trade to have our butter branded on the outside of the tub, because you can preserve the quality intact, if you have proper storage, for several weeks.

By Mr. Cochrane :

Q. Can you do the same with cheese?—A. No, cheese cures differently.

By Mr. McLennan :

Q. Would you make it compulsory with butter?—A. I would not.

Then I think in the third place it would be advantageous to have all factories registered. Then in the fourth place, since there has been a difference of opinion and this discussion has taken place, I think a declaration from Parliament will do good if it says that Canadians are in favour of the prevention of all fraud by misrepresentation of dates or otherwise. Then I think the position would be better for the cheese trade and for the farmers as well.

By Mr. McMillan :

Q. You say that if the English buyers wished to have the date put on the cheese they would have sent word to Canada. Is it not a fact that the Bristol Board of Trade have sent word that they want the date branded on the cheese?—A. Let me distinguish between the two communications. I have made enquiries of the men who are buying cheese and I have not found a man who has given orders to have the date put on cheese purchased on his account this year.

Q. But is it not a fact the people in Great Britain have sent representations that they wish to have the brand put on?—A. Let me make my point clear, it is not quite understood. These men in Bristol who buy cheese, buy it through their agents in Canada. If they want the cheese marked with the date and if there is no bluff in the matter, they have only to send instructions to the men who buy for them to ask to have the date put on the cheese. But so far I have not heard of a single man who has asked to have the date put on.

Q. Don't you think that the expression of the opinion of the Bristol Board is the expression of the individual buyers and that the reception of a circular from them is expected to have more effect than any private individual giving orders himself might have done?—A. I think if the buyer wanted to have it done he would send orders to his buyer here to have it put on. It does not cost anything.

Q. The Board of Trade have sent a representation and no doubt it comprises a large number of buyers in localities?—A. Well, the history of this matter in England, so far as I have learned, is this: Some few merchants there last year bought cheese at higher prices than they could sell it for. They claimed that the cheese which they had bought was bought as of a certain month's make and delivered of another month's make. It so happened there was loss and this was the cause of the trouble. There were cases of arbitration and as an easy way to escape from the troubles of arbitration they agreed to ask Canada to pass a law for the branding of cheese so as to simplify their arbitration proceedings hereafter. If they did really want the cheese branded they would not send it through the papers, but would have sent instructions to the buyers and it would be done at once.

(Mr. Robertson's evidence of this date subscribed to on p. 202.)

The CHAIRMAN.—It has been suggested to me by Mr. Wood that I should invite an expression of opinion from the shippers as to how the inspection could be easily carried out if the Bill becomes law.

MR. MCNEILL.—I wish to say a word or two on this matter, if you will allow me for a moment. I think, from the fact that I have myself resided in England for thirty years, that I may without impropriety say a word in reference to this subject. I have also taken, as you all know, a good deal of interest in the trade of this country, in its bearing on inter-imperial trade.

I hold that this is a very serious question, one which seriously affects the largest export of agricultural products that we have in Canada—by far the largest. It is one as to which if we arrive at an unfortunate conclusion, it will tend to the detriment of the agricultural interest of this country. Now, I am quite sure of this, that, however unfairly some dealers in England may act—and there are unfair and dishonest dealers in England, as in every other country—but I am certain of this, that, if there be in the whole world any community which attaches importance, as a community, to fair-play and fair-dealing, it is the English people. I am quite certain that, if the impression exists in the minds of the English people at the present time that we here in Canada are not dealing fairly by them in reference to our cheese, that feeling there will produce a very injurious effect on the export of Canadian cheese to England. I have very little doubt in my own mind, although, of course, I have no proof, that the very low price which Canadian cheese is at the present moment producing is due to the impression which has arisen in the minds of English purchasers that they are being unfairly dealt with in reference to the cheese sent from this country. There are two prejudices which have to be overcome, one against July cheese, which we have been told by one gentleman representing the Board of Trade in Montreal is a prejudice which is rapidly disappearing; and the other is a prejudice regarding the whole cheese trade of Canada. Which is the more important to consider? That is the point to grapple with. Supposing we do lose a trifle for a short time, and, judging from what has transpired, it will be for a very short time, by branding the cheese “June” and “July,” if we save the whole cheese trade by so doing, is it not in the interests of the whole country? There is no one in this room who has a higher appreciation of my friend, Mr. Robertson, than I have. No one admires the ability and judgment of the Dairy Commissioner more than I do, but greatly as I appreciate Mr. Robertson’s work and worth, still, I think, in this matter, he has fallen into error. I think that if this prejudice against our July cheese be met fairly and squarely, as was suggested by the president of the Brockville Board of Trade, it will disappear very rapidly. Let us sell our cheese on its merits. Let us acknowledge that July cheese is July cheese, and if there be a prejudice against it in England, and if it is found there to be as good as September make, surely that prejudice will soon disappear; but do not let us give the opportunity for unscrupulous men to brand July cheese as September. At present there is a prejudice, we know, against July cheese. Then, why should we allow a risk to be run by branding such cheese “September?” Mr. Robertson says he would not have compulsory branding, but would allow it to be branded “September” if it were September. I would point out, however, that if you would compel the branding on July cheese, it is impossible to have a fraud. If you leave the cheese unbranded, another man can brand it what he pleases, but if you brand according to the month in which it is manufactured, it is impossible for this fraud to be committed. One other observation, before I sit down. It will be time enough to consider the question of the butter trade when that arises. We are now dealing with the cheese industry; let us settle that according to the best of our ability and the best interests of the trade.

MR. McLENNAN said:—I am glad that the gentlemen who have come here to-day representing the different boards have spoken as favourably as they have for the branding of cheese and butter. I expected to meet with very great opposition. It was reported that the Brockville and Montreal dealers in cheese were very much opposed to the bill; it was reported that Mr. Robertson was also opposed to it. I am glad to find he is not, except so far as the compulsory clauses are concerned. He approves of the principle that all the cheese factories should be registered here at Ottawa. I would

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point out to him that if we are going to legislate on this matter of branding at all, it must be made compulsory. The Dairy Commissioner speaks of this as coercive legislation, but all legislation of this kind is compulsory. The Weights and Measures Act is compulsory; the Excise law is compulsory. Mr. Robertson has said that he has known July made cheese to be sometimes better than September make. Well, if July cheese is better than September, there certainly can be no wrong in branding it "July" cheese. If there is a prejudice against July cheese, the quicker we overcome it the better. Before to-day, Mr. Robertson, in this committee, has expressed himself in regard to the prejudices of the English consumer of our dairy and other products. He has told us it was our duty to bow to those prejudices, and to try and please them by placing our products before them in a fair and honest way. The Dairy Commissioner is one of the most pleasing speakers that I have listened to on this subject, and I am glad that he is not against this bill. The only question where we are at issue, is that he is not in favour of making the branding compulsory. This bill provides for marking the cheese as "Canadian;" also for marking the month, and it also provides for the registration and numbering of the factories. This latter provision means that every man who owns a factory in the Dominion will write to the Dairy Commissioner or some other person who may be chosen by the Government for the purpose of taking registrations of cheese factories throughout the Dominion. There will be a registration made of the locality in which the factory is; the name and post office address of the man owning the factory, and he will have sent to him by registered letter the number of his factory and certificate of registration. This will do away with all inspection. This is the best kind of inspection, because with the cheese in Montreal, in Liverpool, in Boston or any place in Great Britain, all that is necessary to do is to refer to this register, and it can then be ascertained where that cheese is manufactured and by whom, so that if a man places bad cheese on the market, if it is filled cheese or composed of any article that it should not contain, he is held responsible for his own conduct in trying to perpetrate a fraud upon the buyers and consumers of that article. So I think this is a very complete system, and will not cost the government one cent. We do not need, nor want any inspector. The grocer in Liverpool, or any other part of England, who has that cheese on sale in his store knows, with the brand upon it, it is under inspection from the time it is used until that brand is destroyed. I think, therefore, every requirement will be met in this respect. In regard to the clause providing a penalty for not branding cheese at the factory, I may say that certainly the shipper will not be responsible for this. The law provides that the cheese must be branded at the factory and there is a penalty of from \$5 to \$20 for every cheese that is sent out without being branded, or for neglect to carry out the full conditions of the law concerning the different matters stipulated in this section. Thus there can be no doubt that there is no inspection necessary.

MR. TAYLOR.—Mr. Chairman, if the hon. gentleman will just allow me, I will point out that the hour for our meeting is just about up, and I know the Minister has a few words to say.

MR. McLENNAN.—I beg your pardon, I thank you very much for mentioning this. I only intended to say a few words and I am sure the Minister, Mr. Robertson and the people of this country are quite willing to extend justice to the farmer. We have already got from the latter an expression of opinion of 90 per cent in favour of it. The people of England want this branding and the people of Canada are also in its favour. Different societies have passed resolutions in favour of it, and why should not the cheese be branded? If there is anything unfair or unreasonable, then it is for somebody to say so, and point out where the unreasonable provisions of the bill are to be found. So far, nobody has been in a position to say we are asking for anything unfair or unreasonable.

MR. McMILLAN—Mr. Robertson says that any infringement of the law can be traced back to the factory. I suggest that it will be necessary to amend the bill and instead of saying "no person shall sell," provide that "no salesman in any factory shall sell."

THE CHAIRMAN.—That will be only with regard to the details. I was going to suggest that there will be ample opportunity for members both of this committee and the house to express their opinions in regard to this matter at a later stage. We will close by having some expression of opinion from the Minister of Agriculture, who is here to listen to the views of the delegates.

Hon. Mr. ANGERS, Minister of Agriculture:—Hon. gentlemen, I thank you very much for the trouble you have taken in coming up here in such a large delegation to give us the best information possible relative to the interest of the farmers in the branding of cheese. The object of this committee and the object of Parliament must be to further, first, the interest of the producer. We know how smart and cunning the dealers and the shippers are, and this law is not required, I believe, to protect them at all. What we have to do is to protect the producer. The dairy industry now is the main thing and the most prominent that our farmers have to depend on. Any law that we adopt which will check the advance of the value of their goods or will give an opportunity to the purchaser in the market of saying: "Oh, this is a July cheese, it is worth two cents less in Liverpool, Bristol or London, therefore, you will only get that for it from me," will be a mistake.

Mr. COCHRANE.—They say that now.

Hon. Mr. ANGERS.—That may be, but if we pass this act we shall give written evidence against the farmers that this is July cheese, because it will be branded on it. Now, I am willing in this matter to be advised by the most interested parties, and I look upon as the most interested parties the producers, not the seller or shipper. There is a fear here that if this bill is adopted as it stands, it will check the endeavour that Parliament is making now to put Canadian butter at its real value on the British market. It is a well-known fact to you all that they will have nothing in England but what is called fresh butter. They want fresh butter with as little salt as possible. We are in a position to give them that butter up to two or three months old as good as if it were only two or three days old. We are making an endeavour in that direction now. Well, if you brand the butter as you propose to brand the cheese, instead of giving a certificate of freshness to your butter, you are bringing it down in the market. As Prof. Robertson told you, they will say: "This is butter three months old, we don't want it. We look for butter which may be just three weeks old." Now, I am willing to do all that is reasonable to satisfy the prejudices of the English purchaser. What is it that he wants? He wants to know the month in which our cheese is made. It has been demonstrated here that to do that you want no law at all. You just want instructions from the British purchaser to his agent in Canada who is dealing with the factories throughout the Dominion, and he will get exactly what he wants, so that if they want to be informed if a cheese is of July or September make he can get that information if he pleases, without it being necessary to pass a law. Now, it is said that no fraud is to be permitted. The law as it stands now makes it a misdemeanour and a fraud to give a wrong date, to put a false trade mark upon goods. This should be sufficient to prevent factories and shippers on this side from stamping a month which is not the true one. There is another question which has not been properly considered. The British purchaser has expressed a prejudice against the cheese manufactured during certain months. There is a question of climate in this connection which nobody has considered. Now, the climate of the Dominion of Canada is not the same all over. The July cheese may be very bad if made far west of Ontario. It may be very good if it is made in Nova Scotia because when there is a drought in the west, very often you have abundant rain and abundant grass in the east. There is a material difference also in the season of all provinces. In Quebec you have not the abundant grass at the same date that you have it in Ontario, and consequently the cheese made in Ontario may not according to months be ranged with the cheese made in the province of Quebec. This is a subject which the committee should consider before we decide to mark the month of manufacture. There is a question of geography implied, and you may be doing injury both to the producer and the purchaser. You may be misleading the purchaser on the other side by putting on the month. I hope the committee will give the greatest possible attention to the subject, and they will perhaps come to the

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conclusion of the Dairy Commissioner that it needs further consideration. But whatever you do, I hope you will take no action to check the attempt now being made to put Canadian butter on the British market.

The CHAIRMAN.—I would like to express to these gentlemen who have come here to-day, at some inconvenience to themselves, our appreciation of the clear and lucid manner in which they have expressed their views to the committee.

COMMITTEE ROOM 46.

HOUSE OF COMMONS,

TUESDAY, 18th June, 1895.

The Select Standing Committee on Agriculture and Colonization met this day at 10.30 a.m., Mr. Roome in the chair, presiding.

Hon. THOMAS BALLANTYNE, of Stratford, Ontario, was present by citation, and being called upon addressed the committee as follows :—

I may say that I have been connected with the dairy industry of Canada for the last 28 years. This is the 29th year that I have been engaged in the manufacture of cheese. In 1867, when dairying had become sufficiently general for the supply to exceed the demand, and the product was almost unsalable, we thought it might assist us in the difficulty of marketing our produce to have a convention. This convention was held in Ingersoll in 1867, and an association was then formed. I was then elected a director of that association, and I have been a director uninterruptedly ever since. I was president in 1872 and 1873 before the association was divided into eastern and western sections. Up to then, it was the Canadian Dairymen's Association, and I was president in 1872 and 1873. Since then I have been seven years president of the Western Dairymen's Association, and I am still one of the directors. I am a farmer and a producer of milk. I have been in the manufacture, as I say, for 28 years. I have been actively engaged in dealing in cheese for the last 25 years. I have been in England every year but one, and at almost every month in the year for the last 25 years, so that I might see our product at all the different seasons of the year, compare one month with another, keep in touch with the trade as far as possible, and be able to give my opinions or suggestions with a view of improving the product. I have conscientiously endeavoured to do so. I have just returned from England lately, and during the time that I was there I suppose that I examined probably 100 specimens of cheese that I had shipped, including June, July, August, September and October—some of which had been kept in cold storage and some not—in the hands of the different warehouse men, so that I could note the character in any that might be deficient with a view to assist in improving the product. While there I found the trade unanimously in favour of the branding of cheese by putting the month and the day of the month upon it. They issued a circular, probably it has been before you, setting forth their views on the matter. I have here a copy of the circular issued by the trade in London. The form of it is immaterial, and I need not trouble to read it. It is simply to bring before the cheese manufacturers of Canada the importance of branding. It was rendered necessary by a strong suspicion, probably a well grounded suspicion, that there were certain dealers in Canada in the habit of shipping cheese of different months' make than that they represented it to be. I would wish the committee to understand that we buy from the factories. I have been dealing somewhat extensively in cheese, shipping on an average about 125,000 boxes a year direct to England, so that I know whereof I speak. As I was saying, we buy from the factories in every case according to the month's make. If we buy May we get May ; if we buy June we get June, and so on. We ship them, or I hope the great majority do, indeed I believe that they do, representing them to be cheese of the different months that they actually are. We put them first half of May, second half of May, June, July, August, September, one month or another, as the case may be. There has been a strong suspicion, resulting from arbitrations held last year in England, that some

of the cheese shipped from Canada were not of the month's make that they were represented to be. I have no wish to accuse any one of doing one thing or another. I have never myself been accused by any dealer of sending cheese which belonged to any other month than that I represented. But there has been a strong suspicion that the English dealers have not been getting the months that they have paid for. The only way to remove that is to have the cheese branded. It should be branded with the month and the day of the month when it is taken out of the press and put on the press-board. Then you cannot take it out again without showing where the erasure has taken place.

When we began, 28 years ago, it was the exception not to put the month and the day of the month on the cheese, but somehow it has gone out of use. The time has now come, I think, when we should return to the system of branding. It was always necessary to put the day of the month on, because in inspecting cheese it is impossible to inspect them as you otherwise would unless you know the day. The branding of the day has been a general thing, but the month has not been branded of late years. There are those who suggest that nothing should be done, but I think the Committee will see that there is good reason for taking action in the way that is now asked for. I know that it is denied that there is a practice of selling cheese as of a different month's make than that which it really is, and, as I said before, I do not wish to accuse anybody. But I was last year in a customer's house in Glasgow when they handed me a circular saying that such an individual was quoting Ingersolls, which is the term by which all cheese west of Toronto is known in England,—cheese was first made in Ingersoll and it has given its name to all the cheese of that district—saying that they were quoting August Ingersolls at 48s. 3d. I told them “It is simply impossible, but I will telegraph to Canada and get to know.” I cabled and they replied that 48s. 3d. for Julys was the lowest price. This had come forward as August cheese, but there can be no doubt that it was July, because of the price. The effect of course is to give the English dealers a prejudice against a particular month. We know that the quality of cheese is entirely different in different months, always and without exception. September, of course, has keeping properties that others have not. I am aware that some people are opposed to the branding of cheese because they suppose it would prejudice the sale of the July make. Now, I had supposed that there could not possibly be any objection on the part of any factory man to branding his cheese. They sell it in every case without an exception as for the month in which it was actually made, and why they should object to the month's make being branded on it I could not understand. But it is easy to see that they have been in conversation with certain dealers, or their agents, who have hinted that branding would affect the reputation of July and August cheese, and that they could not pay as high a price for these months' make because of the prejudice against them. I hope these agents are the exceptions, but I wish to show that the basis upon which they are arguing, the prejudice against July cheese, is a mistake. I have been at the pains to find out what the average for July cheese, and for June cheese, has really been during the last few years. I never sold a box of July cheese for August or September cheese in my life. I find that in 1894 the highest price for June cheese was $9\frac{1}{8}$, and the lowest $8\frac{7}{8}$, average 9 cents a pound. In July it was $9\frac{9}{16}$ and $9\frac{1}{4}$, average $9\frac{3}{8}$. In 1893, June was from $9\frac{3}{8}$ to 9, average $9\frac{1}{8}$ cents a pound; July was from $9\frac{1}{2}$ to $9\frac{1}{8}$, average $9\frac{3}{8}$. In 1892, June was 9 to $8\frac{3}{4}$; July $9\frac{3}{4}$ to $8\frac{3}{4}$. In 1891, June $8\frac{7}{8}$ to $8\frac{1}{2}$; July, $9\frac{1}{4}$ to $8\frac{7}{8}$. In 1890, June, $8\frac{3}{4}$ to $8\frac{1}{2}$, July, $8\frac{1}{2}$ to $8\frac{1}{4}$. In 1889, June, $9\frac{1}{4}$ to $8\frac{5}{8}$; July, 9 to $8\frac{5}{8}$. It will be seen that in almost every case the price of July cheese is higher than the price of June. It is the same with September and October cheese as compared with September. The figures are as follows:—1894, September, $10\frac{1}{2}$ and 10 cents; September and October, 10 to $10\frac{1}{4}$. 1893, September, $10\frac{1}{2}$ to 11 cents; September and October, $10\frac{3}{4}$ to $11\frac{3}{8}$. 1892, September, $10\frac{1}{4}$ cents; September and October, $10\frac{1}{4}$ to $10\frac{3}{4}$. 1891, September $9\frac{3}{4}$ and 10 cents; September and October, $9\frac{3}{4}$ and 10 cents. 1890, September, $9\frac{3}{4}$ to $10\frac{1}{4}$; September and October, $9\frac{5}{8}$ to $10\frac{1}{8}$. 1889, September and October, $9\frac{3}{4}$ to 11 cents; no Septembers only were sold this year.

