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APPENDIX

TO THE

THIRTY SECOND VOLUME

OF THE

JOURNALS OF THE HOUSE OF COMMONS

DOMINION OF CANADA

SESSION 1897



OTTAWA

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

1897

## APPENDIX

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### LIST OF APPENDICES—1897.

- No. 1.—REPORT of the Select Committee appointed to consider Bill No. 2, an Act further to secure the safety of Railway Employees and Passengers, and Bill No. 3, an Act to promote the safety of Railway Employees. *Printed herein.*
- No. 2.—REPORT of the Select Standing Committee on Agriculture and Colonization. *Printed herein.*

REPORT

OF THE

SELECT COMMITTEE ON BILLS NOS. 2 AND 3

IN REFERENCE TO

SAFETY ON RAILWAYS

SESSION 1897

*PRINTED BY ORDER OF PARLIAMENT*



OTTAWA

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

1897

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# Safety on Railways.

*Copy of Bill No. 2, as introduced by Mr. Casey.*

No. 2.]

## BILL.

[1897.

### An Act further to secure the safety of railway employees and passengers.

HER Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

**1.** All cars fitted with air-brakes shall, within one year from the passing of this Act, be provided with an automatic device in the hose-coupling of such air-brakes, or in the train pipes, so arranged that, after the cars are coupled, the connection between such brakes and the air pump on the locomotive cannot be broken, or the coupling deranged, accidentally or otherwise, without the knowledge of the engineer. Cars fitted with air-brakes to be provided with certain device

**2.** All box freight cars built for use on Canadian railways, shall, after the passing of this Act, be of a uniform standard height, and of a capacity not to exceed sixty thousand pounds, to be approved by the Minister of Railways and Canals, and shall be provided with the following attachments for the security of railway employees:— Attachments for box freight cars.

(a) Outside ladders, on opposite sides of the ends of each car, projecting below the frame of the car and with one step or rung of the ladder below such frame, such ladders to be placed close to the end of the side to which they are attached;

(b) Arched iron rails, extending from the top of each ladder to a sufficient and firm support, placed at the side of the running board, and so arranged as to assist persons climbing on to the roof by means of such ladders.

**2.** All such attachments shall be subject to the approval of the Minister of Railways and Canals. Approval Minister.

**3.** Every such car already built, which is the property of Canadian railways for use in Canada, shall, within two years after the passing of this Act, be fitted with the foregoing attachments. As to ready built.

**4.** The penalty for building such cars not fitted in accordance with the provisions of this Act after the date herein mentioned, shall be twenty-five dollars for each car. Penalty.

**5.** The penalty for using any such car not fitted or handled in accordance with the provisions of this Act after the date herein provided, shall be five dollars a day for every day or trip lasting less than a day, during which it is so used. Penalty.

**6.** The Minister of Railways and Canals shall proceed against any railway company or car builder handling, using or building such cars contrary to the provisions of this Act, on the information of any credible person. Minister to prosecute.

**7.** Every employee of a railway company injured while in the discharge of his duty, shall, for every day during which he is thereby unfitted for duty, be entitled to compensation from the railway company at the rate of not less than sixty per cent of the current rate of wages for men similarly employed by the company, at the time the injury occurs, to be paid for not more than fifty-two weeks. Compensation if employee is injured.

**2.** Every such employee permanently disabled while in the discharge of his duty, shall be entitled to compensation from the railway company to the amount of not less than three thousand dollars. If permanently disabled.

- If killed. 3. The legal representatives of every employee who is killed, or who dies from injuries received, while in the discharge of his duty, within six months after such injury, shall be entitled to compensation from the railway to the amount of not less than three thousand dollars.
- Other recourse not affected. 4. The foregoing provisions as to the compensation shall be without prejudice to any further damages which a court of law may adjudge to any such employee or his legal representatives as against any railway company, and shall not be capable of being renounced or given up by such employee by any agreement or contract with the railway company, for value or otherwise, or of being made void by any rules or regulations of the railway.
- Right to damages cannot be renounced. 5. The certificate of two duly qualified disinterested physicians shall be sufficient to prove permanent disability; and the certificate of the attending physician shall be sufficient to prove unfitness for duty, for a period not exceeding ten weeks, after which time a monthly certificate of a physician named by the company shall be sufficient.
- Medical certificates. 6. The foregoing provisions as to compensation shall be void in the case of any employee whose injury, disablement or death is caused by his own negligence,—the burden of proof of such negligence being upon the railway company; but if such injury, disablement or death occurs in the handling or use of trains, locomotives, cars or appliances which are out of repair, or inefficient, or not in accordance with the provisions of this Act, or if the provisions of section eight of this Act have not been complied with, the railway company shall not be allowed to plead contributory negligence on the part of the employee so injured, disabled or killed.
- Contributory negligence. 8. Every railway company shall at all times employ a sufficient number of telegraph operators, trainmen, section men, and other employees and workmen to safely carry on its business, and to keep its bridges, track, roadway, rolling stock and plant in good condition.
- Number of employees to be sufficient to ensure safety. 2. If it fails to do so, it shall be held responsible for all injury to life, person, or property in connection with its operations.
- Penalty.

# Safety on Railways.

*Copy of Bill No. 2, as amended in Committee of the Whole House.*

No. 2.]

**BILL.**

[1897.

## An Act further to secure the safety of railway employees and passengers.

**H**ER Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

**1.** All cars fitted with air-brakes shall, within two years after it is made to appear to the Railway Committee of the Privy Council that a satisfactory device of this kind is in existence, be provided with an automatic device in the hose-coupling of such air-brakes, or in the train pipes, so arranged that, after the cars are coupled, the connection between such brakes and the air pump on the locomotive cannot be broken, or the coupling deranged, accidentally or otherwise, without the knowledge of the engineer. Cars fitted with air-brakes to be provided with certain device.

**2.** All box freight cars built for use on Canadian railways shall, after the passing of this Act, be of a uniform standard height of drawbar from the top of the rail, and shall be provided, for the security of railway employees, with outside and end ladders, on opposite corners of each car, projecting below the frame of the car, and with one step or rung of the ladder below such frame. As to box freight cars.

**2.** Such standard height and such ladders shall be subject to the approval of the Minister of Railways and Canals. Approval of Minister.

**3.** Every such car already built, which is the property of Canadian railways for use in Canada, shall, within two years after the passing of this Act, be fitted with the foregoing attachments, except as provided in section one. As to cars already built.

**4.** The penalty for building such cars not fitted in accordance with the provisions of this Act, after the date herein mentioned, shall be twenty five dollars for each car. Penalty.

**5.** The penalty for using any car not fitted in accordance with the provisions of this Act after the date herein provided, shall be five dollars a day for every day or trip lasting less than a day, during which it is so used. Penalty.

**6.** The Minister of Railways and Canals shall proceed against any railway company or car builder handling, using or building such cars contrary to the provisions of this Act, on the information of any credible person; provided, however, that any other person may institute any proceeding for the recovery of any penalties provided by this Act. Prosecution.

**7.** Every employee of a railway company injured while in the discharge of his duty shall, for every day during which he is thereby unfitted for duty, be entitled to compensation from the railway company at the rate of not less than 60 per cent of the current rate of wages for men similarly employed by the company, at the time the injury occurs, to be paid for not more than fifty-two weeks. Compensation if employee is injured.

**2.** Every such employee permanently disabled while in the discharge of his duty shall be entitled to compensation from the railway company to the amount of not less than four years' wages at the rate thereof at the time of he accident. If permanently disabled.

If killed.

3. The family or dependents of every employee who is killed, or who dies from injuries received, while in the discharge of his duty, within six months after such injury, shall be entitled to compensation from the railway company to the amount of four years' wages at the rate thereof at the time of the accident, but not exceeding in all three thousand dollars.

Acceptance of compensation bars further recourse. Right to damages cannot be renounced.

4. If any employee, or the representatives of any employee, accept the compensation provided by this Act, he or they shall have no further claim at law against the company.

5. The rights under the foregoing provisions shall not be capable of being renounced or given up by such employee by any agreement or contract with the railway company, for value or otherwise, and the said provisions shall not be made void by any rules or regulations of the railway.

Medical certificates.

6. The certificate of two duly qualified disinterested physicians shall be sufficient to prove permanent disability ; and the certificate of the attending physician shall be sufficient to prove unfitness for duty, for a period not exceeding ten weeks, after which time a monthly certificate of a physician named by the company shall be sufficient.

Contributory negligence.

7. The foregoing provisions as to compensation shall be void in the case of any employee whose injury, disablement or death is caused by his own negligence,—the burden of proof of such negligence being upon the railway company ; but if such injury, disablement or death occurs by reason of the handling or use of trains, locomotives, cars or appliances which are out of repair, or insufficient, or not in accordance with the provisions of this Act, the railway company shall not be allowed to plead contributory negligence on the part of the employee so injured, disabled or killed.

Negligence of another employee.

8. In any suit for damages by an employee against a railway company, the act, default or negligence of any fellow employee shall not be pleaded or given in evidence on behalf of the company as a defence to such suit.

# Safety on Railways.

*Copy of Bill No. 3, as introduced by Mr. Maclean.*

No. 3.]

## BILL.

[1897.

An Act to promote the safety of Railway Employees.

HER Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows :—

**1.** On and after the first day of January, 1900, it shall be unlawful for any railway company—

(a) To use any locomotive engine that is not equipped with an air brake in proper working order, or to run any train a sufficient number of the cars of which are not so equipped with an air brake that the engine-driver on locomotive can control its speed without requiring the assistance of the hand brakes ; or—

(b) To use on its lines any locomotives or cars not equipped with automatic couplers in proper working order, so that such locomotives and cars can be coupled and uncoupled without it being necessary for men to go in between the ends of cars.

**2.** On and after the passing of this Act, it shall be unlawful for any railway company to employ any person—

(a) As engine-driver, who has not been employed for at least five years as fireman on a locomotive engine ; or—

(b) As conductor, who has not been employed for at least five years as a brakeman.

**3.** Any railway company violating any of the provisions of this Act, shall be liable, on summary conviction, to a fine of not less than \_\_\_\_\_ dollars nor more than \_\_\_\_\_ dollars.

*Copy of Bill No. 3, as amended in Committee of the Whole House.*

No. 3.]

**BILL.**

[1897.

An Act to promote the safety of Railway Employees.

**H**ER Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows :—

Air brakes on trains.

**1.** On and after the first day of January, 1900, it shall be unlawful for any railway company—

(a) To use any locomotive engine that is not equipped with an air brake in proper working order, or to run any train a sufficient number of the cars of which are not so equipped with an air brake that the engine driver on the locomotive can control its speed without requiring the assistance of the hand brakes ; or—

Automatic couplers.

(b) To use on its lines any locomotives or cars not equipped with automatic couplers in proper working order, so that such locomotives and cars can be coupled and uncoupled without it being necessary for men to go in between the ends of cars.

Qualifications of engine drivers and conductors.

**2.** On and after the passing of this Act, it shall be unlawful for any railway company to employ any person—

(a) As engine-driver, who has not been employed for at least three years as fireman on a locomotive engine ; or—

(b) As conductor, who has not been employed for at least three years as a brakeman.

Certificates of service.

**3.** All railway companies shall within two days from demand, furnish employees with a certificate, specifying the time and nature of service by such employees.

Penalty.

**4.** Any railway company violating any of the provisions of this Act, shall be liable, on summary conviction, to a fine of not less than ten dollars for each offence, during each day that such offence continues.

# Safety on Railways.

## THE SECOND REPORT

OF THE

### SELECT COMMITTEE ON BILLS NOS. 2 AND 3.

The Committee in charge of Bills Nos. 2 and 3, entitled: An Act further to secure the safety of Railway Employees and Passengers, and An Act to promote the safety of Railway Employees, beg to report as follows:—

They have heard the evidence of Mr. A. Hudson, Ottawa, Chairman Dominion Legislative Board of Railway Employees; Mr. A. B. Low, Secretary of the same Board; Mr. William Hughes, Ottawa, ex-conductor, C.P.R.; Mr. T. C. Jones, London South; ex-conductor, G.T.R.; Mr. John McKenzie, St. Thomas, Ont., ex-conductor, M.C.R., representing the Railway Employees; and Mr. William Wainwright, Assistant to the General Manager, Grand Trunk Railway; Mr. Thomas Tait, Assistant General Manager, Traffic Department Canadian Pacific Railway; Mr. Fred Harris, Superintendent New Brunswick and P. E. Island Railway; and Mr. J. B. Morford, Division Superintendent of the Michigan Central Railway Company, operating the Canada Southern Railway; and Messrs. G. M. Clark, Solicitor C.P.R. (who addressed the Committee on the Compensation Causes of Bill No. 2), and H. B. Moore, Montreal, Secretary-Treas. G.T.R. Provident Society; Mr. Pepall, of the local Executive Board of same Society, and Mr. R. P. Leslie, Secy. 4th Division same Society, both of Toronto, and Mr. D. Robertson, Montreal, Secy. No. 1 Division same Society, the latter four being called by Mr. Wainwright, representing the Railway Companies. They have taken note of the legislation of Great Britain and some of the United States on similar subjects, and of the prevalence of accidents to passengers and employees on Canadian railways. A copy of the Bill and extracts from the speech of the Rt. Hon. Sir M. W. Ridley in introducing a Bill in the British House of Commons, providing a scheme of compensation to employees, were put in by the Chairman.

A number of letters were also put in from the managers of different railways, and from railway men's organizations, a list, and copies of which are appended.

Extracts from Hon. L. S. Coffin's statement before a Congressional Committee at Washington, 1892; an article in the Railroad Trainman's Journal; and various tables of statistics were put in and are hereto annexed.

The evidence of the railway employees was practically unanimous in favour of the principal provisions of both Bills. A large number of witnesses of this class might have been procured; but the officials of the Legislative Board of the Executive Committee advised against this course, as they feared that the interests of the men actively employed in railway work might be injuriously affected by their giving evidence before this Committee. These officials, named above, stated that they had been authorized by the representatives of the various organizations of railway men to speak on behalf of railway employees throughout Canada, and to explain why the different provisions of these Bills were asked for.

This Board is elected at a general meeting of representatives from all the different organizations of railway men. They also testify that the Bills in question had been fully considered at the last general meeting of the Dominion legislative board of railway employees, composed of representatives elected by all the railway organizations, and approved of by them in their present shape, with the exception of some details in Bill No. 3, which are changed in the Bill as reported. The Bills were also considered and adopted unanimously by the United Brotherhood of Railway Trainmen of the United States and Canada, in session in Toronto in May, 1897.

In addition to this evidence, the Committee took note of the petitions—68 in number—received by the House in favour of Bills No. 2 and 3, of which a list is appended.