Now, our Code Book is here, and, you will see, it provides for every month. The cable correspondence shows we quote these months—we quote them Julys. Sometimes you

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can buy September alone, sometimes you cannot. Everyone knows there are generally two months sold together, September and October. I never found there was any prejudice against October, as Octobers. There was a time when our Octobers were inferior. The principles of cheese making were imperfectly understood, the milk was not of a sufficient age, the proper temperature was not kept up in curing, but there is no reason now, with the knowledge that we have, why Octobers should not be better. The milk is richer, it contains a larger percentage of butter fat, it is in perfect condition as a rule, and it should be quite equal to the September make. I must state that I was told by a firm which has possibly the best family trade in all England—I mean Hudson Bros., of London. This firm has the best family trade in England, and I sold it some months of October alone, and I sold as well some Septembers and Octobers together. I caused Mr. Hudson to get samples, and I said to him: "How would you compare Octobers?" His reply was: "There is no better cheese in the world." No firm has such a fine trade. The firm is not particular about the price so long as you can give the quality. Mr. Hudson said: "I don't want anything better. I don't know whether we could get anything better." It is a mere question of whether we should create distrust and want of confidence amongst our customers in England, or whether we should make them feel we are willing to act honestly; that we buy these particular months and sell them as these particular months; and I cannot imagine any honest man will object to doing that.

By Mr. McNeill:

Q. Do you sell them in England as those months?—A. Sell them in England as those months, always. They want to know what months they are from your buyer there, and you sell them as such. If a small committee wishes to see my correspondence with my customers they can do so, and they will see that we quote: "Last half Julys, last half Augusts," and so on. There can be no objection, I should think, to branding.

By Mr. Carpenter:

Q. Can you tell me whether, of your own knowledge, the name of the month in which the cheese was made is legible on the brand when it reaches the retailer in the old country?—A. Perfectly legible, and it cannot be taken off without showing that it had been branded at one time. We always brand them when taken out of the press, by putting the stencil on, and you can never erase that without showing that an erasure has been made. It might be quite covered with mould and you could not see it at first sight, but you cannot take off the brand without showing it has been interfered with.

By Mr. Bain:

Q. Where do you brand?—A. On the side of the cheese.

By the Chairman:

Q. You mentioned that in England there is an unanimous feeling that the branding should be done. Has any Irish, Scotch or English cheese been branded?—A. Well, there is a difference, and cheese has been sold as representing the different months.

Q. Do you know whether they brand their cheese?—A. I don't think so. You see they are such small concerns, private dairies, making one or two cheese in a day. That is a very different thing to factories making 500 to 600 cheese of similar quality in a month.

Q. You mentioned that years ago the practice was to brand cheese. At whose instance was this done, the buyers or the manufacturer?—A. I presume it just got into disuse. I have known buyers who asked the factory not to brand the particular parts of the month. I have known buyers who did not brand the last three days of July and did not put the dates on for the last three or four days in August. It got into disuse in that way, after some years of branding.

Q. There was no agitation to stop it?—A. Never.

By Mr. Carpenter :

Q. I am informed that some of the retailers take the trouble to strip off the bandage on each brand when it reaches their counters.—A. You cannot provide against that.

Q. Do you know as a matter of fact that they do that?—A. I don't think the retailers attach much importance to the month. The retailers know what they are buying. They do not care anything about the month as long as they get the quality.

By Mr. McLennan :

Q. In a large number of answers to the circulars that were sent, the factory men say that some dealers and speculators in cheese asked that they should not brand cheese with a date?—A. As far as I know that is the cause of any objection to the branding.

Q. What about the box?—A. They attach no importance to the box. If the cheese is branded it is all that is necessary.

Q. Will you say the Lower Provinces cannot produce as good cheese in July as in Ontario in August and September?—Well, I will not say that I am not aware there is any such difference as that.

Q. You don't think there is any such difference?—A. I am not aware.

Q. Have you ever bought from Prince Edward Island or Nova Scotia.—A. I never did.

Q. Would there be danger of interfering with their cheese trade in branding?—A. I have no idea. The climate is the same as here, they have summer and fall, and, assuming the cattle get pure water, the cheese if properly made will be all right.

By Mr. Carpenter :

Q. I think perhaps Mr. Ballantyne should go on and complete his statement, which he would have done if I had not asked the question I did?—A. It was a very pertinent question.

Q. Now, perhaps you would like to go on?—A. I don't know. Probably what information I know can best be brought out by questions. I have only to say this: I found the feeling in England unanimously in favour of branding. Now, I will state what my opinion is if I was a merchant in England and had honest correspondents here, in fact everyone would deal fairly with me. Would I then want cheese branded? It might operate against me. The English merchants say not. They say "we do not care what the cheese are if we have the quality." There have been certain merchants who did not want cheese manufactured in July. But they are getting out of that. As a rule, I say in 99 cases out of 100, the last half of July make are better goods than those of June. I have instructed my correspondents to that effect and I have always said so. I have the opportunity this year of making a comparison between them. I saw June, July, August and September cheese stored here and in England, and I found the July cheese equal to that of June.

By Mr. Carpenter :

Q. How do you account for the strong prejudice in the English market against August cheese?—A. Oh, no, there is not.

Q. I understood you to say so?—A. I said there had been against July.

I find that we have been paying a higher price for Julys and I am pleased to be able to say that the prejudice against July cheese is disappearing very much. Some will perhaps say even yet that July is not so fine, but if we send them branded it will be found that July cheese are nearly if not quite superior. I say here, as a result of my experience and observation, that 99 out of 100 cheese made in the last few weeks in July are as good as any other make.

By the Chairman (Mr. Roome) :

Q. You manufacture cheese, as well as ship it?—A. Yes.

Q. And you brand your make of cheese?—A. Yes.

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Q. With the day and month?—A. Yes. I used to put the September month only on the Septembers and the day of the month on other cheese, commencing with the 1st of August, but we quit putting the month on except on Septembers. That was the only month I put the date on.

Q. What practice are you following this year?—A. We are branding all this year.

By Mr. Carpenter :

Q. Do you know whether the retailer buys from an examination of the article when he purchases, or is he governed by the brand?—A. It is under the trier. In 99 cases out of 100 they buy them under the trier.

Q. Why then should you put the brand on?—A. To protect the dealer in England ; that is, the man who is buying from us. Our cheese is not prejudiced by sending June cheese, which in no case was ever equal to September cheese. It is said, however, that June cheese has been shipped to England as September make.

By Mr. Bain (Wentworth) :

Q. Has the cheese been placed in cold storage in the meantime?—A. It does not matter whether it has or not. The September make contains a larger percentage of butter fat than the June cheese. The temperature while curing June cheese gets high, and the June cheese is not equal to the September.

Q. But if it is placed in cold storage what is the effect?—A. It just stops where it is.

Q. The process, then, is to place it in cold storage and delay the ripening?—A. That is what they seek to do. Several arbitrations took place in Bristol and London last year on suspicion that some of the shipments were not what they were represented to be, and many of them were decided in favour of the importer.

Q. Decided what?—A. That the cheese were not the month's make as represented.

Q. Were the cheese or the boxes branded?—A. Neither were branded. They were simply sold as the make of such a month.

Q. What would be the immediate effect in price on July cheese if it were branded?—A. The best evidence I could give would be to quote my own experience. I am quite willing to show my books to a sub-committee. Such an examination would demonstrate that I have been paying a higher price for Julys right along than Junes.

Q. I would like to know what your judgment would be as to the probable effect on the prices paid to the Canadian farmer, of branding July cheese?—A. If I thought it would bring a less return to the farmer I would not advocate the branding of the cheese. I have been a farmer myself for a good many years. The non-branding doubtless depreciates very seriously the value of our summer made cheese, and I will explain how. I landed in England this year about the first of May. Fall cheese, that is Septembers and Octobers, were selling at 49s. and 50s. One in the trade was selling simultaneously with them, Junes at 38s. Nothing depresses the market so much as that. This was one of the firms which had a representative in the west recently and who has been saying that he hopes this bill will be prevented from passing, and that if it does pass he will not take any cheese that are branded May. I do not wish to mention any names, as I do not think it advisable, but I state this on my honour. Now, if June cheese is branded "June" it will make them more careful in selling, and we shall not see many boxes placed on the market at 38s.

By Mr. McMillan :

Q. Then you think it would be to the benefit of the farmer to have the cheese branded?—A. Most decidedly.

By Mr. McNeill :

Q. My question was as to the immediate effect of branding Julys, and particularly as regards what the farmer will receive?—A. I have given you the best illustration so

far as my own business is concerned—that I have not bought July cheese for less price than any other person. We have sold them as “Julys” by cable and shipped them as such.

Q. You are in favour of selling your cheese in the English market according to the month's make?—A. I have never sold them otherwise. We have bought them, sold them and shipped them as such.

Q. You have adopted the branding system this year, for each month?—A. Yes.

Q. In your own interest?—A. Yes.

By Mr. Carpenter :

Q. I would like to follow out the methods of the consumer, as we must remember that we have to cater to his taste as well as to the importer. Do you know whether, as a rule, when the consumer in England goes into a store, he asks for any particular month's make of cheese?—A. He does not even take time to look at the article. It is not the consumer who indicates his wishes ; it is the importer by whom we are directed. I will give you an illustration as to how this works. I returned from Bristol one morning and made my way to Edgeware road, where the Home and Colonial Company have a large store. At the sixpenny counter of Canadian cheese, they were handing it out in little bits, and the people were buying it as fast as they could. Then I went to Little Poultny and afterwards to the retail stores at Islington, where the Home and Colonial Company has other large retail stores. They were selling there in the same way. In no case does the consumer ask for the month's make.

Q. Have you bought cheese in the Western States and shipped them through Canada?—A. I have bought cheese in the Western States.

Q. How are they branded there?—A. They are branded, when they get to Canada “Product of United States.” That suggests a remark which I should like to make. We do not want their reputation. We want their prices, and that is all. I was asked once to give evidence before a Committee of the State Legislature of New York. They were advocating filled cheese, by using lard or margarine, and I stated then that one of the effects of filling the cheese with these substances would be to diminish the price.

I stated that one of the effects would be to destroy confidence, to diminish consumption and to lower the price ; and if they wanted to destroy their trade they could not do it better than by substituting margarine and these other things for butter-fat. The effect of it is that now, except for a little while in summer, when they do not adulterate it, everybody is afraid to touch United States cheese. Scientists claimed that if you added margarine oil it would take an expert to detect it ; it could not be discovered by the dealer or the consumer, but, although it is all right for the same month, it will not keep. I have seen it sold for a half-penny a pound.

By Mr. Wilson :

Q. How do you find the difference in the price between Canadian and American cheese?—A. At the present time there is not very much difference, because margarine, or lard, what we call neutral oil, which was used as a substitute for butter-fat, is not used during the summer, during the present month. A correspondent in New York, yesterday, representing the wholesale co-operative stores there, wrote me saying that they were getting American cheese, which was suiting them very well at the present time. There was no danger of it being adulterated.

By the Chairman (Mr. Roome) :

Q. Have Canadians been accused of adulterating their cheese?—A. No, they have never been accused of adulteration.

By Mr. Wilson :

Q. At what season of the year is the difference in price apparent, between Canadian and United States cheese?—A. Oh, when it gets later there will be quite a difference,

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because our cheese are, as a rule, firm and more suitable for cold storage. As soon as the supply is in excess of the demand for immediate shipment, our cheese invariably commands a higher price. These prices are all the result of causes, and that is the principal cause. Our cheese are much more suitable for cold storage, and as soon as the supply is in excess of the demand for immediate shipment there is sure to be an advance in price. The demand for immediate consumption has greatly increased in the States. They only ship one half of what they did some years ago.

By Mr. Carpenter :

Q. I understood it was your invariable practice to brand the make of your own factory?—A. Always the day of the month.

Q. And not the month?—A. We have not been branding the month except the month of September.

Q. You might make a cheese on the 15th of July, and sell it as of the 15th of August?—A. Oh, I don't do that.

By Mr. J. A. Leitch :

Q. You have always had a special brand?—A. Yes, the cheese have always gone under the brand of the factory.

By the Chairman (Mr. Roome.)

Q. Do you brand it for any other factory?—A. No ; our shipments are about 125,000 boxes a year.

By Mr Hutchins :

Q. In buying cheese would you be guided in any way by the brand or exclusively by your own judgment?—A. Oh, by our own judgment.

Q. Not at all by the brand?—Always by personal inspection, but we buy the particular month. If we are buying July, we get July ; if we are buying August, we get August.

Q. If you went into the factory to buy cheese you would not be guided by the brand as to the quality, but by your own judgment?—A. Oh, we find a great difference between one factory and another, and we buy by our own judgment, but we buy them as July and sell them as July.

By Mr. Wilson :

Q. You would buy them by the actual test, and not by the brand?—A. We are not going to pay a high price for an inferior cheese simply because it happens to be branded September. There is no danger of that.

By Mr. McNeill :

Q. Does the July cheese bring a lower price than the September?—A. Oh, yes, than the September. If the price was regulated by the quality, they would always, but it may happen that you will have higher prices in July than in September. But July will in no case sell for the price in England at same time that September will, if they are put on the market at the time. Everyone knows that the character of the goods is entirely different.

By the Chairman (Mr. Roome) :

Q. Do you know whether the farmers in the western part of Ontario, where you reside, are in favour of this branding bill?—A. At our convention in Stratford last winter at which 700 or 800 farmers were present—the hall was packed—a resolution was passed unanimously in favour of branding, but speculative buyers have been telling the farmers that they would be able to pay a higher price for the cheese if they were not

branded. The factory men know nothing about that, and I believe there is some sentiment against branding among the farmers arising from dealers talking in that way. I have heard from the representative of a firm selling cheese at 36 and 38 shillings, intimating that he would not buy them if they were branded. The effect of such statements to the farmers is to make them afraid of branding.

Q. We were led to believe at first that all the farmers were in favour of branding, but it now turns out that it is not so. The Listowel Association had a meeting about it. What did they say?—A. I was not present. I saw from the newspapers they had left it over.

Q. What about the Ingersoll Association?—A. I was in England at the time.

Q. You have heard how they decided?—A. No, I did not.

Q. Would you look upon these as good boards?—Yes, they are all good. Listowel is the largest, and London is also an important board.

By Mr. McNeill :

Q. I understood you to say that cheese made in July is bought at a lower figure and sold in the English market as September?—A. My own memoranda are really the best guide as to what others are buying for. We are not able to pay much higher prices than other people. My own returns show that July has not been sold at an average for less than June.

Q. But I am speaking of cheese which is made in July and sold for September?—A. Suppose you bought in the market in July and September last year, you would have got six or seven shillings less for July cheese than for September. That would be upon the prices of the best cheese. When the finest cheese are at a high price, secondary will sell at two or three shillings less. When they are low, inferior sells for ten shillings. I had accounts this week of July cheese sent over in cold storage and in perfect condition, but they would not compare with September and October, and they sold for 28 shillings, while September and October were 43. But if the price was high, secondary quality would have sold for three or four shillings less. A few years ago the secondary quality which we shipped in June would be within two or four shillings of September or October.

By Mr. Carpenter :

Q. Was this July cheese branded or not?—A. Oh, no, the brand had nothing to do with it. It was simply the quality.

By the Chairman :

Q. Would you be in favour of branding the month if the Cheese Boards of Trade were in opposition to it?—A. There could not possibly be a board in Canada in opposition to it of their own accord, but if makers represent to them that the branding of cheese is likely to be of a disadvantage to the farmers, they may be influenced by such representations. It has only been the result of speculative dealers conversing with salesmen, and telling them that if the cheese were branded they could not pay as high a price for it.

Q. Do you not think the Cheese Boards will be conversant with the subject themselves?—A. No, they are not conversant with the market, or with the conditions in England. They have no means of knowing anything about it.

By Mr. McMillan :

Q. Would you not consider the meeting of the Western Dairymen's Association at Stratford was a better guide as to what the general feeling of the country was than any Boards of Trade?—A. Unquestionably. You had the leading men in the trade from all parts of the province there. Of course there had been no dealers then saying "I won't buy these cheese if they are branded." That had not then occurred. But that resolution that you have before you was passed unanimously.

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By Mr. Hutchins :

Q. If you received an order for 500 boxes of cheese, do you intimate that they are fine cheese or July cheese, or is any particular month or quality mentioned?—A. We invariably quote the month. Without a single exception we reply as I have stated. I have brought one or two books just to show that, invariably, June, July, August, September, winter or summer, are mentioned, and whether they are stored in cold storage or not.

By Mr. Carpenter :

Q. I understand from your reasoning, then, if part of our factories brand, and part do not to make the factories brand who do not at present would cause their cheese to go into the English market with a prejudice against them?—A. I don't think there has been any branding hitherto at all.

Q. Oh, yes.—A. I am speaking of the factories generally.

Q. Branding generally, yes?—A. We have been trying, at least within the territory where we more immediately operate, to get every factory to brand the day of the month, and the vat, as an educational influence of the cheese maker, when he keeps the notes relating to it. Some have advocated putting a factory brand on. If, in every case, the maker or manager of the factory was capable of understanding cheese sufficiently that would be all right, but there is a danger, you know, that you may have the managers of cheese factories who may not be thoroughly conversant with the subject. This matter is easily understood by practical men. Milk is a perishable object and easily injured from so many causes. It is never twice in the same condition, and is not like iron, wood, or articles of that kind. And the difficulty is to manufacture an article of a uniform quality, though the conditions are different. You may have a condition to-night very different from what it was two nights ago.

By Mr. McMillan :

Q. Do you think, if a large number of factories branded the day of the month on their cheese and then sent it to England, whilst other factories did not brand, that there would be a prejudice against any cheese that was not branded?—A. I think there would be.

By Mr. Wilson :

Q. By the retailer?—A. Not the retailer but by the importer. They have got thoroughly alarmed and are under the impression that they have been swindled. I conversed with the leading men of the trade all over, and they have got thoroughly alarmed, thinking they have been swindled by the Canadian dealers shipping them cheese of a different month to what they bought.

By Mr. McNeill :

Q. In order to get rid of that fear, I understand you to say, all that would be required would be this : That other people should do what you have been doing always. That is to say, state the month in which the cheese was made and state it in such a way there can be no mistake about it, by branding the cheese?—A. As I said, you know one of the causes of depression of the market is the short-selling of "June" because this month they have been in the habit hitherto of storing, principally in Scotland. They were in the habit of storing them there largely. It is a northern country and they were not suffering from the heat to the same extent. Now, as I stated, I found one of the trade selling down at 38 and 36 shillings in that drop. The price for cheese was then 49 and 50. Nothing prevents buying freely and nothing prevents a fair price being paid more than these short sales. If these men that sell cheese a month before they buy them had to deliver the cheese with that brand, I think they would be more careful in selling and we would not pay low prices as a result of these causes.

By Mr. Wilson :

Q. Why should not the law for branding be permissive, and allow the factories that choose to brand?—A. Well, I believe in going to the mountain rather than the mountain coming to you. The dealers in England are the very class that should benefit by cheese not being branded. All the respectable houses—I don't say all the houses—but all the respectable houses are very pronounced in favour of it.

By the Chairman (Mr. Roome) :

Q. Have you known American cheese to be branded as Canadian cheese?—A. I think that has been done.

Q. Are they invoiced from Montreal?—A. In Northern New York they usually ship them to Montreal and the buyer ships them from there or sells them to some other shipper there. From Jefferson County and St. Lawrence County they are shipped that way.

Q. They are invoiced from Montreal?—A. Invoiced from Montreal.

By Mr. Wilson :

Q. Mr. Hodgson, of Montreal, stated before the Committee the other day that it was the practice when he first came to this country to brand the cheese, but at the instance of the English buyer, it was dropped.—A. Well, in those days there was a great prejudice against July cheese. I don't know that I have done so any more than others, but I have quoted them and have in conversation with them represented that the first half of July was no better and no worse than the last half of June cheese, but last half of July cheese, 90 times out of 100, was better than the average June cheese.

Q. Mr. Hodgson was also opposed to making this law compulsory. He thought it should be left optional?—A. I would make it compulsory if I had the making of the laws and that would give the English importers confidence. They would feel they were honestly dealt with. In some parts of New York State they have better water, better grass and many advantages generally that we have not, but there is a great distrust in England of everything American on account of cheese being sold for what they are not.

By Mr. Henderson :

Q. The Committee would like to understand from you why you recommend the branding of cheese? It appears your practice has not been to brand the month. Can you make it plainer to the Committee, why you propose to do something that has not been done in the past?—A. There might have been no objection at one time. But now the objection has arisen. Now that the distrust has been created I think it is the only way to restore confidence by branding the cheese. When we commenced, as I said, 25 years ago, we used to brand them, following the example of our American friends. My own factories brand in order to be able to trace any defects. We have not been putting the month on, as I said, but we have not been suspected of shipping July for August or September cheese. They have been sold under the name of the month and the invoice shows that. But my own factories are somewhat different from others; the cheese manufactured there has been going to the same customer and the same man has handled them for the last 25 years.

By Mr. McMillan :

Q. I would like to ask Mr. Ballantyne if he made any inquiries about butter when he was in England?

MR. BALLANTYNE.—When in London I found some of our own creamery butter, in pound packages, offered for sale, but whether it went from the Dairy Commissioner or from Park & Blackwell I do not know. I contracted for the whole season's butter at 22½ cents per lb. For the first year in the trade, the supply of fresh made winter-creamery was in excess of the demand for the local trade.

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By the Dairy Commissioner :

Q. Was the butter in *lb.* prints that you saw in London?—A. Yes.

Q. We did not send any of it?—A. I found in Manchester that some of our creamery made butter had gone there in tubs. I was anxious to know everything relating to it, and consequently made many enquiries respecting the possibilities of the trade. I felt that if there was going to be as much winter dairying in the future in Canada as there was last year, and I felt it was likely to increase instead of diminishing, then we would have a surplus, and that surplus would go to England. I saw the gentleman who was handling Canadian butter in Manchester and got from him a report of the different lots, being specially interested, of course, in my own creamery. The Manchester trade requires a very pale butter; in fact, almost white. That should be clearly understood. The first question put in Manchester is as to the colour. If the colour is wrong all is wrong. Now, in making for the Canadian trade our butter is heavier salted than it would be for the English trade, and unless you prepare it specially for the English market, you do not give it a fair show. Eighty tubs of butter from my own creamery were sold in Manchester. It was butter coloured and salted for the Canadian trade, and therefore, altogether too high for the Manchester trade. It is well, therefore, that our dairymen should profit by this experience and endeavour to suit the requirements of the particular market to which their butter may be going. Then the question of the package is worth considering. We were shipping out butter twice a week. We do not think that, like wine, it improves with age. On the contrary, it commences to deteriorate after it has left the churn. My conclusion is that if you want to capture the English trade, the butter must be very slightly coloured. Glasgow wants the pale butter; Manchester wants it almost white. They also want cheese as white as you can ship it. Taken, on the whole, the butter did very well. The *lb.* prints I referred to, as having found them in London, sold from 84/ to 94/. Now, with regard to the package, the Australian package and the Irish creamery package, are no doubt the most suitable packages for Canada. Let us have one uniform package for the whole of the Dominion—a square box with parchment paper. The Australian box is made of Australian pine, and the butter is wrapped in parchment paper. It is packed nicely; there is no waste. It comes out clean and nice. The box is square with plain boards.

By Mr. Carpenter :

Q. What about weight?—A. Oh, yes, the question of weight is also of considerable importance. We should have a uniform weight, the same as they have, 56 pounds. No doubt the Danish casks might get a few shillings more for a time; the Danish is still a popular butter in England, and commands a high price for winter butter. Theirs is 112 pounds.

By Mr. McNeill :

Q. Is theirs very light in colour?—A. Yes; for Manchester and Glasgow. These cities and the markets of the north of England generally do not want as high a colour as is usual in Canada.

Q. Do you know the reason? Is it a prejudice arising from the fact that butter has been coloured artificially?—A. It is just the same as cheese. They want it almost white. Manchester wants cheese as white as your shirt. It is very difficult for us to give them good quality of the colour they want.

Q. What I want to know is whether the reason of that is a prejudice on account of butter being artificially coloured?—A. Well, we have got to go to the mountain. It is no use asking the mountain to come to us.

Q. If we could find out what the mountain is made of, it might help us?—A. What we have to do is to find out what they want and give them what they want.

Q. But if they have got an ignorant prejudice and imagine it is by reason of artificial colouring we could do something to remove that prejudice?—A. We do colour our winter butter.

Q. But what about our summer butter?—A. I have not much faith in our trade in summer butter. I don't think there will be much of our summer butter exported because there is generally a fair demand for it at home.

Q. In the winter we can make it what colour we like?—A. Yes; it is all artificially coloured. 56 pounds of light coloured butter, wrapped in pure parchment paper, which you can get from Germany, is the best form for our product to be put on the English markets. Last year was the first year there was a surplus of winter butter. The home consumption is generally sufficient to absorb the supply. But there was doubtless a surplus last year, and of course the butter that was sent over was not manufactured for a particular market, and regard was not had to the colour and the weight of the package. It might be shipped every week.

By Mr. Hutchins :

Q. Are you speaking of farmers' butter?—A. Of my own factory.

Q. That is quite different from a farmer's dairy?—A. The day for farmers' dairies is past. Any man who knows anything of the provision trade in England will tell you that dairy butter is no use. They cannot give it away now. They cannot dispose of it even for confectionery.

I would like to add that assuming that there is a prejudice against July cheese, we want by all means to still further improve the quality in every way in our power, and if there is a prejudice (assuming that to be the case, which I deny, for it is contrary to my experience that July cheese should sell for less than June) surely it would just put us on our mettle to show that our July cheese is perfectly good, and that prejudice would disappear. I certainly would like very much to see this Branding Bill carried into effect. I have spent 29 of the best years of my life in trying to improve the cheese trade. Without egotism I may say that I do not know of an improvement I have not suggested. Above all, let us say to them in England "We are honest, we are willing to do all we can to prevent deception and fraud." That is, after all, what this Bill means.

Having examined the preceding transcript of my evidence, I find it correct.

THOMAS BALLANTYNE.

Mr. J. A. LEITCH, Warden of the County of Middlesex, Ontario, was present by citation, and being called, said:—

Mr. Chairman and Gentlemen,—I appear before you this morning as a representative of the county of Middlesex, which is, I think, the second largest county in Ontario, and where a very large quantity of cheese is manufactured. I have been connected with the cheese industry now for about twenty years. When I commenced manufacturing cheese at that particular time, namely, 1873 or 1874, I branded my cheese with the month and the date, and followed this practice for five or six years. Then the agents of the English importers, men like Mr. Ballantyne and others in the trade, asked me to quit branding. Since that time I have just kept the day on the cheese. With regard to the question now under consideration as to whether the cheese should be branded or not, I may say that, from the information which I have received, the trade in England is divided in opinion. There are some good men in the trade in London and Liverpool to-day who want the cheese branded, and there are others who do not. Over in England they have any amount of protection for the farmer, and I hold it is the duty of our Government to protect the producer. The man who supplies the milk in Canada should be protected.

By Mr. McNeill :

Q. We have come to a decided issue at the present moment. Mr. Ballantyne, who has just returned from England, says that there is almost a consensus of opinion there

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in favour of branding. What is your authority over there for saying that the cheese men are divided in opinion?—A. I have it from two buyers who recently returned from England. One of them ships quite as much cheese every year as Mr. Ballantyne does. He says the trade there is divided on the subject.

By Mr. Cochrane :

Q. Have you any letters in your possession to that effect?—A. I have not, but I have always found the gentlemen who gave me this information to be honest men.

Q. Who are they?—A. One of them is Mr. Riley, who buys for Rowson of London.

Mr. BALLANTYNE.—Mr. Rowson is anxious that the cheese should be branded.

Mr. LEITCH.—Well, I have it from his agent, who bought about 40,000 cheese in Canada last year, that his firm is not in favour of the branding. I have been told by another very large buyer, that he found the dealers in England were divided in opinion as regards branding. I may say that if any shipper ships cheese of different quality to what he represents them to be at the time sold, they have produce exchanges in Liverpool, London and Glasgow, at which any dispute can be left to arbitration. If Mr. Ballantyne or myself sell 2,000 boxes of cheese to an English buyer, and they are not what we represent them to be, the produce exchanges can cut the price down according to the quality of the cheese.

By Mr. McNeill :

Q. We don't want that kind of dispute?—A. Well, we want as few as possible. They quickly refer anything to arbitration over there if there is a dispute. I may say that I have talked to many of the factorymen in my own county of Middlesex and in the adjoining counties, and I do not find many in favour of the branding bill. The question has not been properly considered. The matter has been talked over, but most of them are against the Bill. Probably they have not heard everything in favour of it. If all the arguments were laid before them they might form a different opinion. The London Cheese Board of Trade; the Ingersoll Cheese Board of Trade have not decided either one way or the other. The matter has been talked over but no definite conclusion reached. With regard to disposing of our product in England, it is true that there has been a prejudice against the make of certain months. For instance, I do not think that if May cheese was branded they would bring as high a price as they have during the last few days. I believe that the make of the last ten days of May will bring as good a price as June. They will fetch a cent a lb. more than the earlier May product. The cheese made the latter part of May in Western Ontario is certainly as good as that made in the first half of June. Where Mr. Ballantyne lives is undoubtedly one of the best dairying sections in Canada. They make as fine a cheese there as anywhere in the world. They are differently situated to other localities or other provinces. It would not matter to him whether he had May or June, or any other month, on his cheese. He could sell them at any time.

By Mr. Cochrane :

Q. Give us your reasons for saying that that section of country is better than any other section in Ontario?—A. Well, it is a limestone soil and well watered. The county of Perth has cooler weather than many of the other counties, that is, the nights are cooler. Moreover they have been engaged in dairying a long time in that county; some for over 30 years. The farmers are well educated and they have a good breed of cows. You must have first class milk before you can have first class cheese. I do not know of any other county in Canada where they make better cheese than in the county of Perth.

Q. Do you think the breed of the cows affects the milk?—A. Certainly. You must have the right kind of cow and good milk or else you cannot have good cheese. Mr. Ballantyne has been selling his cheese right along to certain English houses, and they know the kind of goods they are getting. There are other factories in that locality which I suppose turn out cheese just as good.

By Mr. McNeill :

Q. If you knew that the large majority of dealers in the mother country are in favour of branding, would it change your view?—A. It would change my view if they were unanimous and pay price and buy according to brand.

Q. But if you knew that a large majority were in favour of branding, would it change your view?—A. My opinion as a manufacturer of cheese is that we won't get as good a price for the make of certain months if we brand the cheese.

By Mr. Cochrane :

Q. Why?—A. Because there is a prejudice against Julys. Moreover I have known some of the October cheese to be sold as Septembers. If you branded them as Octobers you would not get as good a price, although I have known Octobers to be often better than Septembers.

By Mr. Wilson :

Q. Were they sold as Septembers, or on the quality as being equal to September?—A. They were sold as September quality.

By Mr. Dawson :

Q. Do you pay as much for July as you do for June?—A. We paid more last year.

By Mr. McMillan :

Q. You say that they know when they get August cheese from Mr. Ballantyne's factory. Is it not right that they should know when they get them from other factories?—A. They do. A man writes and asks me for fine quality August equal to September and he gets it.

By Mr. Grievie :

Q. But you sell them as Septembers and they are August cheese?—A. They are of as fine quality as September in some seasons.

By Mr. Cochrane :

Q. Do you put any cheese in cold storage?—A. Yes.

Q. Why?—A. Because my customers in England order it, and sometimes I do it for myself.

Q. When you buy cheese in May and June it will be kept in cold storage according to instructions and go to the old country as of another month's make perhaps?—A. No.

Q. It is the quality you judge by?—A. Yes.

Q. But the price they fix?—A. Yes.

By Mr. McMillan :

Q. Does it not injure the Canadian trade to sell July cheese as September which was shown to be done at the last meeting of the Committee? It was shipped as September?—A. I have seen the last half of August as good as the first half of September.

Q. Does it not injure the credit of the country if it comes to be known that August cheese is sold as September?—A. Not if a man buys according to quality and gets better cheese than September.

Q. He is under the impression that he is getting September?—A. He knows by the quality what he is getting.

By Mr. Cochrane :

Q. Then how does branding hurt him?—A. They do not know the month but they know the quality.

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Q. If he buys according to quality why can it hurt the cheese to put the brand on it?—A. If it is good and he does not know the month, but he knows the quality, in what way is the buyer injured?

Q. Because the farmer only gets paid for the month in which the cheese is actually made?—A. I have had July cheese for which I was only offered 7 and 8 cents a pound and sold at 9½ afterwards owing to the increased demand.

By Mr. McLennan :

Q. But the farmer gets no benefit from that?—A. Yes, he does. He gets all they realize when sold.

By Mr. Grieve :

Q. You buy cheese from the factories at the same price as Mr. Ballantyne, who ships July cheese as July cheese?—A. Well, I know a great many who do not.

By Mr. McMillan :

Q. Would it not be better for the country if they did?—A. I do not think it would. There are some times when they have a short make of cheese, like last year, and there is a good deal of speculation going on, when the farmer benefits.

By Mr. McNeill :

Q. Have you seen this London circular addressed to the cheese trade in Canada?—A. No, but I have circulars from England.

By Mr. Carpenter :

Q. How do you think the branding of cheese would affect the producer, the farmer? That is what we want to get at?—A. I think he will get less money for his cheese.

Q. And why? Can you not give me your reason why?—A. Because there is more or less speculation.

By the Chairman (Mr. Roome) :

Q. Do you think buyers would lessen the price to the manufacturers if the cheese was branded?—A. I think so. Suppose a man sold ten thousand June cheese he might have to purchase July cheese to fill his contract.

Q. You think the buyer would take advantage of the prejudice that exists against July and October cheese?—A. Certainly, against July, October and November in some seasons.

Mr. McNEILL.—May I be allowed to read this circular to the witness? He does not seem to have seen it. The circular to which I refer is the following :

HOME AND FOREIGN PRODUCE EXCHANGE, LTD.,
CHEESE SUB-COMMITTEE,
HIBERNIA CHAMBERS,
LONDON BRIDGE, LONDON, E. C., 1895.

To the Producers of Canadian Cheese :

It has no doubt come to your knowledge that there has been considerable dissatisfaction among the cheese distributors on this side of the Atlantic, as to the course of the business during the last two or three years, especially as to buyers who in many cases alleged that they did not receive the special month's make they had contracted for, which called for frequent arbitration during the season just closed.

The result has been to injure the good reputation of the Canadian product, and to destroy that confidence in dealing which is so essential between seller and buyer.