Your Committee report that they have passed Bills No. 2 and 3 with certain amendments, as in the copies herewith submitted. They also report the evidence, extracts, statements and statistics laid before them, and recommend that the same be printed for distribution.

GEORGE E. CASEY,  
*Chairman.*

Adopted 7th June, 1897.

## EVIDENCE.

The Select Committee of the House upon Bill No. 2, further to secure the safety of railway employees and passengers, and Bill No. 3, to promote the safety of railway employees, met in the Tower Room on Wednesday, April 28th, 1897.

Mr. WILLIAM WAINWRIGHT, Assistant to the General Manager of the Grand Trunk Railway system, upon being called, stated :—Bill or no Bill the Grand Trunk Railway is certainly doing this work which you call for just as fast as it could do if it had the Vanderbilt money at its back. It is not a question of money. The reason why we do not wish this legislation passed is that these appliances are only made by certain concerns. We are in their hands.

Mr. CASEY—Which appliances?

Mr. WAINWRIGHT—These appliances, brakes, couplers, etc. Our freight cars are being equipped with automatic couplers and air brakes at the rate of 275 to 300 per month, and we have already equipped 2,291 cars. Our superintendent of the car department has instructions to equip these cars just as quickly as he can possibly do it without regard to cost or anything else.

Mr. MCGREGOR—How many cars have you?

Mr. WAINWRIGHT—About 20,000.

Mr. MCGREGOR—At that rate you will have them equipped in how long a space of time?

Mr. WAINWRIGHT—300 a month would be about 4,000 a year. Bill No. 2 calls for cars to be made a uniform height. That has all been done. We spent \$40,000 in 1896 in raising our cars to the uniform height.

Mr. CASEY—When you say that has been done, do you mean that it has been done to the whole of your rolling stock?

Mr. WAINWRIGHT—It has been done to the whole stock. Of course there are exceptional cases in respect of furniture-cars and other cars of an exceptional character, but I am talking of the ordinary cars carrying merchandise.

Mr. CASEY—What is the height?

Mr. WAINWRIGHT—I have not got it here.

Mr. THOMAS TAIT, Assistant General Manager of the Canadian Pacific Railway said :—The Master Car Builders' Association, which regulates all matters of standard, has agreed upon a standard height for the draw bars of freight cars above the ground and it is compulsory upon all railways which are members of that association, which practically includes all railways of the United States and Canada, that after a certain date the draw bars of cars shall be raised to that height. That means that the car body shall be raised to that height on the trucks and any company failing to raise its cars is bound to pay the railway company on whose lines such cars may be the cost of raising them so that practically to-day all freight cars have been raised to a standard height of draw bar. That does not mean a standard height of roof.

Mr. CASEY—Does that mean all over the continent?

Mr. TAIT—Yes, sir, in Canada as well as the United States and Mexico. The height of the floor will be practically the same but the height of the roof will not.

Mr. POWELL—That obviates all possible objection to the automatic couplings.

## Safety on Railways.

Mr. TAIT—We are obliged to equip our cars with automatic couplers. There is a variety of commodities carried in railway cars and we are obliged to build our cars to suit these commodities. Some of these commodities are very bulky. Furniture, for instance requires a specially high car; dressed beef requires a high car because it is hung from the roof. Flat cars have no body of course. Take two cars of the same height when empty and load one and the roof of the loaded car is not of the same height as the roof of the empty one. So that while cars may be of the same height at the floors and draw bars it is impossible to have the roofs of the same height or to have a continuous platform.

Mr. CASEY—The bill only requires that box freight cars shall be of a uniform height.

Mr. TAIT—That includes ventilator cars, refrigerator cars, and furniture cars.

Mr. CASEY—Your view is these special cars should be excepted from the rule?

Mr. TAIT—More than that. As you know, there has been a steady increase ever since railways were built in the size of freight cars. The old standard of 10 tons was increased to 30,000 pounds, then to 40,000 pounds, and then to 50,000 pounds. Now, almost all the box cars built are 60,000 pounds or 30 tons, and railways have been building 40- and 50-ton cars. The additional capacity can be obtained some in length, very little in width, and some in height. To-day we have cars varying from 20 to 50 tons. These are box cars pure and simple.

Mr. CASEY—Then it is not merely furniture and refrigerator cars which you build at a greater height than the ordinary cars?

Mr. TAIT—No, sir; because the modern car is of a greater height than of the car built six years ago, of which we have a good many, and which have a good many years of usefulness yet.

Mr. CASEY—Do you consider that the difference of the height of the roofs of these cars caused by an actual difference in the size of the cars as an inconvenience or as a danger to trainmen?

Mr. TAIT—I do not, in the future, and for this reason: our trainmen in the future will not have the same duties to perform as in the past.

Mr. CASEY—No; but at present while they have to run on the top of the cars?

Mr. TAIT—I think not, because they have all been trained to look for a difference in the height of cars. I would like to explain that the difference of a foot in the height of a car is not as dangerous to the trainman as a difference of three or four inches, because he is not so liable to trip over it. You are more apt to trip over a small difference in the level than a high one. You can never overcome a small difference, because if you take two cars of exactly the same height, and load one, it will be three or four inches below the other.

Mr. CASEY—I take it that Mr. Wainwright has some notes, and we had better, perhaps, go on with him.

Mr. WAINWRIGHT—I have simply to make a statement in regard to the brakes and couplers. We are equipping our cars just as quickly as we possibly can. In regard to this work, we are in the hands of certain manufacturers. It has been said, "If you are doing this work, why do you object to a bill of this kind to go into law?" I say that if the time was fixed for this work to be done and it is understood we are then in the hands of the people who are making these appliances. We are in the same position that the railways of the United States are to-day in regard to the interchange of cars. By 1898 these appliances have to be on all cars doing work in the United States.

Mr. CASEY—Is that the law in the United States?

Mr. WAINWRIGHT—That is the law. But there is now under consideration an extension of that law to 1901, because the railways have represented just what I have represented here to-day, that they cannot do impossibilities. The Pennsylvania and New York Central cannot without closing their works up do this work within the time.

Mr. INGRAM—That is within 1901?

Mr. WAINWRIGHT—No; they are asking for an extension of three years. I think that the time limit is now 1898.

Mr. TAIT—Yes, July 1st, 1898.

Mr. WAINWRIGHT—They are asking for an extension of three years. As far as the G. T. R. is concerned we are doing this work. We are just as anxious to have these appliances and our road properly equipped as the promoters of this bill can be. Our cars are all more or less interchanged with the American railways and we are compelled to do it under their law.

Mr. INGRAM—Any engines that you are sending into the shop are you sending out with modern improvements, with the air brake?

Mr. WAINWRIGHT—Yes.

Mr. INGRAM—You are equipping a certain number of your cars every year with the air brake?

Mr. WAINWRIGHT—Yes, I gave that. We are fitting up 275 to 300 per month. Now I have here a statement from our superintendent of our car department in regard to the matter of grip irons. He tells me that \$8,385 was expended in order to comply with the United States Commission between July and December, 1896. So that I understand that that part of your request has been complied with.

Mr. CASEY—The grip iron is a V-shaped thing, on the top of the car?

Mr. WAINWRIGHT—Yes, for getting on the top of the car. The superintendent tells me further that out of 807 engines running east of the St. Clair River, 398 are equipped with the Westinghouse air brake appliance, and that we are fitting engines at the rate of from fifteen to twenty per month. That answers Mr. Ingram's question. Now, the latter part of this bill deals with compensation.

Mr. CASEY—About outside ladders, have you any notes on that point?

Mr. WAINWRIGHT—We have put outside ladders on all our cars, in accordance with the rules of the Master Car Builders' Association.

Mr. CASEY—We have had a number of plans sent in by our friends who are asking for this bill. There is a plan of the end of the car. You will see the hand rail they are asking for, and the grip irons on the end of the car also. What do you think of that? Just criticise that feature of the bill and compare it with your own cars.

Mr. WAINWRIGHT—There is nothing to complain of about that.

Mr. TAIT placed on the table the model of a freight car.

Mr. CASEY—Is this model which he has laid on the table the same as what you are doing to your cars?

Mr. TAIT—This is in accordance with the rules of the Master Car Builders' Association.

Mr. WAINWRIGHT—Yes, that shows the whole thing. In interchanging car stock with these American roads it will not do to have one rule for Canada and another for the United States.

Mr. TAIT—They would refuse to accept our cars.

Mr. WAINWRIGHT—As to the ladder on the side of the car, the Master Car Builders' Association rules in all these matters.

Mr. CASEY—Then you object to side ladders because you could not interchange with the States?

Mr. WAINWRIGHT—We have to effect the uniformity between our cars and those of the American line which run over our road.

Mr. CASEY—Would the Master Car Builders' Association object if we had both ladders?

Mr. WAINWRIGHT—I do not see how they could.

Mr. CASEY—What reason is there for the end as against the side ladders?

Mr. WAINWRIGHT—It was opposed at one of their meetings, but I do not know the reasons. It was after due consideration of the best men in the States.

Mr. INGRAM—There are a number of cars with side ladders in use.

Mr. CASEY—Have you any on your road, Mr. Wainwright?

Mr. WAINWRIGHT—Yes; quite a number.

Mr. CASEY—It is for getting from flat cars to box cars that the end ladder is adopted.

Mr. TAIT—It is one of the reasons.

Mr. WAINWRIGHT—One of them, and a very good one.

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Mr. POWELL—With the side ladder alone it would be impossible to get to the top of a box car from a flat one.

Mr. CASEY—I call the attention of the Committee to the fact that on the plan showing what the gentlemen promoting the bill ask for, there is an arrangement at the end to enable men on flat cars to get on the side ladder. I take it for granted that these diagonal grab irons are to enable men to slip around.

Mr. POWELL—I suppose they are similar to those on this model.

Mr. CASEY—I want to ask you about the automatic alarm arrangement, to notify the engineer when anything goes wrong. Are you putting on anything of that kind?

Mr. WAINWRIGHT—No. As I stated before, we never found anything of that kind which we considered would be of any utility. We examined the device supplied to us, and it was condemned by our master mechanic.

Mr. CASEY—You have only tried one?

Mr. WAINWRIGHT—That is all. If anything goes wrong with the air brake the train is stopped at once under the present system.

Mr. CASEY—That is just the difficulty. Suppose the air brakes do not work when called on?

Mr. WAINWRIGHT—It is a very exceptional thing.

Mr. TAIT—It is an automatic brake. If anything goes wrong the brake stops the train.

Mr. CASEY—That is where fault is found with it. Take the accident at St. Thomas, for instance.

Mr. INGRAM—But you have not proved that they tested the brake before leaving Port Stanley.

Mr. CASEY—But they did not know till they wanted to put them on that they were defective.

Mr. INGRAM—They never tested them, and if they had the accident would not have happened.

Mr. WAINWRIGHT—That would happen with any device if the men were negligent.

Mr. INGRAM—I refrained from bringing that point up in the House several times, in order not to bring attention to the negligence of the men, but now that we are in committee I may state it. If the brakes were tested that accident would never have occurred. No matter what device is employed unless it is properly inspected the same thing would occur.

Mr. WAINWRIGHT—It is the negligence of the men and not the devices that are to blame.

Mr. CASEY—I understand, Mr. Wainwright, there is no effective device for the purpose. Would you have any objection to put anything on if it was found?

Mr. WAINWRIGHT—I could not say. We would not be willing to be put to unnecessary expense when we have the best appliances of the day.

Mr. POWELL—What is the object and nature of these appliances?

Mr. WAINWRIGHT—We have only had one presented to us, and we attempted to work it, but it had no effect.

Mr. INGRAM—It would be in the interests of the company if any device which could not be tampered with by flying stones or tramps were brought out, to adopt it?

Mr. WAINWRIGHT—I cannot say at the moment. I am willing to go this far, that anything we find either in the interest of public safety or our own interests in working trains, we are always ready to adopt, but we must be the judges.

Mr. INGRAM—My point is, supposing that for any reasonable expense in doing away with the danger of tramps turning the brake or a stone striking it you would be willing to adopt any device.

Mr. WAINWRIGHT—Certainly.

Mr. INGRAM—But you would not like to be restricted to any particular device?

Mr. WAINWRIGHT—No, certainly not.

Mr. CASEY—Now, I want to bring out your opinion about the compensation clause.

Mr. WAINWRIGHT—In regard to this I will say that it would very seriously affect us for the reason that we have at present a Provident Insurance Society to which the Grand Trunk Company, as a company, contributes \$10,000 per annum. That Society numbers about fifteen thousand men. They are provided with doctors all over the country in sickness, and have an insurance fund in case of death. We took some years to make it popular, and to-day I can say, speaking with authority as vice-chairman, that it is popular, and gives to our men what neither legislation nor anything else could give. It does not deprive them, if they have a case, of going to the courts, and we are sued occasionally by our men. They have a sick benefit for 6 months, and on death their heirs are entitled to a certain sum. If this bill passes we should have to give up the society.

Mr. CASEY—What are the fees and benefits?

Mr. WAINWRIGHT—I did intend to bring papers on that point, but I will send them to you. It is a very moderate fee, indeed. We could not live on legislation like that and contribute \$10,000 and the time of officials to this fund. It would simply collapse.

Mr. BELCOURT—Why would it collapse?

Mr. WAINWRIGHT—Because you are making provision here that the company should be charged so much in case of injury to an employee. But we provide for that ourselves already in this society.

Mr. BELCOURT—What proportion does the \$10,000 bear to the total fund?

Mr. WAINWRIGHT—I will give you all those figures, but I cannot give them correctly from memory.

Mr. INGRAM—I understand that you pay the \$10,000 in and that there is a classification from "A" to "F". The only objection I ever heard was this. In case of accident the railway company has to have their own doctors all over the land, and suppose you did not have this society you would have to have them anyway in case of accidents?

Mr. WAINWRIGHT—Not necessarily. We might have them in big centres.

Mr. INGRAM—But you would not have them all over?

Mr. WAINWRIGHT—No. At present we have them and pay them so much per annum per capita according to the number of men. They are under call all the time.

Mr. INGRAM—But if you had no Provident Society you would have them at the head centres only?

Mr. WAINWRIGHT—That is all.

Mr. INGRAM—Under the present arrangement the company pay into the fund \$10,000 and the men manage the society themselves?

Mr. WAINWRIGHT—Yes; they elect their officers at the annual meetings. At our annual meeting a month ago, I presided in the absence of the general manager, and they came from all over, and the resolutions passed were most satisfactory to the company.

Mr. INGRAM—The officers are elected by the men?

Mr. WAINWRIGHT—Yes; the chief officers represent the company ex-officio, but the rest are elected by the men.

Mr. INGRAM—There is no fraud in the election?