As the result of a conference representing a great majority of the trade in Great Britain, suggestions have been made to your government as to the desirability of an

Act making it compulsory to brand the date at the time of manufacture upon each cheese. It is fully believed that such protection will be a decided advantage to the factorymen and to the distributors throughout the United Kingdom, as it will at once restore confidence on this side, and effectually prevent any speculative or unscrupulous shipper covering his transactions by substituting one month's make for another. It is earnestly hoped that the factorymen throughout the Dominion will at once commence dating their cheese, especially as the desire is pretty general among the importers to favour those factories adopting this system.

Our interest is as yours, that goods should be sold honestly for what they are, and that the reputation and market price of fine fall makes should not be destroyed by the improper substitution of the earlier summer product.

The specimen form we have suggested for use is enclosed herewith, and this and nothing else should be put upon the cheese.

Several of the shippers now and recently in England have also been approached on the subject and they cordially endorse the action taken.

By order of the Cheese Sub-Committee,

C. J. HIGGINSON,
Secretary.

(SPECIMEN BRAND inclosed.)

CANADA, AUGUST 23rd.

THE WITNESS—I am in favour of having "Canadian Produce" put on every box.

By the Chairman (Mr. Roome):

Q. That is on now, is it not?—A. Yes, that is on now. I would suggest that those chaps over there want to do all the speculation themselves and rig the market to suit themselves.

By Mr. Cochrane:

Q. You want the buyers on this side to have a show?—A. Yes, I want them to have a chance with the merchants over there. I had a letter from a large buyer in London the other day and he says: "We want to be recouped. We have lost heavily last season and we want to be recouped." I venture to say that if we brand the cheese for one season these very dealers in England will call meetings and send out circulars asking them to remove the brand.

Q. You have no authority for making that assertion?—A. They did it before. They cavilled for a long time about the weight of cheese. In western Ontario (and I suppose they do it in other parts as well) we give them half a pound of cheese on every box, something which no man dealing in other commodities would think of.

Q. It is the farmers who give them that?—A. Oh, certainly.

Q. When you buy my cheese you get that half pound?—A. That is what I say, but we do not get the benefit of it on this side; the importer gets it.

By Mr. McLennan:

Q. We sent out 2,500 circulars to the factories and we had several hundreds of answers. There are about 94 or 95 per cent in favour of the branding of cheese. How can you justify yourself in saying that the cheese should not be branded when the farmers who furnished the milk wanted branding and the people in England wanted branding, and it is only speculators, and the few they can induce to say so, who do not want it branded. I would like you to explain why you do not want it branded?—A. Well, I can account for the replies to the circulars; that is a very easy matter. A great many men just pick up a circular, when it is sent out by the committee or one of the departments, and a farmer or manufacturer reads it over and fills it in, and sends it back without having ever considered the matter for five minutes. The circular invited a certain answer, and that was given in most cases.

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Q. He would not need especially to go to you to tell him if that cheese should be branded. You would say you would not buy that cheese, and when the speculator tells him he won't buy the cheese, naturally enough the farmer will say branding is not the best thing to do. However, 95 per cent are in favour of the branding of cheese.—A. I never heard any speculator or buyer in western Ontario tell a manufacturer he would not buy his cheese.

By Mr. Carpenter :

Q. Do you know of your own knowledge whether, when those circulars were sent to the cheese factory, the patrons were called together and consulted, before answering or not?—A. I don't know of a single meeting of patrons in western Ontario—not a single meeting of farmers—nor did I ever hear the matter discussed. I think I would have heard of it if the matter had been discussed.

By the Chairman (Mr. Roome) :

Q. Then your own personal opinion, from what you know, is that it would be better at the present time to leave this branding optional until it is thoroughly understood by the dairymen of Canada?—A. Certainly. I don't want to have an enactment or law put upon the statute books that compels me, and says that I must do this, and subject to a penalty for not doing it.

By Mr. Ccchrane :

Q. This does not compel you but compels the factory to brand. A.—I am a manufacturer ; I have had four or five factories.

Q. Let us understand that. You are a manufacturer, but you buy milk from the farmers and the farmers hire you to manufacture it?—A. They pay me so much a pound for manufacturing.

Q. When the cheese is manufactured it belongs to the farmer, does it not?—A. Certainly it does ; I am their agent.

Q. You are hired to make the milk into cheese.—A. I own the factories and charge so much for making.

Q. You do it to get your money for making the cheese?—A. Yes. I get the cheese made. I have money invested in these factories.

Q. They are not your cheese?—A. They are in my possession a certain length of time.

Q. Do you buy them?—A. No, sir.

Q. Well, another man, a buyer like Mr. Ballantyne, for instance, he has the opportunity to buy cheese out of your own factory?—A. Certainly. They are put on a board and sold to the highest bidder.

Q. You are the salesman of these factories?—A. Yes.

By Mr. Featherston :

Q. They are not your make?—A. They are made in my factories.

By Mr. McLennan :

Q. Why do you oppose the branding of cheese?—A. I am satisfied I'll get less money for these cheese in certain months on account of prejudice existing ; I am telling you plainly why I am opposed to it.

Q. That is what you are telling the farmers?—A. I don't think I have spoken upon the question to half a dozen farmers.

By Mr. McMillan :

Q. The question resolves itself into this proposition : When you sell your July cheese under a wrong name in order to get a better price you perpetrate a fraud?—A. I

do not perpetrate a fraud. There are some seasons very dry in western Ontario, but if we have rain in July it gives a second crop of grass, and we may make a finer cheese in July than we are making now. A finer July cheese.

Mr. BALLANTYNE—The factories would sell them to the dealers as July cheese.

—A. As July cheese. I do not perpetrate any fraud. I sell my cheese as May, June, July cheese or August, September or October.

By Mr. Dawson :

Q. How do you account for the strong desire to have them branded?—A. I say the trade in England is divided in opinion about that.

By Mr. McLennan :

Q. I have a memorial from Bristol asking for the branding of cheese?—A. Bristol is about the only place where they are fairly unanimous. I quite agree with you they are very unanimous there, but in other places they are not.

By Mr. Carpenter :

Q. Do you think if the June, July and August make of cheese were branded, that an advantage would be taken of it by the buyer, and in consequence our farmers would get much less money for their cheese?—Yes. I may tell you there are only two months known to the smaller dealers in England, practically, and those are June and September. Hundreds of the smaller dealers have no knowledge whatever about other months.

By Mr. Cochrane :

Q. Was not the trade demoralized owing to the speculation in cheese?—A. The farmer did not suffer, the trade suffered.

Q. Was it not owing to speculation and holding the cheese that the prices of cheese were demoralized this spring?—A. No. I will tell you what demoralized the trade this spring. There were two or three months of cold weather, and hard times in Great Britain and the working men had not the money to buy dear cheese.

Q. How did this interfere with cheese being put on the market as usual?—A. In consequence of the cold weather, hundreds and thousands of people had to purchase coal stoves and coal to keep themselves warm, and the brokers in England urged them to buy bacon and pork in preference to cheese, because it was so much cheaper. That stopped the consumption of cheese during the cold weather.

Q. Had the cold weather anything to do with summer cheese of last year's make being put on the market?—A. Certainly. I sold September cheese and it was not put on the market until the spring. I suppose if they had not had this cold weather in England, the natural consumption would have gone on and there would have been so many less summer cheese this spring to put prices down.

I have heard a great deal to-day about dishonest buyers, but I must say that, so far as western Ontario is concerned, we don't have men of that character. Those who are dealing in cheese in western Ontario are just as honest as the farmers. I have done a large business among the farmers of this country and I have found just as much trickery among farmers as in other classes.

Having examined the preceding transcript of my evidence, I find it correct.

JOHN A. LEITCH,
Cheese Manufacturer.

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MR. JAMES W. ROBERTSON, Dairy Commissioner, was called. In response, he said :

Mr. Chairman and Gentlemen,—When I addressed the committee on this subject some weeks ago, I took this position which I have not seen any reason to change from since : that any man who would misrepresent the cheese he sold was doing a dishonest business, and should be prevented from continuing that ; but I do not at all agree with the statement that a man who opposes the compulsory branding of cheese is therefore not an honest man. The two are quite different.

By Mr. McNeill :

Q. No one will make that statement?—A. It has been made twice to-day in the committee, by Mr. Ballantyne. The point is simply this : First of all, is it a competent subject for legislation to compel a man to do something with the goods he owns and has made, whether he wants to or not, if his doing it or not doing it does nobody any harm ? In the second place, is it a safe principle to go on that we shall attach to our cheese a label or brand which does not describe their quality but which may be used to misrepresent the quality ? Now, it is clearly understood by everybody in the trade who knows the business well, that, from the consumer, through the retailer, up to the importer, in England, our cheese are always bought on quality and not on brand. From the consumer to the importer, in England, cheese are bought on quality and not on brand. Therefore the branding of cheese will have no influence on those people buying our cheese for consumption. I think that is agreed to by everybody interested. Well, if that is so, those people who eat the cheese pay according to quality. Now, the quality is not determined by the month. If it were so, I would say stamp the month on it. The quality depends upon pasture and climate, not on calendar ; and if June does not always stand for abundant grass, and cool nights, and plenty of water, then why stamp June on ? And if July does not always stand for dry pastures and hot nights, why stamp July on ? The goods should be bought on the basis of quality, and not of calendar dates, and therefore I think the principle is wrong that anyone should put something on his goods which does not truthfully, infallibly and faithfully describe the quality of those goods.

By Mr. McMillan :

Q. Why brand the cheese Canadian ; it does not describe the quality?—A. Oh ; yes.

Q. The country but not the quality?—A. Still the cheese of Canada is distinguished in the markets of the world as “Canadian,” as distinguished from that from other countries. It would not be safe for the country to let its reputation depend on everybody or anybody's beck and call.

By Mr. McNeill :

Q. If cheese is purchased by its quality, what harm would be done by branding it ?—A. I will come to that in a moment. I am attempting to show that there is no need for this legislation at the present time.

Q. Don't you think there is something in what has been said that July represents a certain period ; that it is not necessarily quality?—A. The point is this : I have no objection at all to any manufacturer or buyer having the month of July stamped on his cheese. In fact, I prefer it myself, and we are doing it at the Dominion Dairy stations—that is, not by the names of the months, but by marks to designate the months. For instance, No. 1 will represent May, with the day of the month ; No. 2 will represent June ; No. 3, July, and so on. The point is, however, that I do not think this legislation should be compulsory ; it should be left to the maker himself whether he shall brand his cheese or not.

Q. You are in favour of stamping July cheese with the word “July”?—A. I am, if the makers or buyers desire it.

Q. But you considered a moment ago that the word "July" might be misleading.—A. It may be, and consequently I am not in favour of making it compulsory. If the law says it must be stamped "July," it stands for something, if it is optional——

By Mr. McMillan :

Q. If you were buying, you would want the day and the month on the cheese?—A. I would want to know. The point I want to make is this, however : Personally, I am in favour of branding, but I am wholly against any legislative compulsion. In this circular sent from Great Britain, and from the evidence of Mr. Ballantyne himself, it is their contention that if the cheese were branded, the first effects would be a preference for those cheese. Is there any inducement to the men to brand the cheese? If you offer one-sixteenth of a cent per pound more for the cheese branded "July," every man will brand it. If higher prices are to be obtained no law would be required to induce them to brand. What I would favour would be the placing of a law on the Statute-books, making the man who brands June cheese as "July," and so on, guilty of a misdemeanour and subject to heavy penalties.

By Mr. McNeill :

Q. You are in favour of the branding of cheese because you believe it to be an advantage, but you are opposed to the compulsory principle that is involved in this proposed legislation. Is that the distinction?—A. Yes, with this qualification : that if the men who want the branding of the cheese are sincere in their belief that it would make the cheese worth more, and I suppose they are, let them pay a little more for it when it is branded. I would like to ask, however, is there a buyer in England sending instructions to his buyers on this side to have the cheese branded? I have made careful enquiries on this subject and I cannot find any. If an English dealer sends a cable for 500 boxes, does he say they must be branded the day and the month? I cannot say that I have heard of one.

By Mr. McMillan :

Q. We have it stated before this committee that cheese had been sold in Canada as "August" make when really it was made in July. Let us vindicate our good name by adopting this branding system?—A. I agree that it is essential that we should protect the country's good name. Let us do it by putting a fine of \$50 a box on the man who attempts to mislead the public by improper branding.

By Mr. McNeill :

Q. If a compulsory brand were required, would it not be more difficult to mislead the public?—A. The effect of compulsory branding of months is that you establish for all time a false basis of description for our goods. The branding of the month is advantageous for safety and clearness of records at the factories, but not for description of qualities.

By Mr. McLennan :

Q. If a large majority in Canada are in favour of branding, why should we hesitate in passing this bill?—A. If there be a majority engaged in the cheese industry in favour of it, listen to the majority. But my opinion is that in Ontario, on the average, 80 per cent of the men who sell for the farmers are opposed to making it compulsory. As Dairy Commissioner I have to listen to these men to get their views. If you leave this matter over for a year, I think, in the meantime, we can get a more unanimous opinion on the subject. Before next year I would have the opinion of the Scotch and English importers, as well as the feeling of the farming community in this country.

Q. The intention was that the bill should not go into effect until the 1st of March next. There will be no harm done, therefore, to pass the bill this year?—A. It is very true that the law may not go into force until March next, but if it is put on the

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Statute-book and public opinion is found to be against it, it would have to be obeyed despite the feeling of the public. The better plan would, therefore, be to get the views of all the trade before enacting legislation.

By Mr. McMillan :

Q. Of the circulars which were sent out 395 have been examined. Of this number 314 were in favour of branding, 72 opposed to it, and 9 undecided. That is the report of the circulars sent out as far as the committee has examined them?—A. The circulars were sent to many people who were not well informed on the details of this business. The only people among the farmers who are well informed on this business are the men who sell the cheese, because they have experience and know the effect of statements or marks on the prices they are likely to get. These men—the salesmen of factories in the Dairymen's Boards of Trade—who have not asked for a postponement, have been against branding, and they are the ones who represent the farmers.

Q. They were not unanimous?—A. I understand that the Brockville Cheese Board passed a unanimous resolution against it.

By Mr. McLennan :

Q. Mr. Ballantyne is selling cheese, and he is in favour of branding?—A. He is buying cheese much more largely than selling on behalf of the farmers.

By Mr. McMillan :

Q. I must say that I am surprised at the Dairy Commissioner. He says he is in favour of this branding, and yet he is giving all the arguments that he can against it?—A. We brand our cheese at the dairy stations with marks to represent the different months, but I am not in favour of making it compulsory for farmers to brand their cheese when they are opposed to it. I want to get the opinion of the farmers in the meantime, and, when the matter has been thoroughly discussed, let us have legislation in accordance with the expressed wish of the farmers.

By Mr. Dawson :

Q. Would you advise them to brand their cheese?—A. I would.

Q. As a witness here you would advise them to be branded?—A. I would. I advise them wherever I go to brand their cheese, because the men who buy say they will pay more for it. Let us brand our cheese and give them a chance.

Q. Then you are in favour of branding but you are opposed to compulsory legislation?—A. I am opposed to compulsory legislation until there is a general feeling in favour of it, lest buyers might use it as an argument to bring down prices.

Q. Can you suggest any means whereby the fraud could be prevented?—A. In New Zealand they have a system of legislation, the suggestion of which I believe they borrowed from one of my reports. By this system the product of any factory can be traced at any time, because there is compulsory registration. If every factory were compelled to register its number with the government, its product could be traced and identified at any time. Also it could be traced back from England if it were of extra fine quality and you would get a special demand for the make of that factory, which would tend to stimulate improvement of the quality of Canadian cheese.

By Mr. McDonald (Huron) :

Q. Would not that be compulsory in its nature as well as the other?—A. Yes, but in that you do something which does not injure anyone. It would promote the prosperity of the cheese industry and the wealth of the people.

Q. What is to prevent the cheese made in the United States being put in cold storage in Montreal and sent to England, if they can only be identified by the outside brand?

—A. They must be branded produce of United States and we would not be depriving them of anything, but protecting the Canadian producer in his rights.

Q. But if you are willing to apply compulsory registration, what is your objection to the compulsory branding of the date?—A. Well, if you make the branding of the date compulsory, these cheese buyers are not particularly easily gotten round, and use all kinds of suave and other arguments when they try to buy cheese in order to get it cheap. If some of them have gone to the farmers and said, "If you brand the month on the cheese I will give you less money," they will say when the bill is passed, "There is a prejudice in England against July cheese and now that it is branded 'July,' we cannot give so much for it." They use arguments such as this to crush the prices down and I would not place an instrument in their hands for that purpose.

By Mr. McNeill :

Q. Still that would apply to your advice that they should brand their cheese. Although you are not in favour of compulsion you advise the farmers to brand their cheese and yet you say that branding will be used by the buyer as an argument to force down the price?—A. They may come and say "Your cheese are branded and I will not give you so much for them," but without the compulsory legislation the salesman can reply "My cheese shall be branded if I can get as much money for them, but if you will pay more and prefer them unbranded, unbranded they shall be."

Q. Nevertheless you think they should be branded?—A. Yes.

By Mr. McDonald (Huron) :

Q. Would not one of the dishonest buyers come to the seller and say "We cannot give you so much money for your cheese because we cannot get so much for it" under the present conditions, and then put on the market as September cheese what he has bought as July or August and thus reap the advantage?—A. They might do that, but the facts are that in the past the July cheese, just because they were not branded,—because this agitation sprung up very recently—the July cheese have been held in store and the farmers here have obtained as high prices for their July cheese as the quality of the cheese really warranted.

MR. BALLANTYNE—My own experience is the very opposite.

MR. ROBERTSON.—Let me show you the fact on which my opinion is based. Our July cheese does need to be kept in cold storage, because we make cheese for five and a half months of the year and sometimes longer, while cheese consumption in England is during 12 months. We are not going to get all our cheese to the consumer's plate right off. Somebody has to hold the cheese, because the sale is spread over 12 months and the production over five and a half months. Therefore we must do nothing to injure the sale of cheese, which must be held by somebody. People have given higher prices for July cheese than the immediate demand for consumption would warrant, and put them in cold storage because they supposed they could be sold for more later on.

By Mr. McNeill :

Q. But what difference would it make whether the branding was compulsory or not?—A. A compulsory act gives the buyers a new handle to work the prices down to the farmers.

Q. But you say the farmers ought to brand?—A. That is my preference; if left optional with them it could not be used against them in buying.