Mr. WAINWRIGHT—None at all. They elect the officers themselves. At last meeting one gentleman got up and made the statement that it had been thought a few years ago that the society would not succeed because they thought it would be run from headquarters and by the officials of the company, and they were delighted to express themselves that the men had everything to say in its management.

Mr. CASEY—What representation have you on the board?

Mr. WAINWRIGHT—All officers are a committee of management to manage the fund, not on account of our contribution.

Mr. CASEY—You mean the officers of the benevolent fund are officers of the company?

Mr. WAINWRIGHT—They are ex-officio by virtue of office. They have district committees which pass on all cases and report to them.

Mr. CASEY—The management of the fund is under the chief officers?

Mr. WAINWRIGHT—It is managed by the men, but these reports are sent in by district committees to the committee of management.

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Mr. CASEY—I understood you to say that the chief officers were an ex-officio board of management of the fund. This board of management is not elected, but ex-officio?

Mr. WAINWRIGHT—It is elective because there are members from each district elected.

Mr. CASEY—How many ex-officio and how many elected?

Mr. WAINWRIGHT—I suppose there are two-thirds officers of the company and one-third elected.

Mr. POWELL—I suppose the officers of the company perform their services entirely gratuitously?

Mr. WAINWRIGHT—Yes.

Mr. POWELL—Supposing some one were to decamp with the funds, who is responsible?

Mr. WAINWRIGHT—That is impossible. The money is all banked with the company. When money is required to pay benefits or death claims a cheque is given on our treasurer.

Mr. BELCOURT—To what extent do you come to the rescue of a man by this society?

Mr. WAINWRIGHT—The moment a man becomes sick he goes to the doctor, who gives him a certificate, declaring him unfit for work, by accident or illness, as the case may be. The doctor attends to him and gives him medicine, and he puts himself on the fund, where he can remain for 26 weeks.

Mr. BELCOURT—How much does he get?

Mr. WAINWRIGHT—In ordinary cases \$6.00.

Mr. INGRAM—From \$3.00 up. It depends upon the class you are in. I will give the maximum and minimum at next meeting.

Mr. CASEY—I want to ask this question: Is there any special allowance in cases of accident?

Mr. WAINWRIGHT—No; he is off duty, and put on the sick list.

Mr. BELCOURT—What about permanent disabilities?

Mr. WAINWRIGHT—If permanently disabled we can pay him off the fund. There are many cases in which men have been so paid off.

Mr. BELCOURT—Is there any rule, or is it left in the company's discretion?

Mr. WAINWRIGHT—It is left to the district committee to inquire into the particular case in the man's district, and the board of management follows the recommendation of the district committee. I have not finished the bill. In regard to the eighth clause, I think it goes without saying that we certainly would want to know who would be the judge as to whether we employed sufficient men.

Mr. POWELL—I am sure the courts of the country are judges of that now.

Mr. WAINWRIGHT—I think they are.

Mr. BELCOURT—That clause does not mean anything.

Mr. POWELL—If any accident should happen the company would be held liable at law, if they had an insufficient force.

Mr. WAINWRIGHT—I think the company are responsible to the Railway Committee of the Privy Council.

Mr. INGRAM—Section 8 is already provided for in the General Railway Act.

Mr. CASEY—You will see that at the next meeting.

Mr. POWELL—It is provided for in the law independent of this clause.

Mr. ELLIS—If I understand Mr. Wainwright correctly, the beneficial feature of the arrangement as regards the men would cease if there was a legal enactment along the lines of this bill.

Mr. WAINWRIGHT—That is my information.

Mr. CASEY—Mr. Wainwright made a suggestion personally to me the other day which I would like him to put in to the committee, as to what would be the proper thing to do in case this Bill passed and was applied to railways generally.

Mr. WAINWRIGHT—If such a clause as No. 7 were passed, I think the suggestion referred to was that a company which had a provision of this kind should be exempted.

Mr. CASEY—That was the suggestion. Did you tell me that you had been consulted before by the provincial government in connection with this matter?

Mr. WAINWRIGHT—I do not know that I mentioned that. I suppose that you are referring to the Ontario Provincial Government.

Mr. INGRAM—Some years ago the Grand Trunk Railway established a Provident Insurance Society and in the Compensation for Injuries Act in Ontario your company were exempted because of the fact that you had a Provident Insurance Society?

Mr. WAINWRIGHT—Yes, sir.

Mr. INGRAM—In 1888 or 1889 the Ontario Government sent a list of questions as to whether the employees belonging to the Provident Insurance Society which gave them damages would like the Act to apply to them, and their answer was to the effect that they would like the Act to apply to them. In spite of the fact that they belonged to the Grand Trunk Railway Provident Insurance Society?

Mr. WAINWRIGHT—Yes, sir.

Mr. INGRAM—And the Act has applied to your company ever since?

Mr. WAINWRIGHT—Yes.

Mr. INGRAM—That is what you want to bring out, Mr. Casey?

Mr. CASEY—Yes, that is what I wanted to bring out.

Mr. INGRAM—In respect to the height of cars, Mr. Wainwright, this provision is simply impossible?

Mr. WAINWRIGHT—Yes, sir.

Mr. INGRAM—In regard to your furniture and hay cars?

Mr. WAINWRIGHT—Yes, sir.

Mr. INGRAM—What are you doing with regard to air brakes and automatic couplers?

Mr. WAINWRIGHT—At the present time we are fitting out cars at the rate of 275 to 300 a month. There are already equipped 2,291 cars.

Mr. INGRAM—What would be the result if by law you are compelled to do more than you are doing now?

Mr. WAINWRIGHT—You will compel us to do something that is impossible. If we controlled the Vanderbilt bank we could not put these appliances on faster than we are doing.

Mr. INGRAM—At present you are equipping from 15 to 20 engines per month.

Mr. WAINWRIGHT—Out of 807 engines east of the river 398 are equipped with the Westinghouse air brake appliance, and our engines are being equipped at the rate of 15 to 20 a month.

Mr. INGRAM—Suppose you are forced by law to do it faster what would be the effect?

Mr. WAINWRIGHT—We should have to stop the road.

Mr. INGRAM—This bill provides in section 2 that there shall be side as well as end ladders.

Mr. WAINWRIGHT—Yes.

Mr. INGRAM—Is it not your wish by applying the latest appliances to do away as much as possible with the running on top of the cars?

Mr. WAINWRIGHT—Yes, sir, we expect to abolish all that.

Mr. INGRAM—Supposing you have air brakes and automatic couplers there will be no necessity for men running over trains.

Mr. WAINWRIGHT—No.

Mr. INGRAM—Then it will be incurring extra expense to put side ladders on.

Mr. WAINWRIGHT—Yes, without any reason.

Mr. INGRAM—But the end ladders are useful?

Mr. WAINWRIGHT—Yes, and we fit them on now in accordance with the Master Car Builders' Association rules.

Mr. INGRAM—Though you have the air brake you will still have the regular old-fashioned brake in case of accident?

Mr. WAINWRIGHT—Yes, just as we have on the passenger coach. We keep the brake there because, as the Chairman has said, while it is very exceptional, there will be times when the men neglect the air brake and it does not work.

Mr. MCGREGOR—You have those air brakes there as a supplementary precaution?

Mr. CASEY—Have you got these steps there now?

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Mr. WAINWRIGHT—We put on the er.d steps. They will be useful in the yard in shunting. We never know when the cars are going to be shunted in the yard.

Mr. INGRAM—If you did not have the air brake then you would require your side ladders?

Mr. WAINWRIGHT—Yes, but having the air brake it is not necessary to have side ladders.

Mr. INGRAM—Supposing by law that you were compelled to put on these arrangements faster than you are doing now, what would be the result? What would you have to do?

Mr. WAINWRIGHT—The only thing that I can see is that we should have to stop traffic.

Mr. INGRAM—You would have to reduce expenses in some other way?

Mr. ELLIS—He says it is impossible to do it.

Mr. POWELL—They cannot get the machinery fast enough.

Mr. WAINWRIGHT—It seems to me that there is no use of a discussion when you are discussing something that is not feasible.

Mr. CASEY—I understood that you had no objection to this provision about air brakes and couplers if a discretion were left to the Governor in Council to extend the time. I so understood in personal conversation.

Mr. WAINWRIGHT—I did not exactly put it that way, but I said that if we were compelled by law to accept this legislation we should be put on the same footing as the Americans are putting their roads. The Governor in Council, or the Railway Committee of the Privy Council should have the power on application to extend the time for doing it.

Mr. CHOQUETTE—I suppose you are doing everything that is required to ensure safety on your new cars?

Mr. WAINWRIGHT—Yes; if you make it apply to cars that are hereafter built the provision would not be so objectionable.

Mr. POWELL—In section 7, Mr. Wainwright, there is a provision for the protection of the employees. I wish to ask you this question: Do you consider that brakemen and train hands have a higher rate of wage than people ordinarily employed in the country on account of their skilled labour or on account of skilled labour and risk combined?

Mr. WAINWRIGHT—It is not a question of skilled labour because as a rule we find that the newer a brakeman is the less likely he is to meet with an accident. They are generally old men who meet with accidents.

Mr. POWELL—Do you pay the men higher wages on account of their hazardous employment?

Mr. WAINWRIGHT—The wages are fixed in accordance with the wages paid by the different lines of railway.

Mr. POWELL—As a general thing do brakemen receive a higher rate of wages than other labouring men on account of the hazardous character of their employment?

Mr. WAINWRIGHT—I presume the rate of wages was fixed because the employment was more hazardous.

Mr. POWELL—Do they receive a higher rate of wage than the ordinary wage of employees, labouring men I mean?

Mr. WAINWRIGHT—For the same work they do, but it is not a very much higher rate. They are paid according to trips and sometimes men will put in a great many more hours a day than the ordinary man would put in. If a train man doubles the road, for instance, he will make 16 hours a day.

Mr. POWELL—What do you pay section men, for instance?

Mr. WAINWRIGHT—Section men are paid small wages—90c., \$1.00, and on some parts of the road \$1.25 a day.

Mr. POWELL—Supposing a brakeman were working full time what would he get on the average?

Mr. WAINWRIGHT—He will make from \$50 to \$75 a month if he has lots of work.

Mr. MCGREGOR—That largely depends on the number of trips?

Mr. WAINWRIGHT—It depends on the amount of freight moving. Sometimes he will get down to \$35 a month.

Mr. CASEY—On the average it does not come to a very high rate of wages a day?

Mr. WAINWRIGHT—Not per day.

Mr. ELLIS—Risk is not considered much of an element in railway employment, is it?

Mr. WAINWRIGHT—I do not think so. Put a new man on as brakeman and I would rather insure his life than that of a man who has been running for 10 years. Take the couplers in our yard. Before we had this fund we used to deal with an Insurance Company and they preferred new men to old men.

Mr. CASEY—I will ask Mr. Tait to take up the running for a few minutes.

Mr. TAIT—In regard to Bill No. 3, clause 1, "equipment of cars and locomotives with air brakes," I desire to say: This clause is very similar to section 1 of an Act passed in the United States Congress on March 3rd, 1893.

"Driving wheel brakes and apparatus for operating train brakes must be used on all engines (passenger and freight) used in interstate traffic, after January 1st, 1898. From the same date no train must be run unless it has sufficient cars braked by power brakes to enable the engineer to control the speed."

Mr. POWELL—That does not require the whole train to be so equipped?

Mr. TAIT—No, sir, just sufficient cars. As cars of the Canadian Pacific are engaged to some extent in the carriage of interstate traffic, but more largely in the carriage of traffic between Canada and the United States, this United States Act necessitates the equipment of a large proportion of this company's freight cars with air brakes within the next two years. In order that we may enjoy the advantage of controlling our freight trains with air brakes in Canada, we intend equipping our freight locomotives (some of them are now equipped) with air brakes and the state of affairs which this clause in the Bill is intended to bring about will, it is confidently expected, be practically accomplished without legislation within a few years. The Westinghouse Air Brake Company to-day controls the situation with respect to the air braking of railway trains, holding as it does the only patents free from litigation for a safe and approved method of air braking freight if not all classes of trains, and therefore if this clause of Bill No. 3 becomes law it will compel the railway companies of Canada to purchase on its own terms from the Westinghouse Company air brake equipment for all their cars and engines. The patronage of the monopoly will be made compulsory. In 1895 there were 2,023 locomotives in use in Canada of which about 1,500 were engaged in freight service and not equipped with air brakes. The expenditure required to equip these 1,500 engines with air brakes at say \$500 per engine represents an expenditure of \$750,000. In 1895 there were 57,447 freight cars of all kinds in use in Canada of which not more than 3,000 cars were equipped with air brakes and vertical plane couplers, leaving 54,447 yet to be equipped. The expenditure required for this equipment at \$70 a car for air brakes and \$20 a car for couplers would amount to \$4,900,230. Representing an expenditure for the equipment of engines and freight cars of \$5,650,000.

Mr. CASEY—These figures are accurate?

Mr. TAIT—Yes, they are the result of our experience. Under this clause the railway companies would be compelled by the 1st of January, 1900 to expend over \$5,500,000 on this equipment.

Mr. CASEY—These figures apply to all the railways in Canada?

Mr. TAIT—Yes, sir. We in the first place admit that air brakes on freight cars are desirable.

Mr. INGRAM—And absolutely necessary.

Mr. TAIT—I cannot say "absolutely necessary" because we have been operating for some time without them. I admit that vertical plane couplers are also desirable. We are anxious to equip our cars and engines with automatic couplers as fast as our finances will permit, but we do object to legislation which will make it compulsory that we shall be called upon to expend, whether the money markets of the world are favourable or not, this vast sum of money within the next two or three years. We want to do it as fast as we can raise the money but we cannot do it unless we can get the money, and to force

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us to go on the money markets at a time when they are unfavourable means a very serious strain upon our credit.

Mr. CASEY—Would you be compelled to do this?

Mr. TAIT—Yes, sir, we certainly would. It could not be taken out of operating expenses. It is improvement and it would be new capital, and the money that we have expended in the past has been new capital. In 1896 we equipped 1,460 freight cars and 53 engines with air brakes, at an expenditure of \$130,000. This year I have authority from the executive committee to equip 3,000 freight cars and 100 locomotives with air brakes, at an estimated expenditure of \$250,000—250 cars a month. We built last year 400 new cars and some new engines. Last year we equipped 2,460 freight cars with automatic couplers at an expenditure of \$56,000. This year we contemplate the equipment of 3,000 freight cars with automatic couplers at an estimated expenditure of \$69,000. All the new cars and new engines which we have built within the last three years have been equipped with air brakes and automatic couplers and it is the intension to continue this policy in the future. The automatic coupler adopted by the Master Car Builders' Convention has to conform to certain measurements, and is supposed to couple and uncouple automatically. Now this clause will call upon us to equip all our cars irrespective of their age or value. We have in service, particularly in work trains, a large number of old flat cars and it would be a great hardship indeed to compel us to equip these cars with automatic couplers and with air brakes. Once they have been coupled together and put into a train they may be worked a whole season without being uncoupled and it would be impossible to work air brakes on them for the reason that while unloading ballast, sand, etc., sand gets into the mechanism of the air brake, the triple valve and prevents the operation of the brake. We therefore think that, providing the railway companies are making fair progress in the equipment of their present stock of cars and engines and are equipping their new engines and cars with air brakes and couplers that should be sufficient and all that we should be called upon to do. As Mr. Wainwright has said in regard to the United States bill I have just cited providing for the equipment with all appliances and air brakes of cars and engines, an extension of time is being asked for, I may say that our information is that there is no doubt it will be granted. This law provides for the equipment of cars and engines in the United States by July 1st, 1898. We must equip a large proportion of our cars by that date because they will not be allowed to enter the United States unless they are so equipped. I think I have already dealt with the paragraph in regard to couplers. Of course we are anxious to equip our cars with air brakes and couplers for another reason that perhaps has not occurred to some of those who are in favour of this bill, and that is, as on the New York Central where all the cars are equipped with air brakes, we should be able to reduce the number of train hands required on our trains. There is no reason why freight trains equipped with air brakes should need as many brakemen as we now have. On a number of heavy way trains we run three brakemen. Passing on to clause 2 of Mr. Maclean's bill I have a memorandum here which I will read:

“The period of apprenticeship for both engine drivers and conductors is too long. Two, and at the most not more than three, years is sufficient in the case of engine drivers, and one, and at the most not more than two, years in the case of conductors; but no legislation in this matter is required.

“It is quite apparent this portion of this bill has been framed with a view to obtaining new and important advantages for those who are now working as engine drivers and conductors throughout the country. Not only would it render it extremely difficult, if not impossible, for new railways to secure engine drivers and conductors except at the higher rates paid on the older roads, but in case of strikes, this bill, if it became operative, would very considerably restrict the number of men available for the position of engine drivers and conductors, and would seriously handicap the railways in coping with organized labour, because we would not be able under this law to employ any man as a conductor or as an engine driver who had not served five years of apprenticeship, no matter how capable he might be.

“It is in the interest of the railway companies to employ as engine drivers and conductors men who are not only experienced but sufficiently intelligent and capable in

every way to fulfil the duties of such positions properly and with safety to life and property. The mere fact that a man may have had five years' experience as a locomotive fireman or a similar experience as brakeman is not sufficient to qualify him for positions of engine driver and conductor respectively. He must in addition have a fair education, be able to read and write, and have some knowledge of arithmetic. He must have good eyesight and hearing, and he must be intelligent and by his past record have proved himself steady, sober, honest and in every way trustworthy. Some men who have now been working as locomotive firemen or brakemen for many years should never be promoted to drivers or conductors, while others are quite capable of filling such positions with but comparatively short experience as firemen and brakemen. This matter of promoting men to the positions of engine drivers and conductors is one which it would seem safe to leave entirely in the hands of the railway companies, as they are most concerned and interested in the employment of only capable and trustworthy men in such positions.

"The Canadian Pacific require all firemen and brakemen to pass an examination before they are permitted to assume the duties of engineer and conductor respectively, and these examinations have been made much more severe and thorough within the last few years, and the tendency is in that direction."

Mr. POWELL—You are combatting something which is not in that section.

Mr. TAIT—I am pointing out that five years' service is not a necessary qualification. Some men are able to fill the position in two years.

Mr. INGRAM—Would you say three years?

Mr. TAIT—I do not think it is necessary to stipulate any period at all. We are the best judges of that. Supposing to-day that our trainmen or conductors, for instance, who have a separate organization of their own, were to strike, what would we do? We could only put on men as conductors who had served five years, although we might have any number of men who are capable of filling the positions who have only served three years.

Mr. POWELL—They would have you on the hip then?

Mr. TAIT—That is the object. Are there any other questions which you would like to ask me?

Mr. ELLIS—Of course a railway company is like any other person, their desire is generally to employ the best and most competent men they can obtain?

Mr. TAIT—Not only that. We not only make them pass a severe examination before promoting them to positions where the safety of life and property is concerned, but we educate them thoroughly from the earliest grades up. We furnish them with the best literature and the very best articles in the railway papers, sending them to educational courses entirely at our expense with a view, when an opportunity for promotion comes, to promote those men who are best fitted for the positions.

Mr. ELLIS—Without regard to years of service?

Mr. TAIT—In making selections of firemen and brakemen from the shops our people are all instructed, while we lay down no standard, for circumstances alter cases, that they must select the man who will prove fittest for promotion.

Mr. INGRAM—Have you any new men on your road, as conductors, engineers or firemen? A man when new gets certain wages which are increased as he goes on?

Mr. TAIT—We have several. A man is junior for the first year, and then he gets senior pay.

Mr. INGRAM—Have you ever discharged old men because they were getting high pay and put on new men at a lower wage?

Mr. TAIT—No man is discharged except for sufficient cause. If it were otherwise we would have the men up in arms.

Mr. ELLIS—This is very important from the employees' point of view.

Mr. CASEY—Is it necessary here?

Mr. INGRAM—Yes; for in Mr. Maclean's bill in clause 2 railways are to be prevented from employing any men as drivers or conductors who have not been firemen or brakemen for five years.

Mr. CASEY—I see the connection.

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Mr. INGRAM—The objection has been made by some employees that the railways discharge old men and employ new men at a lower wage, and Mr. Tait says this is not a fact. I believe Mr. Wainwright will say the same.

Mr. WAINWRIGHT—Not to my knowledge; there is no such practice on our road.

Mr. TAIT—Every employee of the C. P. R. has a right to appeal through his superior officers to the president if he thinks he is severely dealt with. Not only personally can he appeal but our men take up cases themselves, and I have yet to know of a case where our company has punished a man unless they find he deserved it.

Mr. INGRAM—I would like to ask Mr. Wainwright a question to work in with this: Since Mr. Hays became general manager has he not been trying to abolish what is known as the general grievances committee?

Mr. WAINWRIGHT—I believe Mr. McGuigan, our general superintendent, who deals with that, last time the men were in Montreal told them he did not want them coming periodically. He was willing to hear them personally. They used to come once a year and submit a string of questions, the hearing lasting two or three days. He said to them, "I am on the line all the time and the men can come to me at any time." He wants to discontinue it as an organized committee.

Mr. TAIT—I want to give some more information on the point raised by Mr. Ingram. There is not quite one per cent of our men juniors receiving the junior rate of pay. There has been a comparatively slight increase in traffic for several years, and as a result few new men have been employed, indeed some men have been set back—and all are receiving senior rate of pay. With regard to a casualty fund we have considered it, but we thought that in the interests of the men they would receive more benefit without it.

Mr. POWELL—Down in the Maritime Provinces the railways are small, and they have not taken up this matter. I do not think there are any automatic couplers or air brakes except on the Intercolonial, and I would like to ask about the matter of cost. Supposing the cars are not a uniform height, is there any mechanical difficulty in applying automatic couplers?

Mr. TAIT—The draw bars must be of the same height and of the same variation?

Mr. POWELL—Has the height of a floor to be considered?

Mr. TAIT—The draw bar or coupler height is what is taken into account. The application of vertical planes to automatic couplers was the reason of the Master Car Builders' Association adopting the standard height to make the couplers work right.

Mr. POWELL—Is that difficulty so great?

Mr. TAIT—I say the difficulty is not in regard to the draw bar height, but the roof height. The standard height is for draw bars and it is not difficult to change that. The charge by one railway for raising the car of another, which is done by placing small blocks underneath, is \$1, fifty cents per end.

Mr. CASEY—We will now get on to bill No. 2, and we would like to hear what you have to say regarding it.

Mr. TAIT—In regard to bill No. 2, clause No. 1, relating to an automatic device in the hose coupling to prevent derangement of air brakes, I have drawn up the following memorandum:—

"The railway companies have never felt a need for such a device sufficient to warrant the expenditure which would be involved in equipping our cars with it. According to the latest design of air brake angle cock the handle when in open position, that is brakes operative, is in line with the train pipe and therefore cannot become deranged unless by the act of someone who desires to interfere with the working of the brakes. If all cars are equipped with the only known device to accomplish the results described in this clause great delay and inconvenience would be experienced in the making up and breaking up of trains and in taking into trains or setting out of trains of cars and engines, for on trains equipped with such a device no car can be set out until the air pressure in the train line is reduced from 70 lbs. to the square inch to the pressure of the atmosphere, leaving the brakes on all cars set."

Mr. CASEY—One moment; do you mean the device mentioned a few minutes ago?

Mr. TAIT—The only one we know of is that invented by a man who lives at St. Thomas. We tested it, because if such a device was to be had at reasonable expense and could be depended upon and should operate without delay and inconvenience we would adopt it.

Mr. CASEY—That is Mr. Deyell's invention. You have found it would accomplish the purpose required?

Mr. TAIT—"It will then be necessary in order to set out a car to bleed (that is, reduce the pressure in the air brake cylinders, auxiliary reservoirs and train line from 70 lbs. to the square inch to the pressure of the atmosphere) on the car desired to be set out and all the cars in the rear of it, assuming that the car is to be switched out from the rear end. After the car has been switched out and the cars behind it coupled up again to the forward part of the train, it will then be necessary in order to make the brakes operative on them to again recharge the auxiliary reservoirs and train line of the cars which before were bled. In taking a car into the centre of a train, the cars of which are equipped with this device, it will be necessary to follow practically the same programme."

Mr. CASEY—In the case of passenger cars, they are almost invariably switched out from the rear of the train?

Mr. TAIT—Not always. Sometimes they are set out from the middle of a train, when we have to leave off first or second class cars. While the delays to the passenger trains resulting from the use of such a device would be very serious, yet they would be small as compared with the delays of freight trains, which often consist of as many as 40 cars, and in connection with which, particularly local freight trains, there is frequent switching on and off of cars. If railways are compelled to equip their cars with such a device, it will be impossible to give the same despatch as now to either passenger or freight trains, and it will necessitate the employment of extra men, if not on the former, certainly on the latter, class of trains. The Westinghouse Company employ a very intelligent staff of experts in connection with their brake matters, and they look into every new apparatus and device for the power braking of trains, and railway companies all over the continent rely on them almost entirely as to braking trains and the devices to be used. They have not approved of any such device as this. The air-brake apparatus is a most delicate one; there is probably nothing so delicate as a triple valve. We are equipping our cars with the Westinghouse system; and, if we put something on that does not meet with their approval, they will not be responsible for the results. We only know, as I say, of the one device that accomplishes this object; but it is impracticable to work it. Our experience is that no such device is needed. We have never heard that brakes properly tested have failed to work, for they are automatic. I could bring expert testimony here to that effect. No case has been proved of a cock in the train pipe having been closed by a malicious person. Accidents have resulted from a closed cock, but it was owing to the cock not having been opened. This, however, cannot happen, owing to the rigid system of testing brakes after any change whatever. The old cock in train pipe was not safe, as the handle was exposed when the cock was open, and it has been knocked shut by a flying missile. The new cock, called "angle cock," cannot be knocked shut, as when open the handle is in line with and close to the pipe, so as to be protected by it, and it cannot fall shut, as it works horizontally. No safer device has yet been introduced which can be operated in a reasonable manner. Any device used in the hose couplings is very dangerous, as it might prevent the escape of air if the train parted, thereby preventing the automatic action of the brakes. Such devices are in the market, but should not be considered for a moment. The air-tight dummy coupling used on the Michigan Central tenders only would be quite impracticable if used throughout the train, owing to the great loss of time and waste of air in bleeding and recharging auxiliary reservoirs in train pipe when switching cars and are out of trim. The self-locking angle cock, such as Deyell's, is equally as well as the dummy couplings when switching cars, and is no better than the ordinary angle cock, as it will not lock if not fully open. Therefore, as brakes can be tested with the cock half open, the test would not prove that the brakes were in a condition which could not be

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changed without the knowledge of the engineer. Our system of "running brake test" when approaching dangerous points shows any great defect.

Mr. CASEY—Now, have you anything to say about box cars and ladders?

Mr. TAIT—Outside ladders, I suppose? I notice in the bill that cars are not to exceed 60,000 lbs. in capacity. Well, we do not think from our present experience that it would be good practice, yet in the States they are building cars of 80,000 and 100,000 lbs. capacity, and we may find it necessary in order to meet competition to build cars of that capacity. It is certainly in the way of economy in the handling of freight, and Parliament, I think, would not do anything in the way of restricting it.

Mr. INGRAM—How do wheels last under a 60,000 lb. car?

Mr. TAIT—I cannot say much on that point from our own experience, because we have only been building 60,000 lb. cars for two years, and have only 250 of them. We make our own car wheels and use local iron.

Mr. INGRAM—They are giving good satisfaction

Mr. TAIT—During the last three years we have made excellent wheels. We have been building these cars and placing 600 lb. wheels under them, of Radnor iron which is the best in the world for that purpose

Mr. INGRAM—That is important, for if you are going to increase the tonnage you must have wheels to bear it.

Mr. CASEY—I want to make a general statement before Mr. Kingsmill leaves. We did not intend to call the employers to-day, wishing to hear the employees first, but as they did not turn up we took up the evidence of Messrs. Wainwright and Tait. We will be glad to hear now what Mr. Tait has to say on the subject of outside ladders.

Mr. TAIT—I have put our views in the following memorandum:—

"All Canadian Pacific cars of the box car type are provided with ladders on both ends, the ladder at one end being at the opposite side of the end from the ladder on the other end, with the step projecting below the frame of the car on each side close to each ladder; also with two grab irons on each side of the car above each step and also with another grab iron on the top of the car above each ladder to be grasped by men climbing the ladder, and to be assistance to them in getting on to the roof; and with another grab iron on each end at the other side from the ladder for men to hold on to when they have occasion to go between the cars. The accompanying plan will show clearly the equipment of Canadian Pacific cars of the box car type with ladders, steps and grab irons. The grab iron on the top of the car corresponds to the arched iron rail referred to in section 2, subsection 'B.' It is highly undesirable to place ladders on the sides of cars, as men while using such ladders are apt to be struck when passing through tunnels or bridges, or passing by stations, watertanks, semaphores, cars in yards, etc., and the Canadian Pacific has, therefore, placed the ladders on the ends of its cars, with the steps and grab irons on the sides close to the ladders.

Mr. CASEY—Is there no room for the body of a man?