Q. You say you would advise the farmers to brand, and if your advice was carried out the cheese would be branded. So far as the price is concerned it would not make any difference whether the branding is compulsory or not?—A. Suppose you have half a dozen buyers of cheese. Two of these men may have connections whereby they sell their cheese, not to the importers in Great Britain only, but to the wholesale men to whom the importers in England usually sell. These men may not want the cheese branded.

Q. Still that would be contrary to your advice?—A. Let me show you these facts: Now, if these six buyers or two of them say "My instructions are to have no brand on the cheese; I would have given you a higher price if you had not branded"—in that

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case if you leave it optional to the farmer to leave off the brand he may get more money. Still, if you make it a fraud to brand July cheese as August, they can see very clearly in England that this Parliament is strongly in favour of preventing misrepresentation but that we are not in favour of putting a yoke on the farmers' necks for the sake of pleasing a few men who have been dishonest.

Q. But you say you are in favour of branding. How would you meet that objection?—A. I would recommend branding to our farmers, as I have been doing, as being a desirable practice to adopt. But I would defer all compulsory legislation till the judgment of these men was convinced one way or another and till the farmers say it is not going to hurt them. Then if they still wanted compulsory legislation, it could be carried with the unanimous consent of the people concerned.

By Mr. McLennan :

Q. Do you not know that all the dealers in England want it?—A. Some do and some do not.

By Mr. Ballantyne :

Q. Who does not?—A. It is not advisable to say in public all one knows.

Q. There may be some speculative dealers, but there are no good firms who do not want it.—A. I cannot assent to that at all.

By Mr. McMillan :

Q. If your advice was followed by a number of factories and they did brand, and some of the other factories did not, and the buyers said that they would give higher prices for the cheese that was branded, then the factories that did not brand would be at a disadvantage as compared with those that did?—A. Yes, and the circulars here say that that would be the case.

By Mr. Hutchins :

Q. I understand you brand your cheese, 1, 2, 3 and 4 instead of the month?—A. Yes. No. 1, May; No. 2, June and so on.

Q. You do not put the month on at all. That must be an evidence that it would be an injury?—A. In the past the men who bought our cheese have objected to having the brand on.

By Mr. Cochrane :

Q. Who are your men? Do you mean the men who buy your cheese?—A. Yes. I brought samples to Montreal last year and offered it to all the buyers in Montreal.

Q. You have no men buying cheese in Ontario?—A. No; no men buying cheese anywhere. I am the salesman for several factories in Prince Edward Island, about thirty factories in all, and I sell the cheese for the highest prices I can get. For safety and for my own guidance in 1892 I had the cheese branded with the day and the month, but because the men who bought the cheese said, "We do not want the month marked on the cheese," I altered the brand and changed it from the month to the number.

Q. But the opinion in the Old Country has changed. They have asked for the brand to be put on?—A. The men who have bought from me in the past do not want the month on; or rather, in the past, they have objected and this year they have not asked to have the month on.

By Mr. McLennan :

Q. I would like to read an extract from a letter I have received from Mr. Alexander, of Montreal. He is in the cheese and butter business, and I would just ask you if this is correct. "I have just returned from England and know something of the

complaints made there, and am bound to say the complaints are not exaggerated. I attribute the present demoralized state of the cheese market mostly to the enormous quantities of summer made cheese (undated) that were stored last season. Cheese which should have gone into consumption long ago, but are now flooding the markets. If the farmers gained anything when these cheese were being stored, they are paying sweetly for it now"—A. Allow me to finish my statement for a moment. We are in this market, I hope, to stay for a long time. We are selling Canadian cheese and butter. It is our policy and should be our policy always to retain the confidence of the men who buy our cheese and butter. Therefore, I would deplore anything that would seem to be the expression of opinion from Canada that our men refuse to brand their cheese because they want to misrepresent the quality. We don't want to misrepresent. I would have it understood that we are in favour of passing a very stringent law that any man who will sell Canadian cheese for other than the month it was made in, should be punished very severely.

Q. I have received two letters from Mr. D. M. McPherson, commonly known as the cheese king, in which he deplores that anything should be done to injure the reputation of Canadian cheese, which it has taken twenty-five years to build up. He says we should deal fairly with the people of Great Britain, who are buying our products, and he puts the case very strongly. He is very strongly in favour of the branding of cheese. He is a man who understands what he is talking about, and is the local member for my constituency?—A. There is no difficulty with the factories at all. The difficulty is with the dealers on this side and the dealers on the other side.

By Mr. Carpenter :

Q. I would like to ask Prof. Robertson a question, arising out of what Mr. Ballantyne said in reference to the trade with the old country. Do you find that the retailer when he makes his purchases from the importer buys a certain brand, that is cheese made in a certain month, or is he governed entirely by the article he is buying?—A. He is governed entirely by the quality of the article he is buying.

Q. Then what is the good of a brand of the month?—A. Nothing to my mind at all except for safe and convenient factory records.

By Mr. Cochrane :

Q. What on earth does he do?—A. The brand is nothing to him at all, he tests the quality.

By Mr. Carpenter :

Q. When he goes into a store to make his purchase does he know whether the cheese is June, July or September or is he governed by the quality of the article?—A. Governed by the quality of the article bought the last time. If it pleases him he comes again and asks for the same.

By Mr. McNeill :

Q. The consumer does not know where the cheese comes from?—A. He may know where the cheese come from. He commonly asks for the Canadian article. I may say that a few men who ship cheese are the men complained of as being dishonest; there is no charge against anybody else. We want to understand how quickly buyers will use any advantage they have to wreck the market. The cheese that went from Australia and New Zealand during last year and the butter that went from those countries also has in some part gone to men who were not in the regular trade. Sharp buyers have gone to their warehouses in England and said "that is so and so and we will give you only so much." I know of very many instances where that butter was bought, and sold next day at a profit of 15 to 20s per cwt.; but meantime the fact that it was bought at a very low price had been used all over England to wreck the market for our butter and cheese. This is a little instance of how the market can be manipulated in that way, because a man can say he got Australian butter yesterday at 60s. and he sold it again

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for 75s. In the same way it could be the case if you gave any extra handle to the men who buy our cheese until the people are convinced that the buyers' argument is no valid argument against the quality when they make statements of that sort. My position is this: I am in favour of branding the cheese with the month in which it was made, but I am in favour of putting off legislation until we can get the whole thing fully discussed and get our farmers to assent to the proposition. I am in favour of having cheese branded with a registered factory number. I am in favour of passing a resolution or having a law adopted in the meantime to make it a very serious misdemeanour to misrepresent the time when the cheese was made.

ARRANGEMENTS FOR EXPORT IN COLD STORAGE.

By Mr. Wilson :

Q. What about cold storage?—A. I had intended to say a few words about that if I had time. We have provided a cold storage service for butter, running into Montreal, by a car leaving Windsor and taking up butter at points between Windsor and Montreal; a car leaving Teeswater and being consolidated at Toronto; a car leaving Owen Sound and being consolidated at Toronto; a car leaving Wiarton, via Palmerston, Stratford, Guelph and Toronto. Anyone who has freshly made butter, can ship on those cars with no additional cost above the usual freight rates of the railway companies. We have arranged a cold storage car from the city of Quebec into Montreal; on the Intercolonial Railway from St. Simon, below River De Loup into Montreal; and on four other routes into Montreal, from the south and east. When these arrangements are completed the merchants can have freshly made butter go to the central point for export at no extra cost to themselves for refrigerator service. We shall have cold storage on board steamers, with a service leaving for Liverpool next week and fortnightly or weekly thereafter; steamers leaving for Glasgow the week after next and fortnightly thereafter; steamers leaving for Bristol, that is, for Avonmouth, on the 4th July, I think it is, and fortnightly or weekly thereafter. The whole arrangements are now about completed whereby we shall get fresh made butter from nearly all points in refrigerator cars, to Montreal. There we have cold storage accommodation, and the products will be placed in refrigerator compartments on board the steamers. That is the position of that enterprise at the present time, and I might say this: that the railway and steamship companies, seeing the possibilities of this trade being enlarged, have met us in a generous and liberal spirit.

By Mr. Dawson :

Q. There will be shipments from Ontario to the English market?—A. Provision will also be made so that any merchant who has any kind of butter can obtain the use of these cars, if they are not full. Of course, creamery butter for export will have the preference, but when the cars are not full, individual merchants may have the advantage of this accommodation for shipments of dairy or other butter.

By Mr. McMillan :

Q. What are the results in regard to the butter exported and sold by the government?—A. It is all sold. A return of the sales was received this week. I can make a return to the committee of the whole of the account sales from the shipment of butter.

By Mr. McNeill :

Q. What does it average in price?—A. The last sales of butter were down as low, I think, as 63s. I think that is the last quotation.

Q. What would that be a pound?—A. Barely 14c. The quotations in regard to butter from Australia and New Zealand are 50 to 55s. In my opinion the demoralization of the butter trade was due to the unbusinesslike method adopted by those colonies in selling their butter last year and the year before.

BRANDING.

By Mr. Cochran :

Q. Do I understand you properly in reference to the branding ; you are of opinion that the proper principle is that the cheese should be branded with the month and the date, but you are satisfied in your own mind if that was done that the farmers would not realize as much from the sale of the cheese?—A. I realize there is a danger of that being a consequence if branding is made compulsory this year.

Q. Danger of what?—A. Of some of the buyers using that as an argument for not paying as full a price as they otherwise would.

Q. Don't you think the buyers want to speculate on that account?—A. I do, but while I am in favour of branding being permissive, and think it desirable, I would not be in favour of making it compulsory until there is a more unanimous opinion on it.

Q. Whose opinion do you want yet?—A. I want the opinion of the salesmen and the factorymen in Canada.

By Mr. McLennan :

Q. Sales of cheese are taking place in the English market and the cheese represented as of another month's make than it really is. Have you heard of that?—A. I have heard of some instances. Some of the cheese of this month's make is held over in cold storage for a higher price. Some men hold June cheese until January.

Q. Don't you think by leaving the thing open it would give an opportunity to dishonest speculators to place that cheese on the market?—A. Possibly, but if you make it a misdemeanour to misrepresent, and any English merchant finds himself imposed upon, the proof is not difficult to get, and if a conviction of the guilty party can be obtained, why, then, punish him.

By Mr. Ballantyne :

Q. How could the English merchant trace the cheese?—A. By the shippers and factory brands.

Q. You might be plaintiff in one country and defendant in the other?—A. Exactly ; but you could not help that.

By Mr. McNeill :

Q. Do I understand you to say that you are not satisfied there would not be a loss to the farmer, but you think there is a slight risk of loss?—A. I do not think there will be loss to the farmer at all from branding a registered number on the cheese.

Q. Not for this year?—A. Not for this year. You would find, however, a great deal of dissatisfaction by compelling the farmers to do something they don't want to do.

Having read the preceding transcript of my evidence of the date of 31st May and 18th June, I find it correct.

JAS. W. ROBERTSON,
Dairy Commissioner.

Agriculture and Colonization.

THE EVIDENCE

PART III

IMMIGRATION AND COLONIZATION

Agriculture and Colonization.

COMMITTEE ROOM 46,

HOUSE OF COMMONS,

TUESDAY, July 2nd, 1895.

The Select Standing Committee on Agriculture and Colonization met this day at 10.30 a.m., Mr. Sproule, Chairman, presiding.

Mr. A. M. BURGESS, Deputy Minister of the Interior, was present by citation, and, being called, addressed the Committee as follows:—

Mr. Chairmen and Gentlemen,—Following the method that has been adopted during the two years that I have come before your Committee, I propose to commence by making to you a statement of the immigration during the current season, so far as our returns will disclose, that is to say from the beginning of January up to the end of the month of May. The business of the balance of last section is shown by the annual report of the Department of the Interior, and the intention of this statement is to give you an idea of the extent and kind of work up to the date of the most recent complete returns.

The immigration as a whole, I regret to say, has fallen off, as compared with last year, and I am not able to say at this moment that there are any distinct evidences of revival. Our agents have all informed the department from time to time during the winter that the extremely low price of wheat has had a very depressing influence upon their operations, but have expressed the opinion that otherwise the period has been reached when we might fairly look for a return of the flow of immigration in the direction of this continent. And I might say that the unrevised reports of the port of New York which have reached the department, covering the period up to, and including the month of April only, would indicate that there the signs are in the direction of revival. They are not very decisive there any more than here, but still there are signs.

The immigrant arrivals, that is to say the third class passengers, arriving at Halifax, Quebec and Montreal, during the period ending with May, number 9,223, as compared with 11,950 for the corresponding period of last year. Of these, 7,594 declared their intention of remaining in Canada as opposed to 8,930 for the corresponding period of last year, and 869 were ticketed from Quebec to points in the United States, as compared with 1,918 for the corresponding period of last year. Of the total number declaring their intention of remaining in Canada 2,444 were ticketed for points west of Port Arthur, as compared with 3,637 for the corresponding period last year. The statement which we make up periodically from our land registers, however, is much more favourable than the general statement which I have just read, showing that a larger proportion than usual of the people reaching the country are settling upon land, instead of going to the cities or remaining in the older provinces. I have in my hand a comparative return from the Dominion Lands Agencies of the number of entries granted during the first five months of 1895 compared with the corresponding period of 1894, showing the national origin of the homesteaders. From these it would appear that we had 164 Ontario people make homestead entries during that period as compared with 244 for the corresponding period last year. There were 24 in both periods from Quebec. There were 11 this year from Nova Scotia as compared with 6 last year, and no entries at all were made by people coming from New Brunswick as compared with 8 last year. There was 1 from Prince Edward Island as compared with 3 last year; and 6 from British Columbia as compared with 12 last year; and 29 people who had been for some years resident in Manitoba took up homesteads as compared with 45 last year; while from the Territories there were 11 as compared with 34 last year. This, you will observe, indicates pretty clearly that the movement from the older provinces has very greatly fallen off. It was very much less last year than it had been for any previous year, and the reduction continues. The movement from the United States on the other hand has largely increased. We have had Canadians returning from the United States to the number of 46 as compared with 83 for the corresponding period of last year.

By Mr. Roome :

Q. Is that 46 all that came last year?—A. No, during the first five months, 46 heads of families, men over 18 years of age, who have obtained homestead entries. Most of the people coming from the United States bring with them large families of children. There would in many cases be two or three over 18 in a family, Of Canadians returning from the States we had 46 making homestead entry as compared with 83, which is a falling off as regards returned Canadians. But we have 277 people simply describing themselves as citizens of the United States, as compared with 177 for the corresponding period of last year. We have 131 heads of families from England as compared with 133 last year, and 10 from Ireland as compared with 3 for the corresponding period of last year, and 39 from Scotland as compared with 34 for the corresponding period of last year. There are 45 from France as compared with 55 during the corresponding period of last year, and from Belgium 9 as compared with 17 during the corresponding period last year. There are 2 from Italy and there were none last year; 2 from Holland as compared with 1 last year; 23 from Germany as compared with 29 last year; 25 from Austria, that is to say Austro-Hungary, as compared with 44 last year; 4 Danes as against 3 last year; 5 Icelanders as against 10 last year; 9 Swedo-Norwegians as against 23 last year; 44 Russians, other than Mennonites and Poles, as compared with 39 last year; 2 Mennonites as compared with 3, and 7 Poles as against none for the corresponding period of last year. The net result of this is to show 130 of a falling off in the heads of families obtaining homestead entries from the older provinces during the first five months of this year, as compared with the corresponding five months of last year, a falling off of only 92 in the total number, and the falling off from the provinces compensated for, as you will observe, by an increase of persons from places other than Canada, to the number of 26.

Q. Is there no way of keeping track of how many there are in a family?—A. Yes, we give the actual number in each family. The homesteader makes a statement of the number when he appears at the land office to obtain entry. The statement of the actual number of souls involved, shows that we had 3,306 people going on homesteads for these five months of the current year as compared with 3,828 for the corresponding period of last year.

By the Chairman :

Q. You have only given us the figures for five months of the current year?—A. Yes.

Q. Would it not be better to give the figures for the whole year, so that we might be able to compare the past year's operations with those of previous years?—A. The comparison you suggest is made in the annual report, from which I will read you an extract, if you will permit me.

By Mr. Roome :

Q. What is your year?—A. The calendar year?

Q. To the first of January?—A. From the first of January to the end of December.

Q. I suppose you find that it is during the first five or six months that most of the immigration comes into the country?—A. So far as European immigration is concerned, yes. So far as emigration from the United States is concerned, it is very much the same in the autumn as in the spring. Many of the people drive across in the course of the summer, that is from Nebraska, Idaho, and the North-western States, arriving in the autumn, after which they take up land. Those who drive across country generally bring with them their horses and cattle, and send their household furniture and agricultural implements by railway.

Q. The comparisons you have made are those of five months of last year with the same five months of the previous year?—A. Of the current year. At page 11, Roman numerals, of the report of the department for 1894, will be found exactly the same class of information in regard to the whole of last year as I have given here in regard to the first five months of last year and the first five months of the current year.

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Q. During what part of the year does most of the immigration come in?—A. As I have said, so far as European immigration is concerned, the first five months of the year show the largest returns. As regards the movement from the older provinces and the immigration from the United States, the autumn seems to be as favourable as the spring. People go in the autumn with a view of preparing their land for crop the following spring, putting up their houses, &c.

Q. I presume you do not keep track of all those who come in?—A. We do not pretend to keep track of all who come in, except in so far as the numbers may be disclosed by the steamship returns and by the entries that are made for land in the North-west.

Q. I noticed some time ago the Manitoba Government pointed out to the Dominion Government an increase in the population of 50,000 during the last three years, or since the census was taken.—A. We applied our returns to that statement of theirs, and the effect was that the whole of the claim was not allowed. But our returns indicated that the population on which the provincial subsidy was finally adjusted, was justly claimed.

Q. You simply allowed them 40,000?—A. Yes.

Q. You can show an increase of 40,000 in the returns?—A. Yes. Allowance was of course made for natural increase. We were able to trace 40,000 of the 50,000 claimed.

Q. It must have increased much faster than it did from the statement you made here to-day.—A. No, sir. You see these figures are for five months of the year only. You will observe for the whole of last year the returns showed an increase of the people who simply go on land. We take no account of those who may dispose of themselves otherwise, and only note the people who have gone upon land.

By Mr. Cochrane :

Q. I understand that last statement you made applied to all upon homesteads?—A. All upon homesteads.

Q. And they were just heads of families?—A. Heads of families. And as already explained each head of a family declares at the time that he makes his entry the number of persons in his family.