Mr. TAIT—Not when swinging out. A man getting on a moving train has little control of his body. He gets on from the side and the momentum of the train swings him around to the end, where he gets the ladder. It is much more difficult to get on the side ladder.

Mr. CASEY—What distance is there between the side of the car and permanent obstructions?

Mr. TAIT—The chief difficulty is in passing through yards, where the men principally get on cars.

Mr. CASEY—But in tunnels?

Mr. TAIT—Some are wider than others.

Mr. CASEY—But is there no minimum?

Mr. TAIT—I cannot give it just now. While dealing with this, I may say we are following closely the Master Car Builders' plan. They investigated this carefully and got out a plan as a standard for all United States cars, and we are following that. It is considered best in the interests of the men, which was largely their object in adopting this plan. It must appeal to any one who examines this model that a man getting on

the car swings around to the end ladder, when if he tries to get on a side ladder he is apt to lose his grip.

Mr. CASEY—But if the train was going the other way?

Mr. TAIT—He would never do that. He should always get on the rear end of a car. If there is no ladder on the one car there will be one on the next.

Mr. CASEY—Suppose a train of cars all set with ladders the other way?

Mr. TAIT—Out of twenty cars it would be very rare to find no ladder on the rear end of some of the cars.

Mr. POWELL—Are there any considerations other than those of safety and convenience, such as economy for instance, that would lead you to adopt the end ladder in preference to the other?

Mr. TAIT—It is entirely a matter of safety. It would be cheaper to put them there than on the side.

Mr. POWELL—This is the view taken by experts in the business?

Mr. TAIT—Yes; for this reason, that a man getting on there would be swung around. Another reason is, that for a man mounting from a flat car to a box car roof this is much better.

Mr. CASEY—I want to call your attention to the plan I have handed you, which shows the facilities on the end plan for getting on to the ladders. In other words, that end plan shows an arrangement to enable men to get from a flat car to the end of a box car, and then around to the side ladder. The purpose is the reverse to what you mention, that of convenience for a man jumping on the side and getting to the end; would not both work equally well?

Mr. TAIT—Not at all. If compelled to put side ladders on, in the interests of a man we would still continue to put those on the end. I saw the side idea and have discussed it with our men. I do not know where the agitation comes from, as our men are satisfied.

Mr. CASEY—We have two principles in the bill: One in regard to getting to the top of cars and the other for getting on the roof. Sub-section "B," clause 2, of bill No. 2 provides for "arched iron rails extending from the top of each ladder to a sufficient and firm support, placed at the side of the running board, and so arranged as to assist persons climbing on to the roof by means of such ladders."

Mr. INGRAM—You see this arched rail here on the tracing, would you consider it more dangerous than what is on at present?

Mr. TAIT—Yes; because it is apt to trip men in passing from one car to another. They do not always run on the board and the jolting of the car is apt to throw them off it.

Mr. INGRAM—Do you find in American and Canadian cars a difference which makes it more dangerous?

Mr. TAIT—Yes; but there is more danger in a difference of a few inches than in one of a foot, as the men are more apt to overlook it.

Mr. CASEY—You consider the plan proposed by the employees more dangerous than the other? Have you consulted the men?

Mr. TAIT—Yes; we have consulted the different orders of railway labour and can give you letters from them. There is one point I would like to make clear. A large part of the cars passing over our road and over the Grand Trunk are foreign built, belonging to United States companies. I presume it is not intended to apply the Act to these, as it would mean that we would have to retire from handling United States cars, a very serious matter to us.

Mr. CASEY—It is not proposed to extend the Act to them.

Mr. TAIT—There would be about two-thirds of the cars handled equipped with these things spoken of and over one-third would not be equipped with them. The men would therefore find a diversity to which they are not accustomed. At present they know what they have to depend on, but if you make us follow this bill they will never know what they have to rely on in the way of steps, ladders and grab irons, as there will be so many American cars fitted only with the present devices.

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Mr. POWELL—If universally adopted, would there not be some virtue in these curved grab irons?

Mr. TAIT—No; there is no necessity for them.

Mr. CASEY—That is a question largely for the men to give their opinion on. You say your men prefer the old plan, but I know we will have some men preferring this plan, and perhaps you can get statements from your men who prefer your present system.

Mr. POWELL—Are those your master mechanic's views?

Mr. TAIT—I have charge of the transportation and the operation of trains, and I have no hesitation in expressing my own opinion.

Mr. POWELL—While these might be a decided advantage where you approach from the side would it not be an inconvenience when you wanted to get off the car?

Mr. TAIT—Yes; we think so. The arched iron would only do in case of a ladder at the end.

Mr. INGRAM—No practical man would ever ask for that iron.

Mr. CASEY—I would like to have Mr. Tait's opinion of the compensation question.

Mr. TAIT—In regard to clause 7 that is a matter on which we shall ask to be heard at the next meeting of the Committee. I would like Judge Clarke to speak on this clause.

Mr. CASEY—You might ask him to prepare a written memorandum on the subject and put it in and then we can discuss the matter further. Have you anything to say on clause 8?

Mr. TAIT—Yes, sir, I have a few remarks to make on that point. This clause is evidently framed with the object of giving to the railway employees the extraordinary power to insist upon the railway companies at all times employing what may by the employees be considered a proper number of men.

Mr. CASEY—It does not say so. That is not the provision of the bill at all.

Mr. POWELL—That is left to the law to decide.

Mr. TAIT—I presume evidence would be wanted.

Mr. CASEY—This is the bill handed to me by the railway employees and I think it is imperfect in the matter of saying who is to decide what number is to be employed.

Mr. TAIT—Probably evidence will be required, and the employees on a section for instance where there are five men employed might agree that they would give evidence that two men more were wanted on that section, thus easing the work for the five men already employed.

Mr. CASEY—I think this is a matter that would be left to the Government engineer or some one of that kind.

Mr. WAINWRIGHT—It is emphatically a matter for the Privy Council Committee to deal with.

Mr. CASEY—I do not think so.

Mr. TAIT—In the case of a strike of all classes of railway labour we have to go on and operate the road. We may not have a full complement of men as required by law that we would desire to have but we still could continue our operations on such sections as might be required to save life and property. This would give those on strike a decided advantage for they would at once appeal to the law to show that the company had not a sufficient number of men.

Mr. CASEY—Is there any legislation of this kind in the United States?

Mr. WAINWRIGHT—I do not know of any.

Mr. CASEY—Any legislation comparable to this?

Mr. TAIT—The only law in the direction to the equipment of cars with special appliances is what is known as the Coupler and Air Brake Act.

Mr. WAINWRIGHT—Yes, and that we are complying with.

Mr. TAIT—We do object to having a time put upon us for fixing it at 2 or 3 years.

Mr. CASEY—Have you a benevolent fund amongst your men?

Mr. TAIT—We have not, but we have practically the same thing as the Grand Trunk in this country. Of course if they are injured through their own negligence they have

no claim, but if injured through no fault of their own we take care of them, pay their hospital fees and make them some allowance. We do that voluntarily and we always take care of our injured men.

Mr. CASEY—You do not make any stated contribution to their benevolent fund?

Mr. TAIT—No, sir, we do not, nor do we call upon them to make any stated contribution to a benevolent fund either.

Mr. CASEY—In the case of the Grand Trunk fund is the contribution compulsory by the men? Is it kept out of their wages, or may they contribute or not as they please?

Mr. WAINWRIGHT—It is taken from them out of their wages. You will understand that our fund covers not only injury, but sickness as well.

Mr. TAIT—In remote districts where population is sparse and doctors would not remain unless they were guaranteed some fixed compensation we employ doctors and pay them a certain salary. Our men pay 50 cents a month to that fund and they get the doctors' services and drugs for themselves and their families except in midwifery cases.

Is it proposed, if this compensation clause is enacted, to relieve the railway companies under the common law?

Mr. WAINWRIGHT—In our cases we do not find that any payment that we have made is taken into consideration in a court at all.

Mr. CASEY—It does not relieve a company of their common law obligations.

The Select Committee of the House on Bill No. 2, further to secure the safety of railway employees and passengers, and Bill No. 3, to promote the safety of railway employees, met on Wednesday, May 5th, 1897.

Mr. A. HUDSON called.

Mr. CASEY—What is your position?

Mr. HUDSON—I am chairman of the Dominion Legislative Board of Railway Employees.

Mr. CASEY—How is that Legislative Board composed?

Mr. HUDSON—This Legislative Board is composed of representatives of the different railway organizations—the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen, the Order of Railway Conductors, the Brotherhood of Railway Trainmen, the Order of Railway Telegraphers, the Brotherhood of Railroad Trackmen. These bills as you are aware came before the Committee or were introduced in the House two or three years ago. Mr. Casey spoke to me in connection with them and I gave my ideas at the time, not having any power from the Dominion Legislative Board which was not formed at that time. The organization of the Dominion Legislative Board of Railway Employees was caused by a bill introduced by Sir John Thompson. Since then the Board has been organized and all the different railway organizations belong to it. I am its chairman and Mr. Low its secretary. At our meeting last year when the Dominion Legislative Board met the Government, these bills were taken up and amended. All we ask is what we consider right and just in the interest of the railway employees of Canada. We do not consider that the bills of Mr. Casey and Mr. Maclean are anything more than what is just and right in the interest not only of the railway employees but of the public, and also in the interest of the railway companies if they look at it in the right light. There is nothing that we wish to do or have said to induce the railway companies to do what is impossible or something that has not already been done in the United States and in other countries. For that reason we took these bills and struck out of them what we considered obnoxious clauses—clauses that we would have liked to have had retained but which we did not consider altogether just to the railway companies. Our committee appeared before Mr. Laurier and the members of the Government, and, as the Premier said, we were not asking for anything but what was fair and just and right. I will say that it is the wish of the railway employees as a whole in Canada, and the organized railway employees, that these bills should be passed as they stand. They do not contain anything but what they consider just and right and they think they should be passed as they stand. I refer to Mr. Maclean's, Mr. Casey's, Mr. Gibson's and the Alien Labour bills. I have been requested to come here and represent

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them. I was not able to come the other day because of the illness of my wife. This is what the railway employees wish and they consider it is nothing more than just.

Mr. CASEY—Is bill No. 2 as it now stands exactly in the form in which it was adopted by your organization?

Mr. HUDSON—Yes, exactly in the form in which it was adopted by the Dominion Legislative Board of Railway Employees who were represented here from Halifax and British Columbia.

Mr. CASEY—Were there clauses in my bill of last year which you struck out?

Mr. HUDSON—Yes, there were clauses which we would like to have had in but we thought probably that the railway companies would object to them, and we did not wish to put them to the expense of doing what we did not consider would be just or right at this particular stage.

Mr. CASEY—The bill you have put in the present shape with the object of commending it as far as possible to the railway companies?

Mr. HUDSON—Yes, the Canadian Pacific Railway Company seem to be doing as fast as they can what is right. They are equipping their cars as fast as they can, and I do not think this bill will affect them at all. The Grand Trunk Railway Company are also doing as much as they can. The trouble is with the smaller roads. A brakeman was killed here the other night, I think, by being blown off the train. With these arch iron rails on top of the cars we consider that brakemen would have a protection. When a man gets on top of a car now there is nothing to protect him while getting to the centre of the car. If there is one flat car on and the train is going at any speed he runs considerable risk, while going to put on the brakes. The first four or five cars next the engine might be box cars, and then there might be a flat car. He has to get down off the box car and climb over the flat car to put on the brakes, and without the arch iron rail he has nothing to protect him.

Mr. CASEY—It was urged at the last meeting of the committee by Mr. Wainwright or Mr. Tait that a ladder on the end of the car instead of on the side would be more convenient under these circumstances for a man getting off a flat car and upon a box car.

Mr. HUDSON—Not at all. They have placed these handles here. The train is moving and the man has to step off between these cars to get on the other car. He has to step off between the cars to get on the other car, whereas with the side ladders all he has to do is to catch hold of the iron and step on.

Mr. ELLIS—If the train is in motion?

Mr. HUDSON—Yes, if the train is in motion.

Mr. CASEY—This plan represents the end of a car with two iron handles diagonally on opposite sides of the end.

Mr. HUDSON—Yes.

Mr. CASEY—What is the object of these diagonal handles?

Mr. HUDSON—These diagonal handles are to allow a man to swing around and catch them on the end of the car if he wants to step in between the cars. The idea of the handle is two-fold. To assist a man getting on a flat car or something to take hold of if he is pulling the pin when the train is in motion. If he happens to get his foot into a frog he has something to catch hold of.

Mr. CASEY—Mr. Tait explained to us that the end ladder with the handle on the side was more convenient for the man when the train was in motion because he would grasp the side handle and the motion of the train would swing him around the corner of the car so that he would alight upon the end ladder.

Mr. HUDSON—Does that stand to common sense? Here is a train going at 5 miles an hour; a man grabs the side handle and he is swung around between the cars. If his hand slips he is thrown between the cars. If he catches hold of the side ladder he is outside of the cars. If two cars come too close together, or lumber projects too far beyond the ends of the cars a man climbing up the end ladder is crushed to pieces. The railway law provides that there should be nothing within a certain distance at the side of the track. The law provides that two tracks must not be too close to each other and that all poles must be a certain distance away, and there is nothing on earth that can catch a man climbing up the side ladder if the law is complied with.

Mr. CASEY—Suppose a car was standing on a siding at an acute angle with the track on which the car in question was moving; might not the corner of that car catch the man?

Mr. HUDSON—The law provides for that. It provides that a car can only be so far out and there must be a clear space from one track to the other.

Mr. CASEY—If it does not stand far enough to clear the law has been violated?

Mr. HUDSON—Yes.

Mr. CASEY—Then Mr. Tait told us that the car with the end ladders has been adopted by the Master Car Builders' Association and has become universal on this continent.

Mr. HUDSON—That is perfectly right.

Mr. CASEY—He says that this being the case a car equipped as you propose would be particularly inconvenient for men accustomed to the other kind of car.

Mr. HUDSON—The Master Car Builders' Association is composed of railway officials and they are protecting their interests, or what they think their interests, and not the interests of the railway employees. We are seeking to protect ourselves and we say we cannot be protected in any other way. We have adopted what we consider to be right and just for the safety of railway employees. As a body of railway employees representing all classes and men who have railroaded for 20 years, we have now laid before you a bill we consider in the interests of and for the safety of railway employees. I think if the views of the Master Car Builders' Association were carried out they would conflict with our wishes.

Mr. ELLIS—You do not seem to meet the point made by them. You make it appear that there would be some antagonism between you. This Master Car Builders' Association's idea is to have proper cars and they are as much interested as anybody else in saving railways from accidents. It was urged with great force that our cars going to the United States and having different appliances would cause confusion.