By Mr. Innes :

Q. You do not pretend to keep trace of those who come into the country without taking homesteads?—A. No.

Q. That might account for the discrepancy?—A. Well, some allowance was made in making up the returns on which were based the new subsidy arrangements with the province of Manitoba, for the movement of people backward and forward across the international boundary, and from the older provinces, of whom, however, it would, in my opinion, be as impossible to keep trace as it would be to count the sands by the sea shore. I dare say that the members of the Committee who pay attention to that class of subjects will remember that when immigration was handed over to the Department of Interior, I was required by the Government to make a report upon that subject, and I recommended the abolition of all the provincial agencies, the chief business of which appeared to be to endeavour to keep record of the people coming into and going out of the country. I based my recommendation on the impossibility of obtaining information of this kind in a reliable form, in view of the very large number of avenues for ingress into and egress out of the country and the large travel there is backward and forward. In this view the Government concurred, and abolished the system accordingly.

Q. Still, you keep a careful record of those who come in at Quebec?—A. Careful records made from the manifests of the steamships and the results of the examinations of our own agents at Quebec and Halifax.

The CHAIRMAN.—You have not given us yet the number of immigrants that came in last year.

By Mr. Bain (Wentworth):

Q. Have you any record of those who come in by way of the Bridge, as it is called?—A. No.

Q. You dropped that?—A. Yes. In answer to the question of the Chairman, I may say that the number of heads of families who took up homestead entries last year was 3,174, with a population of 9,716 composing their families, according to their own statement.

By the Chairman:

Q. That is the number of homestead entries?—A. I mean the number of immigrants coming into the North-west country as a whole who have gone upon the free homestead lands of the Government.

Q. And by all the routes that you have means of keeping trace of?—A. At page x of the report of the Department of Interior for last year the following statement on that subject, Mr. Chairman, will be found:—

“The whole number of arrivals of the immigrant class at the ports of Quebec, Halifax and Montreal during the year 1894 was 27,911, as compared with 63,447 during the previous year. Of the 27,911 persons mentioned, 20,680 declared their intention of becoming residents of the Dominion of Canada, being over 8,000 less than for 1893; and 7,087 declared their intention of settling in Manitoba, the North-west Territories and British Columbia, a decrease of 4,279. It will, of course, be remembered,” I say here again, “that the department has abandoned the plan of collecting statistics with regard to immigrant arrivals in the country generally. All that is done is to count the ocean arrivals, obtaining from each incomer a declaration as to whether he intends to remain permanently in the country or not, and the province in which he proposes to reside.”

Q. This gives us the number brought in from European countries?—A. Yes.

Q. But you have no account in that of the number coming from other countries, I see?—A. No.

By Mr. Innes:

Q. Only in so far as they take up land?—A. Only in so far as they take up land.

By Mr. Roome:

Q. You cannot tell how many come from the United States?—A. Only in so far as they take up homesteads.

Q. You cannot tell what your agents are doing there?—A. We have prepared a table, which you will find at page xii of the report for last year, showing the States from which the homesteaders from the neighbouring country come. We really are not encouraging any other than agricultural settlers from the United States or anywhere else.

Q. How many agents have you engaged in the United States now?—A. Well, we have only one gentleman at the present moment engaged in the United States. We have a few working on commission, who are paid \$5 per homestead entry, and the settlers are required, according to a form of certificate furnished by the department, to show they were induced by these agents to go on to the land before the commission is paid. We have, however, in prospect the employment of three gentlemen in the United States for part of the current financial year.

By Mr. Carpenter:

Q. Who have you employed in the United States at the present time?—A. Mr. C. O. Swansen.

Q. Are you pretty well satisfied with the class of people you are getting from the United States now; are they turning out fairly well?—A. They are turning out splendidly, according to my experience and observation.

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By Mr. Innes :

Q. The bulk of them are from the Western States?—A. The great bulk from the Western States, but there are a few Scandinavians and Germans from the Eastern States.

By Mr. Carpenter :

Q. Are they equal to the European class?—A. They are very largely Europeans by birth, who have settled in the United States from periods of various duration up to 30 years. They are very much like the class of settlers who left Ontario and went to the States at one time; men who have large families, and the land in the neighbourhood of which they would place those children if they could is too dear for their means, so what they do is to sell out to their neighbours who are better off and move over to the Canadian side of the line, bringing with them their ready money, their families, their agricultural implements, their horses, their cattle, and an invaluable experience of the system of agriculture best suited to our western prairie country.

By Mr. Roome :

Q. How many are there from the State of Michigan?—A. Quite a few.

Q. What are they, mostly Canadians?—A. Very largely Canadians.

By Mr. Innes :

Q. What are the favourite sections of settlement in the North-west Territories?—A. They change almost every year. The country lying between Calgary and Edmonton has been a favourite location for a large number of people of late years.

Q. The Red Deer country?—A. Yes, and north of the Red Deer. The reason of this is easy to understand. There are there large tracts of land unsettled, and people moving into the country in large bodies, as those from the Western States have done, were able to settle down closer together than would be possible in more advanced settlements. On the other hand, the colonization which is effected by single families and individuals following friends, and dropping off at various stations along the line of the railways, has been going on extensively in Eastern Assiniboia, Southern Manitoba and elsewhere. That is a kind of immigration of which the public has not as much knowledge. It goes on quietly, and is much less in evidence than the system by which people go into the country by train loads. The census recently taken of the Territories shows that there has been during the past three years quite a large addition to the population by immigration at every important point along the lines of railway, as our periodical returns of homestead entries clearly indicated.

By Mr. Roome :

Q. You have had quite a number of agents working during the past year in the United States?—A. Only a few. The number has been gradually reduced.

By the Chairman :

Q. How many have you had there altogether?—A. The largest number of agents we had under employ in the United States during the past year was 9.

Q. Did each one make a report on his work?—A. Yes.

Q. And the number of emigrants he sent to Canada?—A. It is very difficult to do that; because all the emigrants an agent may be the means of inducing to come to the country do not move while he is in communication with them, nor in many instances for long afterward.

By Mr. Robillard :

Q. Are you doing anything to encourage female domestic servants to come out from Europe, as suggested in the High Commissioner's report?—A. We have done something

in that way. We offered a bonus to Miss Birt, the lady who keeps the home for female immigrants at Knowlton, P.Q.,—a bonus of, I think, \$5 per head. I will have to refer to the official documents to be quite sure of the amount. I may say, however, that Miss Birt never made any claim, and no money has ever been paid to her in that relation. The offer does not appear to have had any effect on the movement.

By Mr. Carpenter :

Q. Has your department considered the advisability of building small houses and breaking up five or ten acres to each with a view to establishing a home for the settler when he arrives here?—A. The subject has been discussed a good deal.

Q. Don't you think it could be done with advantage?—A. My own view is that you might as well make a present of the house and breaking to the settler at once. If he had the money in his pocket to enable him to make payment immediately he would sooner do the work himself. The probability however is that neither the breaking nor the house would be of the kind he would choose if he did the work himself. Then if you were not to exact payment immediately, you would create in the country a large class of people more or less dependent on the government, who would probably in time be able to make it a condition with the member of parliament elected for that district that they should be relieved from making payment. My own individual view is against a proposal of this kind. I cannot say that the government, as a government, has given any attention to the subject. But it is a question which I have discussed with the Minister of the Interior on different occasions, and in the course of such discussion I have expressed the same views as here.

By Mr. Innes :

Q. Such a scheme would create a lot of trouble and necessitate the employment of a staff of men?—A. Yes ; a staff more expensive than useful, I am afraid.

By Mr. Carpenter :

Q. What portion of the year do you recommend the settler to locate in Canada—the spring or the fall?—A. The spring, on the whole, is the best time for the European immigrant to settle.

Q. The Americans also?—A. The Americans say the autumn suits them just as well. The plan largely adopted by immigrants from the United States is for the father and the boys of the family to come over in the autumn and select their homesteads. They also in some instances build their houses and do a little breaking in preparation for the spring. Late in the autumn, they go back for the family, and bring them over in the early spring, when the permanent settlement is effected. Colonists from the older provinces frequently adopt the same plan.

By Mr. Innes :

Q. Have you any recent information as to how the Crofters are doing?—A. We have nothing very recent. We know how they were last autumn.

Q. How about the Mormons?—A. They are doing very well indeed. They are a most industrious and hardworking people and good farmers.

Q. Do they still stick to one wife each?—A. A most careful investigation by departmental officers fails to reveal the existence of any objection to them on that score.

By Mr. Bain :

Q. Does the female population in the settlement appear to be greater than in other settlements?—A. No.

Q. There does not appear to be a surplus of female cousins, sisters and aunts?—A. No. I may explain that some years ago Mr. Card, the chief promoter of the colony, came to Ottawa with two of his elders, in order to obtain some few concessions from the government. Sir John Macdonald was then Prime Minister, and he instructed me

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to ascertain the views and intentions of these gentlemen on the question of polygamy. He desired me to make it clear that their answer on this score must be satisfactory before any concession could be granted to them. I made careful enquiry of Mr. Card, and he answered generally that it was their intention to obey the laws of their country. I replied that it was no use trying to make virtue of that which would be a necessity ;—that the laws were strictly enforced in Canada, and that anyone who did not obey them would have to pay the penalty. I further pointed out to this delegation that it would be useless for them to go to the Prime Minister without being prepared to give a definite answer to him on this particular question. Mr. Card replied immediately that he understood the situation perfectly, and asked me to accept his solemn assurance that when his people came to Canada, or, to use his own expression, “When they found an asylum in Canada from the persecutions of their own government,” they thoroughly comprehended what our marriage laws were and they intended in good faith to obey them as well as all the other laws. He mentioned the marriage laws particularly, said they quite understood what they were, and intended as far as they were concerned to give no ground of complaint, in so far as the people responsible for the colony were concerned. I will do Mr. Card the justice to say that although seven years have elapsed since that time not the slightest evidence has been brought to my attention or to the attention of the government, as far as I am aware, to indicate that he has not fulfilled his promise in the best of faith.

By the Chairman :

Q. Is the colony numerous ?—A. It is getting to be quite numerous.

Q. Have you any record of the number it contains ?—A. About 1,000 people at the present time.

By Mr. Innes :

Q. They are, as a rule, industrious and intelligent farmers ?—A. They are very industrious and fairly intelligent.

By Mr. Roome :

Q. Where are they located ?—A. At a place called Lees-Creek in Southern Alberta.

By Mr. Innes :

Q. Near the boundary ?—A. A little north of the boundary.

Q. Do they live together ?—A. Yes.

By Mr. Bain (Wentworth) :

Q. Did they take up a reserve ?—A. They took up homesteads. No reservation was made for them, nor any special privilege granted them.

Q. And how are they progressing ?—A. They are doing well. They have a cheese factory, a cloth factory, and other industrial establishments in the settlement. Mr. Davis, the Member for Alberta, whom I see present, could speak more definitely on that point than I.

MR. DAVIS.—They have several factories, mills, &c.

By Mr. McMillan :

Q. Is this settlement a mixed one ?—A. I do not know of any persons settled there but those of the Mormon faith. There is, however, not the slightest hindrance to any one of another faith going to live among them. They have no exclusive rights or privileges. I suppose, however, that other people do not care to join them.

By the Chairman :

Q. When speaking about emigration work in the United States, you mentioned that you had one man employed there ?—A. Yes.

Q. Where is he working?—A. He has no particular headquarters. His operations are carried on among the Scandinavian people of the eastern states, principally New Hampshire, Maine, Vermont and Massachusetts.

By Mr. Roome :

Q. Why have the services of the other agents been dispensed with?—A. Because the appropriation is not sufficiently liberal to permit of their retention in the service, and because we think that the business in the United States—in a large number of states, at any rate—has reached that point where further work is not necessary, at least on the scale requisite in former years.

By Mr. Bain :

Q. You think that the settlers themselves are the best immigration agents when they succeed over here?—A. Undoubtedly.

By Mr. Roome :

Q. What object would there be then in putting on new agents after this?—A. We should place them in territory not touched before. For instance, in the case of Mr. Swansen, he is operating in a section of the United States where little work has been done hitherto. Mr. Swansen is a native of Sweden ; he speaks English, but the Swedish language is his native language, and he is a fair interpreter into English. He is a successful farmer in the eastern townships, and he is engaged at this moment collecting parties of representative Scandinavian farmers in the eastern states to go to the Northwest to look over the country and report.

Q. Is he employed the whole time?—A. He was employed nearly the whole time during the past year.

By the Chairman :

Q. Have you many men operating as agents on commission?—A. Five or six.

Q. In what sections are they working?—A. Chiefly in Kansas, Nebraska and Idaho.

Q. What conditions do you attach to their agreement—that the settlers they bring over remain on the land a certain length of time, or do you pay the agents when the settlers are placed?—A. When they are placed on the land.

By Mr. Semple :

Q. Have you an agent in Dakota?—A. Not at the present time. The Dakota field is pretty well worked out.

By Mr. Innes :

Q. These agents have to furnish you with evidence that they have brought in the settlers?—Yes ; they have to supply us with two kinds of evidence. First, the evidence must be that of the railway company, and the evidence of the settler himself when he appears before the land agent.

By Mr. Roome :

Q. How is this system working?—A. It is working very well in Nebraska, where we have an energetic Englishman name Gadsden employed.

Q. And he receives nothing but a commission?—A. Nothing but a commission.

By Mr. Carpenter :

Q. Have you any information as to whether the immigration will be pretty large this year?—A. If the price of wheat remains as it is, there should be a large influx of immigration from Europe next spring.

Q. Not this year?—A. There is no hope for this year.

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By the Chairman :

Q. How many agents has the department under employ in European countries ?—
A. We have one in France and Belgium and four in Great Britain and Ireland. These latter are not stationed at any particular point, but go round lecturing and visiting amongst the people. Then we have the regular agencies at Liverpool, Bristol and Glasgow. The permanent agencies in Ireland have been abolished.

Q. You have no permanent agents in Ireland at all ?—A. We have an agent in Ireland who is permanent like the other three I have mentioned in Great Britain, except that he does not stay in his office at Belfast or Dublin as before. He moves about the country continuously, but his appointment is permanent.

Q. And at these other places you have permanent offices established that are looked after by men all the time ?—A. Yes, at Liverpool, Bristol and Glasgow. Then, there is the High Commissioner's office, which is largely devoted to the promotion of emigration.

By Mr. Innes :

Q. Is Mr. Stewart still employed in the North of Scotland ?—A. Yes.

Q. Is he successful ?—A. Only moderately so, for the reasons that have interfered with the success of the others. I may say, however, that two or three promising colonies, the fruits of Mr. Stewart's labours, have been started in the country lying between Red Deer and Edmonton.

Q. Is he paid by commission ?—A. No. He receives a salary of \$100 per month.

By the Chairman :

Q. And these are all the parties travelling over there, or have you other lecturers ?
—A. We have many volunteer lecturers, clergymen, school-masters, etc., who get assistance in the form of lantern slides with which to illustrate their lectures, with full information upon any question on which they desire to be informed.

Q. Do you find that plan successful ?—A. One can hardly say that any present effect is noticeable from it, although the educational influence of this class of work must be very great.

By Mr. Innes :

Q. This plan of volunteer lectures is managed largely by the High Commissioner's office, I understand. ?—A. Yes.

By the Chairman :

Q. Last year you spoke of means being adopted for the imparting in the schools of information about Canada ?—A. Yes, the plan was largely carried out.

Q. By the supplying of pamphlets ?—A. We usually furnish them with what they apply for. The Handbook of Canada has been largely in demand as a text book, as well as the reports of the farm delegates. Instead of publishing these latter in a single volume as before, we issue them separately, and circulated the several parts in the districts from which the delegates came whose reports such parts contained. We found that to be a cheap and effective method. We also found that the reports of the delegates were largely in demand in the schools.

Q. What number of these reports and pamphlets did you supply ?—A. The High Commissioner reports about half a million pamphlets, documents and reports of one kind or another supplied for that purpose.

Q. To the schools ?—A. To schools, schoolmasters, clergymen and other people of position and influence, who interest themselves in emigration.

Q. What other pamphlets are you issuing or have you been distributing in European countries ?—A. We have not been publishing anything of our own since last year. Since I came to the meeting this morning I have telephoned to the Interior Department to have sent over a complete set of the literature, in all the languages in which we are publishing it.

Q. Have you any information as to the cost of this literature?—A. The cost is fully shown in our accounts. I shall be very glad to make a report to the Committee of the cost of publication, classifying all the different publications. I think also it would be well to put in the report a statement of the distribution that has been made, and the methods of distribution adopted. I can give that more concisely by looking at the various reports than from memory.

(*Vide Supplement to Mr. Burgess' evidence, p. 226.*)

By the Chairman :

Q. I notice that there is child immigration carried on by societies. I have here a long letter sent by the manager of the Barnardo Home, of Toronto, giving a statement of the operations that have been carried on through that association. Have you the number of children that have been brought to Canada during the year?—A. Yes. There is published in the annual report a statement of the societies and individuals engaged in promoting juvenile immigration during the past year. It will be found at pages 7 and 8 of Part No. 3, of the Interior Report for last year, and is as follows:—

Rev. Mr. Wallace—that is, of the Marchmont Home at Belleville—brought out last year 227 children; Church of England Waifs and Strays' Society, 23; Mr. W. J. Pady, 16; I might at this point say that an examination of Mr. Pady's methods satisfied us that he was an undesirable man for this class of work, and we have taken steps to prevent his continuance of it. He is really out of the business now. Finley Home, 2; Dr. Stephenson's Homes, 53; Gordon Boys' Homes, 6; Miss Macpherson, 103; Miss Rye, 121; Mr. Quarrier, 239; Miss Birt, 130; Fegan's Homes, 65; Dr. Barnardo, 612; Salford Catholic Protection Society, 31; Liverpool Catholic Protection Society, 78; Hon. Mrs. Joyce, 11; Self Help Emigration Society, 36; Rev. Father Seddon, 61; Children's Aid Society, 18; Young Colonists' Aid Society, 37; Philanthropic Society Farm School, 2; Bristol Emigration Society, 20; Total 1891 last year, compared with 2,720 the previous year.

Q. What assistance do you give for bringing these children out?—A. \$2 per capita, except for children that are brought from any of the workhouses, and for those we give nothing.