Mr. CASEY—Or rather their cars coming here.

Mr. ELLIS—Yes, the interchange of cars.

Mr. HUDSON—There are two cars in the United States with side ladders to one with end ladders.

Mr. CASEY—I want to hear your answer to the point as to the inconvenience of interchanging cars. A point that these gentlemen made in general terms was, that men accustomed to the end ladder would find themselves at a loss on a car which had only the side ladder.

Mr. HUDSON—In answer to that question I will state right here that the same conditions exist in the United States. Some organizations have adopted the side ladders and cars for the reason that I have stated. Here is a car and the train is moving at five miles an hour, the man has to catch hold of that handle there and swing himself around to the end of the car in order to climb up while with the side ladder he has only to climb up. There is everything in favour of the side ladders and nothing in favour of the end ladders.

Mr. CASEY—Suppose men were accustomed to handle cars with end ladders would they find themselves at a loss in handling cars with side ladders?

Mr. HUDSON—No, they are handling both to-day on every railway in the United States and Canada. The C.P.R. and Grand Trunk have both classes of cars and so has every road that I have seen or travelled over.

Mr. CASEY—As a railway employee do you consider that there is a real necessity for this arched iron rail handle on the top of the car?

Mr. HUDSON—Yes, that is one of the strongest points that the railway employees insist upon.

Mr. CASEY—It was thought that men accustomed to use cars with that iron railing on would be at a loss when they came to brake cars which did not have it on.

Mr. HUDSON—No, I do not think that would be the result. They would know what roads had these irons on, and they would govern themselves accordingly, just as they do with the different brake wheels. There is no system for that at all. They go out to put on the brake in the dark; they feel for it; some are two or three feet high,

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and some not a foot high. This rail is our protection, and if it becomes law we are satisfied that it will become universal.

Mr. CASEY—Clause 1 of bill No. 2 provides for an automatic arrangement connected with the air-brake to notify the engineer if there is anything wrong with the brake. We were told the other day by Mr. Wainwright and Mr. Tait that if the brakes were properly tried before the train started there was no possibility of their going wrong afterwards.

Mr. HUDSON—I do not agree with them.

Mr. CASEY—What have you been?

Mr. HUDSON—I have been a locomotive engineer for 15 or 16 years. In the first place, there are angle cocks in each pipe at the end of each car or at the back of the tender. When the cock in the pipes is open, the handle is supposed to be straight in line with the pipe; when it is shut, the handle is supposed to be hanging down. I was pulling a train with Mr. H. B. Spencer, ex-Superintendent of the Canadian Pacific Railway, and now General Manager of the Hull Electric Railway Company, in the engine. We had hold of an excursion train out of Smith's Falls. The brakes were tried there. I came into Carleton Junction, and I tried my brakes. When I came to the semaphore, and found that I had no brakes except on the engine, I reversed my engine. Somebody, after these brakes had been tried, had turned that cock and cut off my connection with the train. There are several other cases which have been brought to the public's notice as well as to the notice of the companies, where trains have run past stations. I can refer to one case at Buckingham. The engineer tried to stop his train at Buckingham, and ran a mile before he could stop it. Tramps get on between the train and the tender, and there is nothing to prevent them from turning that cock; and if that is done there is nothing to notify the engineer until he comes to apply his brakes. With that safety device the cock could not be turned without the engineer's assistance.

Mr. CASEY—Whose device is that?

Mr. HUDSON—It is Mr. Deyell's of St. Thomas. There is one being worked on the Canada Atlantic Railway now. There is an arrangement with the valve in the coupling of the hose, so that when the hose is coupled it opens the valve, and when the hose is uncoupled the valve is closed. The uncoupling of any of this hose blows the whistle on the engine. I think if this bill were adopted there would be several other devices brought out. In the past the companies have refused to adopt this device, because they hold the Westinghouse Company responsible for anything that might happen from a failure of their brakes. The Westinghouse Company would not adopt this device; therefore the companies refused to adopt it. They would adopt anything that the Westinghouse Company put on.

Mr. CASEY—Mr. Tait told us that if Mr. Deyell's appliance were adopted, it would cause great inconvenience in cutting out cars because the pressure would have to be reduced to a certain number of pounds before a car could be uncoupled.

Mr. HUDSON—In the operation of trains the first consideration should be safety. A few minutes' time does not amount to anything if it is going to do anything which will protect the lives of passengers and railway employees. We admit that Mr. Deyell's device takes a little more time than the present system. All you have to do now is to jerk the hose apart and it is uncoupled, but in the other case the engineer has to put on the air to unlock Mr. Deyell's device, then lets his brakes off and the thing is uncoupled. I will admit it takes a little more time, but safety is what we are looking for—the safety of the public and the safety of the employees. We are not taking the time into consideration at all.

Mr. CASEY—You consider that some better device would probably come out?

Mr. HUDSON—Yes; I consider the Westinghouse Company has perhaps something better adapted to the purpose, but they may not be prepared to put it on.

Mr. ELLIS—Suppose the Westinghouse Company were not to adopt these things, or suppose they were adopted by the railways, the Westinghouse Company would no longer guarantee their apparatus.

Mr. HUDSON—When it was proposed in the United States that Congress by law should adopt anything that the railway companies and the Westinghouse Company very strongly opposed and made threats that they would not adopt when it became law, they soon adopted it. The Westinghouse Company are not going to throw away a large business simply for a small additional outlay that they will be paid for, and if this is going to be for the safety of the employees as well as the public, why can they refuse to put it on?

Mr. CASEY—It seems to me that the argument that the Westinghouse Company will not adopt this, and therefore that we should not compel them to adopt something of the kind, amounts to saying that the Westinghouse Company has the control of what shall be used.

Mr. HUDSON—The first question is, "Is it right that this law should be enacted?" and if it is, then the question arises whether we shall adopt this device or not.

Mr. CASEY—I want to ask you about these points in regard to the size of box freight cars. Section 2 of bill No. 2 provides that "all box freight cars built for use on Canadian railways shall, after the passing of this Act, be of a uniform standard height and of a capacity not to exceed 60,000 lbs." The railway representatives say that they have adopted a uniform standard height for the drawbars and the height from the ground, which they consider right; but that a uniform roof height of cars is impossible to secure, because they have to build different cars of different heights for furniture, refrigerator cars, and so on. They say also that a maximum of 60,000 pounds capacity is not practicable inasmuch as they are building cars heavier than that in the States, and that they have to build them in Canada to meet competition. I suppose you have good reasons for asking for a uniform standard height, that is the roof height, and reasons for asking that the capacity of cars be not more than 60,000 lbs. We would like to hear them.

Mr. HUDSON—Our reason for a uniform standard roof height—we do not care what the height is, so far as that is concerned—is that when a brakeman is running over the top of a train and comes to a car which is two feet or two and a half feet lower he has to jump down to the other, and then when he comes to another high car he has to jump up two feet or two and a half feet to get up to that. The cars are of mixed heights, and we do not see any reason for having different cars for grain, furniture, or anything else. We claim they can build furniture cars of a height which could carry anything.

Mr. ELLIS—If they have these appliances how does that affect them? Will they not have these end ladders to get on top from a low car?

Mr. HUDSON—He won't have the ladder if he is going over the running board. When he is walking along the running board and finds one car three feet lower and another three feet higher there is no ladder, and at night time he cannot see where the ladder is.

Mr. CASEY—Your point is that a uniform running board is essential to safety?

Mr. ELLIS—You don't catch on. I see the difficulty in getting down but not getting up; for if you can get up from the ground by the end ladder you can use it for getting from a low car to a high one.

Mr. HUDSON—When a man is going along the roof of a car and has got to step up to the other running board, nothing at either sides or ends will help him. A uniform height would make it safer for the brakemen.

Mr. CASEY—What are your reasons for limiting the capacity of cars to 60,000 lbs.?

Mr. HUDSON—The roadbeds are not fit for heavier cars at the present time. There is no roadbed in Canada to-day fit for more than a 60,000 lb. car.

Mr. CASEY—How much does an engine weigh?

Mr. HUDSON—Considerably more, but it has bigger wheels and is not so apt to spread the track. In days gone by you did not hear so much about spread rails. Heavy cars with small wheels would cramp on curves or the flanges striking against the rails would cause them to spread. An engine with six-foot wheels has a larger bearing on the rail.

Mr. CASEY—You think a uniform roof height is to be got by making all cars as high as the highest needed? Would not that be an unnecessary height for grain cars?

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Mr. HUDSON—There is the point. There are not many furniture cars and in days gone by the railways carried it in common cars. Now they build them this size to carry more; but you don't get your furniture carried any cheaper in one than in two cars.

Mr. CASEY—But keep to the point. You say a uniform height is to be obtained by making all cars as high as the highest needed. Would not that be too high for ordinary use?

Mr. HUDSON—Yes.

Mr. CASEY—Then the only thing is to keep them down to the size of refrigerator cars?

Mr. HUDSON—Yes; the Canadian Pacific Railway's refrigerator cars are good average size.

Mr. CASEY—How would that work with American roads?

Mr. HUDSON—They have none that I have seen any larger than the Canadian Pacific refrigerator cars.

Mr. CASEY—Then the Canadian Pacific refrigerator cars are about as large as the American cars?

Mr. HUDSON—About the same size as refrigerator box cars, such as Armour's.

Mr. CASEY—That is all on that point; unless any other member of the Committee wishes to ask anything. I want to ask you particularly about the matter of attachments. In regard to air brakes and automatic couplers, my recollection is that Messrs. Tait and Wainwright agreed to the necessity of applying these, but said they were putting them on as fast as they could. I do not know whether there is anything in that requiring an answer from Mr. Hudson. Just make a general statement regarding air brakes and automatic couplers.

Mr. HUDSON—With regard to the Canadian Pacific Railway, they are doing what is right and will come within the law, and the Grand Trunk under the new management are doing the same; but the small roads are not doing anything, and we claim that the law should be enacted, compelling every road within a certain time to have their cars equipped with these appliances, as in the United States. You will have seen that Congress extended the time, which was up in 1895, for two years. Let the Government make a time and if the work is not done then we won't kick about an extension; but make all the roads do it. The Canadian Pacific is doing it because they have to comply with the United States laws.

Mr. CASEY—Would you be willing to accept clause 3 requiring the use of air brakes and couplers within two years with the understanding that the time be extended from time to time by Order in Council?

Mr. HUDSON—Extended for how long?

Mr. CASEY—For another two years.

Mr. HUDSON—Yes; the employees were very clear on that. They said they would not object to that. They wanted this made law so that they could insist upon the small roads adopting these appliances.

Mr. CASEY—I may tell you that is the proposal which Mr. Wainwright is willing to accept on behalf of the Grand Trunk Railway.

Mr. HUDSON—The Canadian Pacific and the Grand Trunk are not the particular roads we are fighting, but the small roads.

Mr. ELLIS—I would like to call attention to this fact: In New Brunswick a protest has been filed by several very small roads attached to the Intercolonial Railway, or maybe to the Canadian Pacific Railway, but chiefly to the Intercolonial, and really they are in such poor condition and are more convenience than anything else—such as the Kent Northern, the Hillsboro' Road and other roads—that I think they ought to be exempted altogether. Nobody is ever killed there, they go so slow.

Mr. HUDSON—It can be done by Order in Council, when the road is poor or has very small traffic.

Mr. CASEY—Are you willing to agree to have such roads exempted by Order in Council?

Mr. HUDSON—So far as the smaller roads are concerned, but there are roads like the Gatineau Valley Railway, the Kingston and Pembroke Railway, the Ottawa,

Arnprior and Parry Sound Railway, and the Quebec and Lake St. John Railway. We would not be willing to have them exempted where they should know they are able to provide the appliances the same as others. But on roads like those mentioned where there is only one train a day, and perhaps they have only about a dozen cars, we would exempt them.

Mr. ELLIS—And the cars are difficult to attach the appliances to.

Mr. HUDSON—And many of those mentioned use Intercolonial cars.

Mr. LEWIS—The Hillsboro Company use their own cars.

Mr. HUDSON—That could be overcome. We don't want to be arbitrary, but we want the roads that are able to do it, forced to do it.

Mr. CASEY—I want to bring you on to the compensation question. This clause of bill No. 2 is in the shape in which it was put by your committee?

Mr. HUDSON—It is.

Mr. CASEY—The general principle is that a man who is injured while doing his duty, not being his own fault, is entitled to a fixed compensation for himself or his heirs in case of injury or death. Now, have you reasons to advance why that principle should be enforced as a principle, without regard to the amount?

Mr. HUDSON—As you are all well aware, ours is a very hazardous position, and where accidents happen we have a good deal of trouble in getting anything for the heirs of deceased, and we think that, following up the practice in the States, there should be a law.

Mr. CASEY—Just on that point, can you tell me where there is such a law in the States?

Mr. HUDSON—In Ohio and Minnesota, and in several of the States there are laws both for passengers and employees, that they get a certain amount when killed or hurt. It is allowed by the state, as this bill provides, besides what may be allowed to them by a court and jury afterwards. The general principle is just and right in every respect, so far as the indemnity is concerned and compensation while injured. If a man is injured through his own neglect we provide that he gets nothing, but where there is neglect on the part of the company, or through its not doing work required on cars or engines, and the man takes an extra risk and is hurt or killed, we consider there should be extra compensation.

Mr. CASEY—Supposing it is what is called a pure accident, where nobody can say how it arises, where it is caused through no carelessness, a man must receive a fixed compensation. Is that your opinion?

Mr. HUDSON—There are different ways of answering that. It is very seldom an accident occurs but someone is to blame, either the company or an employee.

Mr. CASEY—But suppose something breaks?

Mr. HUDSON—It would be purely an accident. We don't consider this clause comes in at all. It is for cases of neglect that we want the law. The latter part of the clause takes away the difficulty.

Mr. CASEY—That is subsection 6 of clause 7? It enacts "The foregoing provisions as to compensation shall be void in the case of any employee whose injury, disablement or death is caused by his own negligence,—the burden of proof of such negligence being upon the railway company; but if such injury, disablement or death occurs in the handling or use of trains, locomotives, cars or appliances which are out of repair, or insufficient, or not in accordance with the provisions of this Act, or if the provisions of section 8 of this Act have not been complied with, the railway company shall not be allowed to plead contributory negligence on the part of the employee so injured, disabled or killed."

Mr. HUDSON—That latter part covers it. I was going to show you a case—I find no fault with the railway company at all—

Mr. CASEY—Hold on a minute. I want to get at the intention of your friends in framing this bill. You don't wish to claim damages where apparently there is no one to blame.