Q. You give them all the same?—A. The same, except as regards children that are brought from the workhouses.

By Mr. Innes :

Q. Are the children brought direct from workhouses without any previous training?—A. They are brought direct to homes established for that purpose in this country, and kept in those homes until they can be placed with satisfactory families.

By the Chairman :

Q. Do they get any reduction in passage rates or anything else besides this \$2 a head?—A. Not that I am aware of, but that is a matter between them and the steamship companies.

By Mr. McInnes :

Q. These parties get a special rate?—A. I suppose they do, and I come to this conclusion not from anything I know, but because the companies sometimes practically give them a special vessel. Take for instance during the past week, I know that Mr. Quarrier sent about 230 children from Glasgow direct to Quebec by one of the slow sailing boats of the Allan Line. I should expect that in a case of this kind a special rate is given, but I really do not know.

By the Chairman :

Q. Have you had many objections from any parts of the country regarding this class of emigration?—A. The Department has received no complaint from any person or corporation.

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Q. You have had reason to believe that the class of children brought was fairly satisfactory to the people of the country, since there have been no objections?—A. All our information is that they are fairly satisfactory. I might say that we are required by the Imperial Government to make an annual inspection of the workhouse children that are sent out, and the result of this inspection last winter was on the whole very satisfactory.

Q. An annual inspection for how many years after they are landed here?—A. We are not bound to do it for more than one year, but as a matter of fact our agents continue the work. When they go to a particular locality for the purpose of following up a child that came within the past 12 months, they look after all of the same class that may be within reach, so that we keep from time to time very good trace of them.

By Mr. Carpenter :

Q. Some of the institutions that bring these children out make a point of looking after them for several years?—A. They all do.

Q. I know Dr. Stevenson's Home keeps track of them until they are 21 years of age?—A. So does the Rev. Mr. Wallace, who is engaged in the same class of work.

By Mr. Innes :

Q. I know Barnardo does it?—A. For a much longer period than most of the persons and organizations engaged in the same work.

By the Chairman :

Q. Do these societies make any report to the Department for some years as to the success or failure of the children after they come to the country?—A. They answer all inquiries that are sent to them, and we do inquire according to prescribed form regularly. Dr. Barnardo has volunteered reports at various times, and so have some of the others, but there is no systematic report continued over a series of years. I submit for the information of the Committee the following letter, of the date of the 24th April last, addressed to myself, from Mr. Owen, the agent at Toronto of the Barnardo Homes.*

By Mr. Roome :

Q. They do not make any annual report to the department?—A. No.

By Mr. Carpenter :

Q. You stated you paid certain immigration agents in Great Britain \$100 a month. Does that include living allowance?—A. They have an allowance not to exceed \$600 a year in addition to the \$1,200 salary. That \$600 includes the hiring of halls, advertising and everything of that description.

By the Chairman :

Q. Do they make any report of the lectures they deliver?—A. They make a detailed report monthly of the work of the preceding month.

Q. Then the average expense of each man to the department will be \$150 a month?—A. It must not exceed that.

Q. Have you any knowledge as to immigration to other countries compared with what is coming to Canada?—A. The falling off in immigration to the United States has been enormous. Lately, however, there has been a slight improvement at the port of New York.

By Mr. Innes :

Q. There has been considerable falling off in emigration to New Zealand, Australia, and to the other colonies?—A. Yes ; to all except to South Africa.

* For a full explanation of the system pursued by Dr. Barnardo in reference to his Orphanage Homes the bringing out and placing of young children in Canada, see letter of Mr. Alfred B. Owen, agent for the Dr. Barnardo Homes,—p. 221.

Q. And therefore the falling off is not exceptional as regards Canada?—A. Not at all.

Q. Mining is responsible for emigration to the Cape?—A. Undoubtedly.

By the Chairman :

Q. You have no knowledge of the emigration to the older provinces?—A. No. We take that to be the work of the provincial authorities. They own the Crown lands, and we regard it as their work to look after their immigrants.

Q. You make no effort to keep a record of the classes coming in?—A. We make no effort. As I have already explained, my individual conclusion was that an effort of that kind must be unsuccessful and the results misleading; they at least are not to be depended on. Therefore the attempt to get this information was abandoned. It could be done, but to do it properly would cost a large sum of money—a sum out of all proportion to the advantage to be derived from it. As you may remember, I took the ground that the Canadian census was taken at sufficiently frequent intervals to be as satisfactory as we could well wish upon this head.

By Mr. Roome :

Q. Has the United States any emigration agents in the old country?—A. The United States railways have emigration agents on the other side of the Atlantic.

Q. And still working?—A. Working hard.

By the Chairman :

Q. Are our railway companies doing anything in that line?—A. The Canadian Pacific Railway Company is.

By Mr. Carpenter :

Q. Is the Grand Trunk Railway doing anything?—A. Not that I know of. I would not like to say that they are doing nothing, but they are not doing anything that I know of, except indirectly through their passenger agencies. But they send the department no information as to their work, if any, or its results.

By the Chairman :

Q. Have you any knowledge of the success or otherwise that has attended the efforts of the railway companies?—A. I think it would be impossible to apportion what has been done respectively by the agents of the Government and the railway agents.

Q. Would not the emigrants sent out by the railway companies purchase railway lands?—A. Not necessarily. Many that the railway people send out may take up Dominion lands, while a good many we bring out purchase railway lands. They increase the 160-acre holding by this method. Those coming from the United States, for instance, have been selling their land in the States at \$15 and \$20 per acre, and in some instances I believe even higher prices, and have been buying Canadian Pacific Railway lands near their homesteads at \$3, and in this way they have been securing farms for their younger children, as well as extending their own holdings.

By Mr. Carpenter :

Q. I think it is fair to assume that the Canadian Pacific Railway would bring out the best class of land holders, as they have to do business with them in the future?—A. They would be interested in bringing good settlers.

By the Chairman :

Q. Have you had many applications during the year for domestic servants and labourers from the older provinces?—A. We have had a great many applications from farmers in the Ottawa Valley, and a considerable demand for foreign labour, no doubt largely arising out of the construction of the Parry Sound Railway. An abnormal local demand for labour has been created on that account, and the farmers have had less choice of material.

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Q. How far have you been successful in supplying that demand?—A. We have supplied it pretty fully, so far as my recollection serves me at this moment, but I think there was a greater demand for farm hands than we were able to meet.

Q. And as to female servants, has there been any demand for them?—A. There was a great demand for female servants.

Q. Have you been able to supply that?—A. Not nearly all.

Q. Have you mapped out any change in the system during the coming year from that of the last year?—A. The chief change, Mr. Chairman, has been in the direction of "drawing in our horns." Our vote is \$70,000 less than it was last year.

Q. How much was spent in immigration last year?—A. Our appropriation was exactly \$200,000.

Q. You intend to reduce it to \$130,000.?—A. We intend to reduce it to \$130,000 this year.

Q. In what direction are you making reductions?—A. In every direction.

Q. I understand the salaries are the same for the agents?—A. Yes.

Q. And the allowance the same?—A. The allowances are the same.

Q. You are making no reduction in that direction?—A. We are making reductions in the contingencies of the permanent agencies, places like Liverpool, Glasgow and Bristol, and in the High Commissioner's own office.

By Mr. Carpenter :

Q. You have a local agent, have you not, at Toronto?—A. No.

Q. In making applications for farm help, where do you apply?—A. The local government are presumed to look after that. We refer a good many applications to the local government.

Q. There was one at Hamilton?—A. Yes, there was at one time, but not now.

By Mr. Bain :

Q. You have no agent in the province of Ontario at all?—A. We have an agent at Port Arthur, but that agency is incidental to the work along the railway. Each party of immigrants is visited at different points along the line of the railway, and an agent of the government at several points sees that the immigrants are comfortable and well and properly cared for.

By Mr. Roome :

Q. How do you look after the immigrants that come from the old country?—A. We have excellent facilities for looking after them at Quebec. I wish the committee would come to the conclusion some time to go down there and look at our arrangements. The Department of the Interior takes no credit to itself for this ; the arrangements were in existence when the business was handed over to us ; therefore I speak on the subject without bias.

By Mr. Innes :

Q. There were complaints of want of accommodation at Montreal?—A. The reason was that the steamship companies were carrying immigrant passengers to Montreal, where there was not intended to be accommodation for their landing, but there was no reason why they should go there at all. Quebec was the point where proper accommodation had been provided. Their being brought to Montreal was merely the result of rivalry between the steamship companies.

Q. There is no accommodation at Montreal, because I have seen them loitering about the railway stations?—A. There is no necessity for their landing at Montreal at all.

By Mr. Roome :

Q. Why should Quebec be better than Montreal for the immigrants to disembark?—A. Because Quebec is the first port of call, and it is desirable that steerage passengers

should be landed as soon as possible. Besides, we have the accommodation at Quebec, and there would be no justification for maintaining two large and expensive establishments when one will meet the requirements of the business. It saves time, too, to land at Quebec.

Q. Twenty-four hours?—A. Twelve hours at least, according to my recollection. But the point of time is not of great importance.

Q. But it is cheaper, is it not?—A. No; it means the same thing in the end.

By the Chairman :

Q. You have no quarantine arrangements at Montreal?—A. No.

Q. But you have at Quebec?—A. All our arrangements for quarantine and disinfection are perfect at Quebec—far superior, in my estimation, to the quarantine and the disinfection station at the port of New York. I have had the opportunity of examining both.

By Mr. Featherston :

Q. The immigrants seem to know that, because they come to Quebec and then go to the United States?—A. They are not doing that so extensively now as they did last year and the year before.

Q. Immigrants have told me that they get better accommodation at Quebec and get in more easily than in the United States and they come to Quebec and then pass over to the United States?—A. There is a little of that done.

Q. There is a great deal of it done by English immigrants?—A. I have just read to the committee a statement of how that business is this year. It is very small.

By Mr. Innes :

Q. There was likely at one time to be friction between the representative of the United States government at Quebec and our government with reference to the inspection of the immigrants by the United States officers. Is that carried on now?—A. This government has nothing to do with it. It is a matter in which the government refuses to take any part. The steamship companies and the railway companies furnish facilities for doing this work. We do not.

Q. The government simply allows this officer to make this inspection?—A. He does not make this inspection on government property.

By the Chairman :

Q. What means have you to prevent the introduction of disease? I thought the government had arrangements for inspection and quarantine?—A. Oh, decidedly. I have no doubt what Mr. Innes referred to was the compliance of immigrant passengers bound for United States points with the regulations so far as concerned the United States Alien Labour Contract Act.

By Mr. Roome :

Q. If they did not comply with the Alien Labour Act they would be refused at Detroit?—A. They make the examination at Quebec. Then, having passed a satisfactory examination, they give them immigrants' certificates and they pass right through.

By Mr. Carpenter :

Q. They are not delayed; there is no cause for that?—A. There is no cause for delay. We would not permit them to delay the immigrants.

By Mr. Roome :

Q. I notice that some 2,000 had been refused admission in New York under the Alien Labour law recently?—A. That may be.

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By the Chairman :

Q. Has the quarantine station been found sufficient to handle all the baggage of the immigrants coming in last year ; I understand that there were some reports as to its inadequacy ?—A. I do not think there were any complaints last year.

By Mr. Innes :

Q. During the cholera scare, the disinfectant apparatus was enlarged ?—A. It was.

Q. And now works satisfactorily ?—A. Quite satisfactorily.

By Mr. Carpenter :

Q. I understand that all the latest improvements were put in ?—A. Yes. The committee will, however, understand that the question of quarantines is within the jurisdiction of the Agricultural Department—not the Interior Department.

By the Chairman :

Q. And your department has nothing to do with it ?—A. Except that it has a direct bearing on our business. We have occasion to see how it works, and it is to our interest to have it efficient.

Q. Are you getting out any new pamphlets or documents for distribution ?—A. Not on a very large scale. The reduction of our appropriation will have a distinct effect upon that branch of our work. It is one of the items in regard to which we can economize. We hope to be able to conduct our work so that its efficiency will not seriously be interfered with. Naturally, we shall have to reduce the volume of literature and the number of publications to some extent.

By Mr. Carpenter :

Q. You think the reduction of \$70,000 in your appropriation will not seriously interfere with immigration work ?—A. I am hopeful that it won't. We shall certainly do our best to prevent it.

By Mr. Innes :

Q. You could cut off the contingencies in the High Commissioner's office ?—A. You might cut off the contingencies so as to seriously interfere with the efficiency of the office. Take the item of travelling, for instance. You might cut that down so as to prevent a man from carrying on his work. The chief saving we expect will be in the work in the United States. That is where we shall make the chief cut.

By Mr. Roome :

Q. Don't you think the money which has been spent there has been bringing more immigrants into the territories than from Europe ?—A. Probably, but the immigration from the United States will not cease. The number will largely increase on the representations of friends already settled in Canada.

Q. Would not that apply equally from Europe ?—A. No ; it does not apply to the same extent.

Q. Don't you think it would be better to push the work energetically for some time longer in the United States, and then quit altogether, instead of having a one-horse affair ?—A. I would not call it a one-horse affair.

Q. But one or two agents cannot do a great deal ?—A. No, but the interest of the people over there has been stirred up in regard to the North-west, large numbers have been induced to look at the country, and what they have seen has awakened their interest. As you will see by reference to the latest report of the Department of the Interior, we had people entering the North-west last year and taking up land, from 33 States of the American Union.

By Mr. Featherston :

Q. These people will then act as immigration agents by corresponding with their friends?—A. We have found that to be the case, from practical experience.

Q. They would be more efficient than regular agents?—A. We have found it so. But the regular agent is a necessity to start the work, and, on a modified scale and at least for some time, to keep it going.

By Mr. Semple :

Q. Have you any information from the old country that working men can make as much there as here?—A. As far as agricultural labourers are concerned, that is the case. The actual amount of money earned there may not be quite as large, but its purchasing power is.

Q. And that is the reason they do not come to Canada?—A. Undoubtedly. We have found in past years that they made good progress on homesteads, but the terms of employment on farms in Canada are different to the old country. There they can get employment all the year round, whereas the farmers in Canada hire them simply for the season.

By Mr. Innes :

Q. So that they are busy in summer and idle in winter?—A. Yes.

By Mr. McMillan :

Q. In my county (Huron) we find great difficulty in getting young men to hire by the year?—A. Does that refer to Canadian young men?

Q. Yes, and to those from the old country as well?—A. The net effect in the old country is this : that a man would be willing to take smaller wages and be employed all the year. At least, that is what they say. Mr. Peter Fleming, our travelling agent in Scotland, writes us that the condition of affairs in Canada as respects the terms and periods of employment, has a depressing effect upon his work.

By Mr. Carpenter :

Q. That is not our experience in my section (Wentworth). There the married men are largely employed by the year. We can get a better class of men in that way?—A. In the North-west, the farmers are not able to hire men in many cases, and when they do get them they simply hire them for such time as they want them. Consequently the agricultural labourer under present conditions won't come out. He prefers to remain in the old country.

Having examined the preceding transcript of my evidence, I find it correct.

A. M. BURGESS.

Agriculture and Colonization.

DR. BARNARDO'S HOMES, 214 FARLEY AVENUE,

TORONTO, 24th April, 1895.

A. M. BURGESS, Esq.,
Deputy Minister of the Interior,
Ottawa, Ont.

SIR,—Conceiving that the subject of juvenile immigration is not unlikely to occupy some little attention from yourself, and possibly the Committee on Immigration, during the present parliamentary session, I venture to submit for your consideration a few remarks upon that subject, as it appears to me from the result of my experience of the past eleven years, during which time I have been the representative in the Dominion, of Dr. Barnardo and his institutions.

I write under the assumption that in the view of the Government immigration to the Dominion from Great Britain and the older countries is to be promoted and encouraged as a matter of general policy, and that therefore in dealing with the subject of child immigration the object of the Government would simply be—first—to satisfy themselves that the class of persons added by means of this movement to the population of the Dominion is a desirable class—second—having so satisfied themselves to be in a position to meet and answer the objections or prejudices of persons opposed to the movement, and thirdly, to determine what measures, if any, it is incumbent upon them to take to guard against abuses connected with child immigration, and to promote and direct its developments to such an extent as shall be beneficial and acceptable to the country.

Before going further it is necessary to say that I speak only of Dr. Barnardo's work, and have no intimate knowledge of any other, but inasmuch as Dr. Barnardo has for several years past brought out to the Dominion almost as large a number of children as all the other individuals and institutions put together, I presume that a satisfactory defence of Dr. Barnardo's work would constitute at any rate a very strong plea for the whole movement as far as it is conducted on similar lines and governed by the same principles.

As to the class of children brought out, there is a not uncommon impression, among those who have taken no pains to inform themselves upon the subject, that they are sent from England untaught and untrained, that they are often morally corrupt and physically unsound, and the work of the persons engaged in child immigration, who are generally described as "professional philanthropists," is supposed to consist in huddling together a lot of these unfortunates in some receiving depôt in London or Liverpool, covering them with a few decent clothes, and forthwith transporting them to the Dominion to fill the gaols, penitentiaries, lunatic asylums, etc., and make themselves a burden and pest to the community. Against this let it be said that "Dr. Barnardo's Homes" and his work of child rescue and training had been many years in operation before he turned his attention to emigration in any shape or form. It was only when the necessity presented itself for finding an outlet for boys and youths who had been trained and educated in the homes and were thus equipped to go forth into life, that he began to seek some wider field than was afforded in England with its overcrowded labour market in which each trained boy entered only to be another competitor in the industrial struggle, whose presence might too often be the means of driving some other to want and privation. Not a boy or girl is, or ever has been, sent to the Dominion until he or she has passed through a period of careful, practical training and education in the English home, and have during that period satisfied those who have charge of them that they are physically healthy, mentally sound and that in character and in morals they are at least honest, decent and inclined to be industrious. In the various homes where boys of different ages are under training no less than seventeen trades and handicrafts are in operation besides the various schools which are attended by all boys under "school age." It is not supposed that the boys when immigrated will follow the trades at which they have been employed in the

homes, but the object is attained in their having acquired habits of industry and application, and having been brought under firm but kindly discipline. The institution for girls is a village home where, in the fifty-two villas seven hundred young maidens are being brought up and trained on the family system, each cottage containing from twelve to eighteen girls under the care of a matron known to them as "mother," and from whom they learn the rudiments of house work and household usefulness supplementing the excellent education they receive at the schools of the Village Homes. The various institutions accommodate in all over four thousand children, and when each year from seven hundred to eight hundred are selected from this number to be sent to Canada, it is a gross misrepresentation to describe them as mere "street arabs" gathered in from the slums and gutters. Of course inasmuch as human judgment is fallible, grave mistakes have occurred and we have had to lament over a small percentage, happily a very small one, whose immigration has been unquestionably a mistake, but the mistake has been in judgment not in intention, and it has been the honest aim and effort of Dr. Barnardo and those associated with him to send out those, and those only, whom we have good and reasonable grounds to expect will turn out to be useful and respectable citizens of the Dominion. Nor are any large number of the children originally what may be styled "gutter children." All have been poor and indeed must have been in a position of actual or impending destitution to be eligible for admission to the "homes," but in the vast number of cases the homes have stepped in between them and the street, and have rescued them on the threshold of what would otherwise have become lives of adventure on the street. How this is so, is easily imagined by those who are at all familiar with the conditions of life among the British working classes. The widow and family or the orphaned children of an English labourer or mechanic, too often find themselves plunged by his death into a condition of hopeless poverty and want, without any blame or disparagement attaching either to themselves or to him. The process by which the home is broken up, and by which gradually, often after a brave but hopeless struggle, the family succumb to the cruel pressure of want is a very oft told tale to those engaged or interested in philanthropic work. The casual ward, the common lodging house, the street must be the ultimate fate of those so situated, but for such institutions as Dr. Barnardo's, but thanks to these great movements, children under such circumstances are sought after and rescued, and are thus prevented from joining the ranks of the vagrant and vicious classes. Surely even those who are most prejudiced against child immigration would find it hard to justify the contention that the door should be closed in the face of those whose only fault is that they are poor and have been in want, and on this ground to refuse to allow them the chance of raising their position, and earning an honest and respectable livelihood.

Furthermore, statistics abundantly establish our claim that amongst the large numbers that Dr. Barnardo has placed in the Dominion, we have experienced a remarkable immunity from disease or serious failures of health, and further that an exceedingly small percentage have been committed for crime or have lapsed into criminal or vicious courses. The full details as to the latter have been already furnished to the Department, and it will suffice to say that less than one per cent have been convicted of crime, while the death rate and health statistics will compare favourably with those of any class of people in the Dominion. It would suggest itself that if it had not been so, and if any large number of the children sent out by philanthropic individuals or societies failed to become good citizens, it would have become apparent to those among whom for the past twenty-five years those young people have found their homes, in whose families they have grown up and intermarried, and who have had the fullest possible experience of them, good, bad and indifferent, and that as a result there would have ceased to be a desire on the part of the farmers to employ or give homes to such a class. We find on the contrary, that there is a demand five or six times in excess of the supply, that for a party arriving at the end of March applications to the full number have been received early in February, and that to secure the services of a "Home" boy or girl, farmers are willing to take an amount of trouble that would be inconceivable if it were not that they have excellent reason to anticipate from their experience in the past that the young person will be such as to be a help and benefit to them. We sometimes hear

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that this is simply greed for cheap labour and a desire to obtain help at less than its fair market value. Certainly no one will accuse the Canadian farmer of not looking after his interests in such a matter as the hiring of labour, or of being a bad hand at a bargain, and if the boys were sent out unfriended and unprotected to make their own arrangements there would often be cases in which they would be taken advantage of. They are not thus left however. No boy is ever placed with a farmer without an agreement being entered into and signed. This agreement is simple in form and shorn as far as possible of legal verbiage and intricacies, but it provides for the boy being engaged for a certain definite length of time, for his being boarded, clothed, lodged, cared for and looked after, and his attendance at Church and Sunday School and at day school, if his age requires, shall be promoted by his employer and that he shall be paid wages at a stated rate per month, or per year, or in a lump sum, at the end of a term of years, as we consider his age, strength and capabilities justly and fairly entitle him to receive in accordance with the current rate of wages in the country. We are careful not to demand from a farmer an amount of wages for a boy that would necessitate his working beyond his size and strength in order to fairly earn, but, as far as in us lies, we strive, and I venture to think strive successfully, to secure that our boys are reasonably and fairly paid for their services. Needless to say our views of what a boy should receive do not always accord with those of his employer, and many weary hours are spent every month in negotiation, personally or by letter, but as the result I have abundant justification in assuring you that the young people under our charge are not underpaid or taken advantage of, and if "cheap," that is underpaid labour, were the sole or principal object of the farmers of the Dominion in taking our boys and girls, they would long since have discovered that they were failing in its accomplishment.

The subject of wages, and what I have said upon it, leads to the general question of the supervision of the children after being placed out, than which nothing is more imperatively essential, or more surely affects the success of any scheme of child immigration. With all deference, I venture to submit that the department is called upon by the dictates both of policy and humanity to allow no individual or institution to bring to this country and place out young children without requiring that the persons who bring them out shall be made responsible for visiting and looking after them, and that with a view to this they shall establish and maintain a "home" or institution to which it shall be possible for children to return and be taken in, if from any circumstances they should fail to remain in their situations. Dr. Barnardo has three such institutions at the present time, one for girls at Peterboro', one for boys in Toronto, and the third an Industrial Farm for older lads and young men near Russell in the Province of Manitoba. If any boy or girl should fail physically or morally, it is known to both the child and its guardian that there is a place where such child may return as to its home, so that there is no pretext or necessity for its wandering about or becoming chargeable to the charitable institutions of the country, any more than a child who has parents living in the country. To do further justice to the interests of the children placed out, a large and continuous correspondence is necessary. They and their employers must be encouraged to write freely and regularly, and such letters will always supply matter for anxious and careful consideration on the part of anyone honestly doing their duty in the capacity of guardian to these young people. And last and perhaps even most important, I would venture to urge that regular and systematic visitation is an absolutely necessary feature of any properly conducted work of child immigration. Without it there can never be really satisfactory assurance that a child is being kindly and properly treated, and moreover numberless opportunities are missed of influencing a boy or girl in the right direction, of restraining them from wrong and foolish courses and of promoting pleasant and harmonious relations between them and their employers. With the knowledge that in the event of trouble of any kind there is a home open for his reception, finding himself in occasional receipt of letters conveying, it is hoped, kindly and judicious advice, and receiving a visit annually or semi-annually from someone who invites his confidence and comes to look after his interests, no child can feel neglected, and no case of illusage or hardship can pass unnoticed or unredressed; and I would repeat that a system of child immigration thus administered, safeguards the country to the fullest extent

from being in any shape or way burdened with the care or charge of the young immigrants. In our own experience, I am happy to say, cases of ill-treatment or cruelty on the part of employers are extremely rare. That it might be otherwise if the children were not carefully looked after, I will not deny, but as it is I can only bear grateful testimony to the general consideration and kindness which our young people receive at the hands of the farmers of the Dominion. The class of farmers who chiefly employ them may be divided into three: first,—young beginners, who, not being in a position to find employment for a man, can profitably use the services of a boy to assist them; secondly,—elderly people whose own families have been started out in life, and, thirdly,—large farmers employing adult labour but requiring the services of a boy to run errands and do light chores about the house and buildings. It would be hard to conceive what the country would gain by depriving either one of these three classes of the supply of boy help which at present they so much appreciate. In the case of the first class, the boys often remain for years, growing up and developing with the development and improvement of the new farm and treated and looked upon by the “boss” more as a brother than an employee. With old people the children often find those who are almost more than parents, and against the suggestions we sometimes hear as to the boys being overworked and imposed upon, we can point to numberless instances of children who have been adopted and provided for with a generosity and liberality that nothing but genuine affection could inspire. Not a few boys, now grown to manhood, are well established on farms of their own upon which they were originally “set up” by the farmers with whom they were placed on their first arrival in the country. Of course such cases do not figure in the usual newspaper references to the work, which generally take as their text some isolated case of crime or misdemeanour committed by a juvenile immigrant, perhaps under great provocation, and very likely in participation with native delinquents, to whom, of course, no such ungenerous censure is to be meted out. In this connection I would point out what seems to me an especially satisfactory feature in the results of child immigration, and that is the very large percentage of them, as compared with other immigrants, who remain permanently upon the land and directly assist in the agricultural development of the Dominion. I feel sure that I am well within the mark in saying that of those under our care fully eight-five per cent. are permanently and definitely established on the land, making, “two potatoes grow where one grew before,” and in doing so adding, as I think we may fairly claim, to the wealth and resources of the country. In the province of Ontario our boys largely supply the place of farmers’ sons and farm hands who have migrated westward, and as far as can be judged from present indications, this westward movement will supply homes and openings for them for many years to come. In filling these openings we contend that they neither displace or unfairly compete with any other class of labour, and that their loss would be severely felt and would prejudicially affect the interests of the farming community.

As to the attitude of the government towards child immigration, I feel great diffidence in approaching the subject, inasmuch as it would seem unfitting to suggest anything in view of the very generous support and consideration we have received for so many years past, and further when there is so much to be said in favour of everyone minding his own business, and letting other people, including the government, mind their’s, but I cannot refrain from giving expression to a desire that I have for a long time past had in my mind, which is that the department would make the assistance it gives us in the shape of a capitation grant, a means more directly of encouraging not only the immigration of children but the careful selection of the subjects for immigration, and the subsequent supervision and caring for them when they have been placed in the Dominion. Supposing for example instead of giving two dollars (\$2.00) per head, as commission upon the children landed in the country, the department would give a grant on a rather more liberal scale per capita, payable at the end of five years upon as many children as the parties who immigrated them could show were still in the country and employed upon farms, and who had been visited and properly looked after during the five years. By this means the department would at once have the means of discouraging unsatisfactory immigration work

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and would be showing its recognition of the efforts of those who have done good service for the Dominion and faithfully fulfilled their responsibilities. Of course there may be considerations that make anything of this kind impracticable, but I hope I may be pardoned in making the suggestion inasmuch as I am sure the department will sympathize with the object of securing proper and adequate supervision of the young people brought to this country, and discouraging the importation of undesirable classes.

May I express, in conclusion, my conviction that this question needs only a fair hearing in the Dominion to remove the prejudice that at present exists, and in certain quarters is industrially fostered against it. It is inconceivable that if it can be shown, as I feel sure it can, that by means of the enterprises of Dr. Barnardo and others, thousands of young people whose only fault is that they have been in need and want can be benefitted and established in life, that a legitimate demand for labour among the agricultural community can be supplied, and that a useful and deserving class can be added to the population of the Dominion—that any measures should be taken to discourage it, and that the argument that “England should take care of its own poor,” should be applied to these boys and girls to their exclusion from this country, while there are openings for them here, where without injury or detriment to any class of the community they may enter upon useful and honourable careers. And it is impossible to believe that the government would seek by legislation or otherwise to frustrate the efforts of those who are seeking to aid them and would prefer to cast them back into lives of pauperism and dependence.

Humbly apologizing for having obtruded my views upon you at such length,

I have the honour to be, sir,

Your obedient servant,

ALFRED B. OWEN,

Agent, “Dr. Barnardo’s Homes.”

Supplement to Mr. Burgess's evidence on Immigration.

STATEMENT of Immigration Literature utilized by the Department of Interior since the transfer of the immigration business to this Department, in 1892.

Language.	No. of Copies.	Cost.	Where distributed.
		\$ cts.	
<i>English—</i>			Principally in Great Britain and the United States.
Illustrated and other periodicals . . .	188,450	9,540 05	
Pamphlets and delegates' reports. . .	1,109,000	29,306 18	
Leaflets	106,000	125 19	
Posters	40,000	2,295 40	
Extracts	299,560	2,164 60	
Hand bills	100,000	243 43	
Circulars and slips	321,000	168 21	
Folders	108,000	1,619 16	
Totals	2,272,010	45,462 22	
<i>French—</i>			In France, Belgium and the United States.
Pamphlets	86,500	1,713 49	
Newspapers, &c.	344,500	7,640 43	
Totals	431,000	9,353 92	
<i>Icelandic—</i>			In Iceland, principally.
Newspapers	135,000	2,635 00	
Pamphlets	5,000	197 78	
Leaflets	2,000	24 35	
Circulars	3,000	27 00	
Totals	145,000	2,884 13	
<i>Scandinavian—</i>			Norway, Sweden, Denmark and in the Scandinavian settlements in the United States.
Pamphlets	290,069	7,350 04	
Circulars	25,000	87 23	
Leaflets	100,000	81 49	
Newspapers, &c.	91,650	1,903 80	
Folders	10,000	35 58	
Totals	516,719	9,458 14	
<i>German and Dutch—</i>			Germany, Holland and United States.
Pamphlets and folders	430,042	13,274 02	
Newspapers	22,000	695 50	
Totals	452,042	15,635 52	
<i>Finnish—</i>			Europe and United States.
Folders	60,000	669 17	
<i>Bohemian—</i>			Europe and United States.
Pamphlets	20,000	158 17	
Folders	50,000	547 50	
Totals	70,000	705 67	
Maps for pamphlets	635,805	2,463 82	
Grand totals	4,582,576	86,632 59	

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RECOMMENDATIONS BY THE COMMITTEE.

The following resolutions were adopted by the Committee as recommendations for the promotion of the agricultural interests referred to in each :—

No. 1.—DISTRIBUTION OF AGRICULTURAL REPORTS.

Moved by Mr. Roome, seconded by Mr. Wilson,—“That the Chairman appoint a sub-committee of five members to consider and report to this Committee upon some feasible plan for a better distribution than at present, of the official reports upon agriculture.”—Carried.

No. 2.—BRANDING OF CHEESE.

Moved by Mr. Taylor, seconded by Mr. McNeill,—“That the Chairman be and is hereby instructed to issue a circular and address one to each cheese factory in Canada, of which he can ascertain the address,—asking for a reply by the 25th instant,—requesting the different producers in the country to give their views on the advisability of passing a law compelling the producers to brand the date of production on each cheese and box.”—Carried.

No. 3.—A DELEGATION APPOINTED.

Moved by Mr. Taylor, seconded by Mr. McNeill,—“That Messrs. The Chairman, Frechette, McLennan, McMillan and the mover compose a delegation of this Committee to attend the Dairy Convention to meet at Brockville on Thursday, 9th May instant.”—Carried.

Committee Room 46, 7th May, 1895.

No. 4.—DAIRY COMMISSIONER'S EVIDENCE.

Moved by Mr. Taylor, seconded by Mr. McNeill,—“That the Committee ask the House to authorize the printing of a sufficient number of copies of the evidence of Mr. Robertson, Dairy Commissioner, before the Committee to-day, to place 1,000 copies at the disposal of each of the Honourable The Members of the Senate and of each Member of the House of Commons, for distribution.”—Carried.

Committee Room 46, 14th May, 1895.

No. 5.—AID TO EXPORT OF FRUITS.

Moved by Mr. Carpenter, seconded by Mr. Roome,—“That in consideration of the rapidly growing importance of the fruit industry, to the people of a large section of the Dominion, and the importance and difficulty of establishing a good reputation in the English market : The Committee are of opinion that the Government would be justified in adopting some method of assisting our fruit growers in placing their fruits on the English market, believing, as we do, that if some shipments of fruit were made by the Government, it would give Canadian fruits a standing abroad that they cannot secure when exported by individual shippers.”—Carried.

Committee Room 46, 6th June, 1895.

No. 6.—COLD STORAGE FOR FRUITS.

Moved by Mr. Carpenter, seconded by Mr. McGregor,—“That the opinion submitted to-day, by Mr. Craig to this Committee, on the practicability of exporting in good condition, Canadian grown fruits of the more perishable kinds, by the aid of a system of cold storage as outlined by him in his said statement, be incorporated into the Committee’s final report, as a part thereof.”—Carried.

Committee Room 46, 12th June, 1895.

No. 7.—THE CENTRAL EXPERIMENTAL FARM STAFF.

Moved by Mr. Roome, seconded by Mr. Carpenter,—“That each member of the official Staff of the Central Experimental Farm be granted 500 copies of his own evidence before this Committee and that the Superintendent, Mr. Saunders, be granted in addition thereto, 500 copies of the Committee’s full report.”—Carried.

Committee Room, 12th July, 1895.

No. 8.—EXTRA ISSUE OF COMMITTEE’S REPORT.

Moved by Mr. Roome, seconded by Mr. Carpenter,—“That whereas the report of the Select Standing Committee on Agriculture and Colonization is often inquired for and in much demand: We, therefore, recommend that at least 50 copies of said report be supplied to each Member of the House representing a rural constituency, in addition to the number usually supplied.”—Carried.

No. 9.—PUBLIC ACCOMMODATION

Moved by Mr. Roome, seconded by Mr. Carpenter,—“That in the opinion of this Committee, there should be a suitable building erected at the Central Experimental Farm, in which excursionists and parties visiting the Farm might be accommodated as a place of shelter and lunch-taking, with a good supply of water by fountain or otherwise, and other necessary conveniences for their comfort.”—Carried.

No. 10.—COMPLIMENTARY VOTE TO THE CHAIRMAN.

Moved by Mr. Semple, seconded by Mr. Pridham,—“That the cordial thanks of this Committee is hereby tendered to Mr. Sproule for the energy with which he has conducted the variety of business that has come before this important Committee and in bringing all the matters of investigation to a satisfactory conclusion; as well as for his uniform courtesy while occupying the chair.”—Adopted.

Committee Room 46, 15th July, 1895.

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INTERIM REPORTS.

WEDNESDAY, 1st May, 1895

Mr. Sproule, from the Select Standing Committee on Agriculture and Colonization, presented the first report of the said Committee, which is as follows :—

The Committee recommend that the House authorize them to employ a short-hand writer to take down such evidence as the Committee may deem necessary.

Votes and Proceedings, No. 10, p. 74.

TUESDAY, 14th May, 1895.

Mr. Sproule, from the Select Standing Committee on Agriculture and Colonization, presented the second report of the said Committee, which is as follows :—

The Committee recommend that the House authorize a special issue of two hundred and ninety-five thousand (295,000) copies of the evidence of Mr. J. W. Robertson, Dominion Dairy Commissioner and Agriculturist, before this Committee on the date hereof, to be printed in the usual proportions of English and French, for equal allotment to the Honourable the Members of the Senate, and the Members of the House of Commons, for distribution to farmers.

Votes and Proceedings No. 19, p. 124.

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