Mr. HUDSON—We do not. There was a run off at Hull sometime ago, during the Session, and some of you gentlemen may have heard of it, when an engineer and fire

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man were killed. Actually no one was proved to blame for it, or for the switch which was left open. The engineer to save the passengers stayed on his engine and when it turned over he and his fireman were scalded to death. We took the case up and succeeded in getting \$2,700 for the engineer's wife and \$1,000 for the mother of the fireman, but it was simply a settlement between the Brotherhood of Locomotive Engineers and the company. But still the switch was left open and that man, doing his duty, saved his train and passengers' lives but lost his own life.

Mr. CASEY—In that case you consider there should be compensation?

Mr. HUDSON—We consider that the wife of the engineer and the mother of the fireman should be entitled to so much without begging or praying for it. There are several other cases I could mention; but this is just one.

Mr. CASEY—Suppose that through a failing of the rolling stock, suppose that a wheel breaks or a rail gives way going around a curve, or some circumstances arise quite beyond the control of employees, don't you consider that a fixed compensation should be given to the man who is doing his duty and killed in that?

Mr. HUDSON—Where the company would not be to blame?

Mr. CASEY—I ask, whether the company is to blame or not? Supposing the case of a man doing his duty correctly, according to the rules of his position, and that some of the company's property which he is using breaks down and involves him in injury. Don't you consider he has a right to compensation?

Mr. HUDSON—I do; because these things won't happen without something being wrong.

Mr. CASEY—Then I understand it is the intention of those promoting this bill that companies shall be supposed to have all plant and roadbed which may cause accident in perfect order?

Mr. HUDSON—Yes; we consider it to be in the interests of the public.

Mr. CASEY—I want to ask you about the difficulty of getting insurance.

Mr. HUDSON—Well, I may tell you that to get \$2,000 for death or permanent disability, or \$10 a week for injury an engineer has to pay an Accident Insurance Company \$32 a year, and a brakeman has to pay up before he can get his \$500 or \$5 a week \$32 a year. They are classed in different hazardous positions. Firemen are on the same lines as engineers. Brakemen cannot get life insurance at all, as the straight life companies won't insure them. They will insure engineers, but at high rates. Accident Companies, such as the Hartford, will take brakemen but the old line companies won't.

Mr. CASEY—Have the organizations mutual insurance?

Mr. HUDSON—Yes. The \$4,500 which I had on my life when I lost my hand cost me about \$40 a year, but they would pay the full amount for the loss of a hand, an eye or a foot.

Mr. CASEY—Is that considered a permanent disability?

Mr. HUDSON—Yes. Of course it costs us more. When I lost my hand three engineers between here and Brockville lost their hands and every man got his insurance.

Mr. CASEY—Just now, would you mind telling the Committee how your hand was lost?

Mr. HUDSON—I had a new pair of wheels put in at Ottawa, like last night, and went down to Montreal on a passenger train and very soon a brass ran hot. I was a long time in getting in, and in Montreal I had new brasses put in. Coming back they ran hot again. I had several passengers on board for the Toronto connection and 20 miles from Montreal I got down, oiling them at every stop. My fireman, in order to save a couple of minutes, started the engine when the conductor gave the signal, and I walked along beside the engine oiling the brasses till I had to swing myself on board. I did this at every stop till we got to Buckingham. At Buckingham I was doing the same; but he started the engine a little quicker than usual, and while I was pouring oil in, I tripped over the end of a tie. I dropped through the driving wheels and when I saw they were going to go over my body, I freed myself and the engine went over my hand. That is a case where I never got anything. I never asked anything, and

they never offered me anything since. I considered I was to blame myself, and that I was taking risks.

Mr. CASEY—Do you consider that sending out engines with imperfect fittings?

Mr. HUDSON—No; I was to blame. I had a right to detain the train and report the cause; but I was trying to get my train in on time. There is a lot of red tape about these things, and a lot of letters written about being late, and I wanted to avoid that by being in on time.

Mr. CASEY—It seems the Grand Trunk have an Insurance and Provident Society, to which Mr. Wainwright says they pay \$10,000 a year. He claims that this Insurance and Provident Society and the payment by the company to it should exempt that company from the operation of clause 7 which we are discussing. Do you know anything about what the Grand Trunk men think of it?

Mr. HUDSON—Grand Trunk men are opposed *in toto* to the system. There is no satisfaction about it. They pay in while on the road, and when they go off it is done. It is a source of annoyance. Indeed, while Sir William Van Horne was talking about an insurance society on the Canadian Pacific Railway, I pointed out to him that the Grand Trunk men were opposed to it. We talked for over an hour, and he came to the conclusion that I was right, and would have nothing to do with it. By this petition you will see the Grand Trunk men are very much opposed to that system.

Mr. ELLIS—At our last meeting we had Mr. Wainwright before us, and this is what he said about the society we are discussing: "In regard to this I will say that it will very seriously hurt us, for the reason that we have at present a Provident Insurance Society, to which the Grand Trunk Company as a company contributes \$10,000 per annum. That society numbers about 15,000 men. They are provided with doctors all over the country in sickness, and have an insurance fund in case of death. We took some years to make it popular, and to-day I can say, speaking with authority as vice-chairman, that it is popular, and gives to our men what neither legislation nor anything else could give. It does not deprive them, if they have a case, of going to the courts, and we are sued occasionally by our men. They have a sick benefit of six months, and on death the heirs are entitled to a certain sum. If this bill passed we should have to give up the society."

Mr. HUDSON—That is just what the men want. Here is where the dissatisfaction comes in. Suppose I am an engineer, and am off for six weeks. They send me a check for three or four weeks' benefit. I have to keep my mouth shut, for if I do any kicking I suffer.

Mr. CASEY—This company is under the control of officials entirely?

Mr. HUDSON—And they pay what they think fit to pay.

Mr. ELLIS—But Mr. Wainwright told us that they have committees in each district, and the compensation is fixed by them.

Mr. CASEY—I shall read from the Constitution and By-laws, beginning at section 31: "(13.) The Committee of Management shall consist of four members nominated from time to time by the Board of Directors of the Grand Trunk Railway Company, and of the following officers for the time being of the company, viz.: The General Superintendent, Chief Engineer, Superintendent of Motive Power, Superintendent Car Department, Superintendent of Hamilton Foundry, Treasurer of the Grand Trunk Railway, General Freight Agent, General Auditor, General Passenger and Ticket Agent, and General Purchasing Agent, and of two members to be nominated by each Local Executive Committee." That provides for four members appointed by the company and two members appointed by each Local Executive Committee. Then it goes on:

"(14.) To each district there shall be appointed a medical officer, and the company's chief medical officer at Montreal shall be entrusted with the duty of generally superintending the medical affairs and staff of the association."

Mr. HUDSON—There is nothing there that tells you what it is.

Mr. CASEY—" (25.) The company's system shall be divided into sections, the number and extent of which shall be determined by the Committee of Management.

"(26.) There shall be a Local Executive Committee in each section, the members in the section electing seven members in the committee, to be elected by ballot fourteen (14) days prior to the annual general meeting."

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Mr. HUDSON—That has got nothing to do with this executive referred to, nor with the board.

Mr. CASEY—Yes, it has.

Mr. HUDSON—I tell you it has not.

Mr. CASEY—I am reading from the constitution. It states that two members nominated by each Local Executive Committee shall be members of the Board of Management. Under the heading of "Executive Committees," it is provided that the company's system shall be divided into sections, and in each section there shall be a Local Executive Committee, the members in the section electing the members of the Executive Committee. Each Local Executive Committee shall appoint two members to the Board of Management.

Mr. HUDSON—No.

Mr. CASEY—Well, that is the statement in their constitution.

Mr. HUDSON—If you understood the meaning of "Railway Local Executive Committees," you would understand why I dissent. I will tell you what these committees mean. Each organization has a committee. The engineers have an Executive Committee for the system which —

Mr. CASEY—We cannot have you read your mind into this constitution and by-laws. The thing is made clear—two members to be elected by each Executive Committee. The constitution says that the Executive Committee shall be elected by all the members of this society in each section of the company's system.

Mr. HUDSON—If you wish to take that meaning out of it there is no use of my explaining it.

Mr. CASEY—The meaning is clear there. I will ask you if the plan is a good one?

Mr. HUDSON—That is not the plan in the first place.

Mr. CASEY—That is the plan laid down.

Mr. HUDSON—No, it is not. I had something to do with the working of it.

Mr. CASEY—I cannot allow Mr. Hudson to make his statement in that way. We have before us, which I have not seen before, the constitution and by-laws of this Insurance and Provident Society of the Grand Trunk Railway system, stating how it is composed. We have to take this constitution and by-laws as the constitution and by-laws of the society. As to the meaning of the constitution and by-laws Mr. Hudson is not the judge. As to whether the system works well and as to whether the men are contented with it, I will ask his opinion.

Mr. HUDSON—The men are not satisfied with it and there has been dissatisfaction from the beginning among them.

Mr. ELLIS—There was a statement made that the men were fairly satisfied with it and that one of the men got up at the annual meeting and so stated.

Mr. HUDSON—There is only one way to satisfy yourselves as to whether this is correct or not. The company say they pay in \$10,000. Have they shown you what they pay out?

Mr. CASEY—Yes, here is an abstract they have submitted of the receipts and expenditure as furnished to the members of the society themselves. I got this, just this morning from Mr. Wainwright and I have not had time to look over it. I will read what they are said to have paid out:

	1896.	1895.
Sick Benefit Fund . . . . .	\$87,864	\$80,763
Life Insurance Fund . . . . .	69,943	75,940
Temporary Employees Accident Insurance . . . . .	12,594	11,672

The receipts are made up of the company's contribution and monthly fees. They are as follows:

	1896.	1895.
Monthly Fees . . . . .	\$60,822	\$61,715
Annual Fees of Retired Members . . . . .	553	496
Grand Trunk Ry. Co's. Annual Allowance . . . . .	12,500	12,500
Interest on Monthly Balances . . . . .	158	395
Balance . . . . .	13,829	1,914

Mr. HUDSON—Do the men get back there what they put in? What the company put in is proportionately trifling.

Mr. CASEY—About one-sixteenth of the total receipts appear to have come from the company.

Mr. ELLIS—Mr. Ingram put this question to Mr. Wainwright: "The officers are elected by the men?"

Mr. WAINWRIGHT—Yes; the chief officers represent the company *ex officio*, but the rest are elected by the men.

"Mr. INGRAM—There is no fraud in the election?"

"Mr. WAINWRIGHT—None at all, they elect the officers themselves. At last meeting one gentleman got up and made the statement, that it had been thought a few years ago, that the society would not succeed because they thought it would be run from headquarters and by the officials of the company, and they were delighted to express themselves that the men had everything to say in its management." This of course is Mr. Wainwright's statement.

Mr. HUDSON—I do not think this is an argument that would affect the question.

Mr. CASEY—I will give you the contributions of the men and the company from 1st January, 1885, when the society was organized, to 31st December, 1896. The members contributed in that time \$1,512,593 and the company contributed \$150,868.

Mr. HUDSON—Quite different; and so far as the men attending the meeting are concerned, if you ask Mr. Wainwright for the names and occupations of the men who attended the last annual meeting you will be surprised at the smallness of the number of employees who were there. I do not wish to state how many there were.

Mr. CASEY—That is what we want to ask you.

Mr. HUDSON—I cannot give it to you exactly, but I can get it for you.

Mr. CASEY—Mr. Wainwright proposes that, in case this bill should pass, railways like the Grand Trunk which contribute to a fund of this kind should be exempted from its provisions. Do you consider that such a contribution as the Grand Trunk make in this case ought to put them outside the limits of this bill?

Mr. HUDSON—No, sir; the men are willing that this whole thing should be dropped.

Mr. CASEY—You are aware of the feeling of the Grand Trunk men?

Mr. HUDSON—Yes.

Mr. CASEY—Now, in regard to the amount of the compensation payable, I find it is put here at 60 per cent of the current rate of wages during the time a man is laid off, and \$3,000 for death or permanent disability. Would you discuss these amounts?

Mr. HUDSON—We fixed that amount for disability; we put it at what a man would earn. An engineer earns so much, and a brakeman so much, and in case of injury he would have 60 per cent of what a man similarly employed would get. In case of death, we consider a brakeman's life just as valuable as that of an engineer, and we fix the amount at \$3,000. This, we consider, is as little as can be asked.

Mr. CASEY—How does that compare with the benefits of the insurance companies?

Mr. HUDSON—It is about on a line with the different organizations. We have no sick benefit, but we take accident assurance in the different companies to cover sick benefit.

Mr. CASEY—What do you get in these?

Mr. HUDSON—If we take \$1,000, we have \$5 a week; if we take \$2,000, we have \$10 a week.

Mr. CASEY—Clause 8 of the bill provides that every company shall have a sufficient number of operators, trainmen, section men, etc., to safely carry on its business. Mr. Wainwright and Mr. Tait say that this clause would simply put them in the hands of strikers; that in the case of a strike, or anything of that kind, they might be able to run their trains; they would not be able to keep up their full number of men, but they would be able to run the road. Under these circumstances they would be running it illegally, and subjecting themselves to the penalties of the law. Is that the intention of the clause?

Mr. HUDSON—No; it is not the intention of the clause at all. The intention of the clause is to provide that there shall be a proper number of section men—not two

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section men to every 20 or 25 miles of road, as they have had it in the North-west this last winter and previous winters. The roads are undermanned from the 1st of October or November to the 1st of May. The "Rule Book" provides that a man has to go out a certain distance with the flag while the section men are engaged in changing a rail; and if that rule is carried out, and the men were out with the flag, there would be no one to do the work. So far as the operators are concerned, we consider that there should be more of them on the line, and that instead of boys they should be men. There are too many boys employed as operators at night. They put a boy 15 or 16 years of age on operating at night. You all know what boys are for sleeping. It is impossible for a young man growing to keep awake at night-time. They are employed simply because they can be got cheaply. The companies will not allow a man to be a conductor or an engineer until he is 21 years of age. Why should they allow him to be an operator? We consider that the same law should apply to an operator as to an engineer or a conductor. All we ask is to have sufficient operators for the road to be run without undue risk. The clause was not intended to help the strikers. We simply wish to have a sufficient number of men to carry on the road successfully.

Mr. CASEY—Can you mention any accidents that you have known to occur through the undermanning of the roads?

Mr. HUDSON—Yes, I could give a number of them; but I did not come here for that purpose. I do not wish to say anything of that kind to influence this committee.

Mr. CASEY—We expect you to give us all the information you can.

Mr. HUDSON—I will hand you something in writing. I want to be exact.

Mr. CASEY—The plan produced by the railway employees shows the end of a car with two iron handles about two feet long and about two feet from the bottom of the car in a diagonal position, almost horizontal. A brakeman going between the cars for the purpose of coupling while the train was in motion would support himself with these handles while operating the pin or the coupler, and would not fall if he tripped over a tie?

Mr. HUDSON—Yes, that is right.

Mr. CASEY—A man climbing from a flat car on to a box car with the proposed attachments would catch the handle above referred to with his left hand, throw his right foot and arm on to the side ladder and so climb up to the roof. If he fell he would fall clear of the track, whereas with the end ladder if he fell he would fall between the cars.

Mr. HUDSON—Yes.

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The Select Committee on Bill No. 2, further to secure the safety of railway employees and passengers, and Bill No. 3, to promote the safety of railway employees, met on Tuesday, May 11, 1897.

Mr. Fred Harris, superintendent of the New Brunswick and Prince Edward Island Railway, was called.

Mr. ELLIS—What is the length of your road?

Mr. HARRIS—It is thirty-six miles long.

Mr. ELLIS—Is it operated as an independent road?

Mr. HARRIS—As an independent road, as a company road.

Mr. POWELL—Would your road be fairly representative of the branch railways in New Brunswick and the Maritime Provinces?

Mr. HARRIS—Yes, of that class of railways. There are heavy traffic roads like coal roads that would not compare with ours.

Mr. POWELL—Outside of the coal roads it would be fairly representative?

Mr. HARRIS—Yes, fairly representative.

Mr. POWELL—Of what are known popularly there as branch railways?

Mr. HARRIS—Yes.

Mr. POWELL—Both as respects length and traffic?

Mr. HARRIS—Yes.

Mr. POWELL—And I suppose yours is more paying than the others?

Mr. HARRIS—It is generally recognized as a little better paying road than the rest of them.

Mr. POWELL—Have you seen these bills?

Mr. HARRIS—Yes, I saw a copy of them.

Mr. POWELL—Just state any points in favour or against the provisions of the bills. Take first bill No. 2, section 1, providing that cars fitted with air brakes shall be provided with an automatic device so arranged that after the cars are coupled the connection between the brakes and the air pump on the locomotive cannot be broken or the couplings deranged accidentally or otherwise without the knowledge of the engineer. What about that section?

Mr. HARRIS—As far as that is concerned I know of no fairly reliable action in the shape of an automatic coupler at present. This thing is being looked after, but no satisfactory device has yet been produced that I know of.

Mr. ELLIS—Mr. Hudson, who gave evidence the other day, expressed his belief that if there were such a law passed something would be developed.

Mr. CASEY—Mr. Tait of the C. P. R. stated that there was a thoroughly effective device but the objection to it was its inconvenience in coupling and uncoupling cars.

Mr. INGRAM—His objection was that it took too long to recharge.

Mr. CASEY—His only objection was loss of time.

Mr. POWELL—You have heard of such devices?

Mr. HARRIS—Yes.

Mr. POWELL—But none that it would be desirable to adopt?

Mr. HARRIS—None yet.

Mr. POWELL—What is your objection to it?

Mr. HARRIS—The loss of time.

Mr. CASEY—I do not suppose that you have paid any attention to this on a small road; so that really your opinion has not as much weight as if you had given attention to it.

Mr. HARRIS—No. I was employed on the I. C. R. before I went to this road.

Mr. POWELL—Clause 2 of bill No. 2 provides that freight cars shall be of a uniform standard height and of a capacity not to exceed 60,000 lbs. What about this?

Mr. HARRIS—I do not see any special necessity of prescribing a standard of height and capacity for a small road like ours. We have on our road different heights, sizes and capacities of cars. We haul quite a number of American, Grand Trunk, C. P. R., I. C. R. and branch road cars, and these vary very much in height and capacity.

Mr. CASEY—Speak of your own cars. Are they of standard height and capacity?

Mr. HARRIS—They are not at the present time standards.

Mr. CASEY—Are they uniform?

Mr. HARRIS—We only have a small number of cars—two box cars and 33 flat cars.

Mr. CASEY—So that this bill would not apply to your road to any great extent.

Mr. HARRIS—No, sir. The cars that go down our road are cars from the Intercolonial.

Mr. INGRAM—What do you mean by standard—from the coupler down to the rails, or from the top of the car?

Mr. HARRIS—I mean the standard adopted by the Master Car Builders' Association. We only use our cars for local freight, and the other cars we haul are transferred from the I. C. R.

Mr. POWELL—Supposing the other cars were uniform there would not be much difficulty in having yours made uniform with them?

Mr. HARRIS—Not at all.

Mr. POWELL—The provision that cars shall not exceed 60,000 lbs. in capacity would not affect the branch lines, because you have no large cars.

Mr. HARRIS—No, our cars are not of that capacity.

Mr. POWELL—So far as the first principle of this clause is concerned there is nothing that would operate against you.

Mr. HARRIS—No.

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Mr. POWELL—Subsection *a* of clause 2 provides that there shall be outside ladders on opposite sides of the end of each car. What about that? You run a great many box cars over your line. You have been a railway man for a long time?

Mr. HARRIS—Yes, I have been railroading for 26 years.

Mr. CASEY—This plan has been proposed by the railway men. These things on the end are grips to enable a man getting off a flat car on to a box car to grab hold of.

Mr. HARRIS—I would consider the outside ladder objectionable if there was not some provision like this to swing around to. The end ladder is better for a man getting off a flat car on to a box car opposite. In getting off the ground on to a train with this present device as shown in this plan the side ladder would be preferable.

Mr. CASEY—Do you consider the device shown on the end which I pointed out, the iron handle, would make the side ladder a convenient arrangement for a man climbing on a box car from a flat car?

Mr. HARRIS—Not so convenient as the end ladder, but still it would be better than having the side ladder alone.

Mr. POWELL—It would be a little assistance.

Mr. HARRIS—Yes, a little assistance. One objection would be this:—sticks are sometimes hanging out of a car loaded with wood, bark and that sort of thing and there is not always an exact clearance from the siding that there should be. A man climbing up the side ladder would be apt to get pushed off very easily.

Mr. CASEY—You say that sometime there is hardly room for a man to climb the outside ladder without being struck by projections from another passing car.

Mr. HARRIS—Yes, from a car on the siding.

Mr. CASEY—Would that not be owing to carelessness? Is there not a limit prescribed?

Mr. HARRIS—Yes, there is a limit but it is not always kept within by any means.

Mr. CASEY—A certain number of feet?

Mr. HARRIS—It is just described as a proper clearance.

Mr. CASEY—Would you not have a proper clearance?

Mr. HARRIS—An engineer would run by a siding if a car was standing a foot clear.

Mr. CASEY—If the car on the siding was a foot clear?

Mr. HARRIS—Yes. I have frequently been riding on railroads and have seen cars standing so close to the train that if I had put my head out of the window it would have touched the car on the siding.

Mr. POWELL—And then also on these branch lines, Mr. Harris, there is a great deal of lumber carried, is there not?

Mr. HARRIS—Yes.

Mr. POWELL—How about the piling of that along the side of the track?

Mr. HARRIS—That can be regulated by the Company not allowing them to pile it too close to the track.

Mr. POWELL—Do they obey your orders with respect to that?

Mr. HARRIS—No, they do not.

Mr. POWELL—How is it as a matter of practice?

Mr. HARRIS—They don't keep within the rules by a long distance.

Mr. POWELL—I should not think they would be responsible if other people voluntarily offended against the rules. The railway companies would not be responsible.

Mr. CASEY—You want to tell us particularly any special objections why your roads, as distinguished from the larger roads, should not carry out these enactments.

Mr. HARRIS—I came in as a spectator with Mr. Powell, and it might be better if the committee were to put questions to me, on any points they like.

Mr. INGRAM—You were just now speaking of obstructions at the side of the track. Does your company use order boards?

Mr. HARRIS—No; we operate by telegraph.

Mr. CASEY—What is the connection?

Mr. INGRAM—A conductor coming from the train to get orders, gets off at the station. Getting on, he gives the signal to the engineer to go ahead, and when climbing up is likely to strike his head against the order board.

Mr. POWELL—That would be no objection here.

Mr. ELLIS—Is that a thing you ought to have?

Mr. HARRIS—It is not a thing we consider necessary.

Mr. POWELL—I want your opinion as a railway man, so far as regards danger, which would be the best protection in view of danger, the end or the side ladder?

Mr. HARRIS—I think, as a whole, I would prefer the ladder put on the end of the cars.

Mr. POWELL—Do you think that would be safer?

Mr. HARRIS—Yes.

Mr. CASEY—How do you account for the fact that the railway men, through their organizations, have unanimously decided to ask for the ladder on the side instead of the end?

Mr. HARRIS—I suppose that is on account of men who are shunting, and whose train starts, liking to get up by the side.

Mr. CASEY—Would not the men who had to do the work be the best judges?

Mr. HARRIS—It is generally the way in all practical work.

Mr. INGRAM—Do you notice the iron rail on that plan (pointing to the working-men's plan) from the end of the car to the running board to aid men getting on top?

Mr. HARRIS—It is not an important necessity on our road.

Mr. INGRAM—Would it be on the Intercolonial Railway?

Mr. HARRIS—Yes; a good deal.

Mr. INGRAM—Do you think that a man when running on the top would be in danger of tripping over this device, mentioned in bill No. 2, from the side ladder to the running board?

Mr. HARRIS—I suppose men would confine themselves to the running board and avoid this handle altogether. That is to say, I don't think that men are in the habit of running along the side of the car off the running board.

Mr. INGRAM—You never had any practical experience in that line yourself?

Mr. HARRIS—No.

Mr. POWELL—When the trains are in motion, brakemen have to pass from car to car. Which is safer for passing from a flat car to a box car, this ladder on the side or the one on the end?

Mr. HARRIS—In the case of box cars the men just cross the gap between the cars, but in the other—that is on a mixed train—I would consider the end one safer.

Mr. CASEY—I understand you to consider the side ladder has good points in the matter of mounting from the ground?

Mr. HARRIS—Yes.

Mr. CASEY—But that the other might be better in cases of mixed trains, where there are box and flat cars?

Mr. HARRIS—Yes.

Mr. CASEY—A point that was made by a previous witness was that in cases of collision or sudden jamming of the cars a man on an end ladder is in a bad box compared with the other.

Mr. HARRIS—That is true.

Mr. CASEY—Of course it is not a frequent occurrence?

Mr. HARRIS—Not very.

Mr. POWELL—If trains are regularly moving, except on starting, would a man be likely to be climbing the end ladder?

Mr. HARRIS—Not at all, except when signalling for two cars to come together, they might want to climb up.

Mr. POWELL—In such a case they might see the train coming and the ladder would be of use to get off rather than not?

Mr. HARRIS—Yes. And getting up on the end trains would be going exceedingly slow, and there would not be much danger except a man was riding on the end. I don't see much danger on the end more than on the side ladder.

Mr. POWELL—Another thing as respects small roads, is the compensation of employees. What do you think of this:

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"Clause 7. Every employee of a railway company injured while in the discharge of his duty shall, for every day during which he is thereby unfitted for duty, be entitled to compensation from the railway company at the rate of not less than 60 per cent of the current rate of wages for men similarly employed by the railway at the time the injury occurs, to be paid for not more than 52 weeks.

"2. Every such employee permanently disabled while in the discharge of his duty shall be entitled to compensation from the railway company to the amount of not less than \$3,000.

"3. The legal representatives of every employee who is killed or who dies from injuries received while in the discharge of his duty within six months after such injury shall be entitled to compensation from the railway to the amount of not less than \$3,000."

At present is there any arrangement for paying gratuities to railway men on the branch companies?

Mr. HARRIS—Not that I know of. I have never heard of it.

Mr. POWELL—What do you think of that provision in view of their finances?

Mr. HARRIS—I think it would put the roads in great danger of having to shut up in some cases.

Mr. ELLIS—That would intimate that you have many accidents?

Mr. HARRIS—There would be very few accidents, because when a man has to bear any risks he is more careful. He has no right to go in to couple cars which are going at a dangerous speed, when he has simply to step back and signal the engineer to slow up.

Mr. CASEY—In regard to coupling cars, Mr. Hudson, who represented the railway men before the committee, pointed out to us that a man between two cars often had to couple cars when going at a rate that might take him off his feet, and that he should have something on the end of the car to catch hold of. He urged that the handle on the workman's plan now before you would exactly answer that purpose, and that end ladder cars would not have it on. You see the double handle I refer to?

Mr. HARRIS—Yes. The ladder, of course, would be a help to him; but only on one side. On that side he would be all right, but not on the other. That would be a good arrangement, in my estimation.

Mr. POWELL—What is your opinion about this allowance of \$3,000?

Mr. CASEY—I would rather Mr. Harris did not go into matters he had not thoroughly read, but which are merely read at the table to him.

Mr. HARRIS—I have read the bills over and I think I understand them.

Mr. POWELL—Now, Mr. Harris, you have looked into the matter of the \$3,000 gratuity. How about the branch roads in the Maritime Provinces? Could they stand that financially?

Mr. HARRIS—I don't think they could.

Mr. POWELL—Financially, how are they getting along at present?

Mr. HARRIS—Well, a considerable few of them are going behindhand, and others are just keeping on by being extremely careful and saving at every point.

Mr. POWELL—At present there is no arrangement covering that feature of the bill.

Mr. HARRIS—Not that I have heard of.

Mr. POWELL—This general question I will put to you respecting the charges and expenses these branch companies would be put to in order to place air brakes on their cars and engines. It would lower the revenue without effecting greater safety?

Mr. HARRIS—I don't think ours could afford it. I don't think there is any necessity for air brakes on small roads for the reasons that trains are run at low speed; with small engines, carrying necessarily a small number of cars. With trains running one hundred ton engines on long roads, running fast with long trains of cars, I think it a splendid arrangement.

Mr. CASEY—I understood you to say, you thought with the large roads with long trains, this would be a good arrangement.

Mr. HARRIS—Yes, in regard to the air brakes.

Mr. CASEY—But coming back to the compensation clause, you say you do not think there is any necessity of applying it to your road, because you do not have many accidents?

Mr. HARRIS—We do not have many accidents.

Mr. CASEY—It would not embarrass you very much then?

Mr. HARRIS—It seems to me that the men are more careful when there is no provision of this kind.

Mr. CASEY—You said you did not have many accidents. And at the same time you said your railway could not afford to pay this compensation. If you do not have many accidents, you would not have a large amount of compensation to pay.

Mr. HARRIS—That is plain enough.

Mr. CASEY—So that the two statements are hardly consistent. Then, speaking as a railway man, do you think it is a fair proposition to apply to the larger roads, or would you prefer not to give an opinion on that point?

Mr. HARRIS—I was speaking more particularly of my own road and the small roads.

Mr. CASEY—Precisely; we will leave it at that if you prefer not to go further.

Mr. ELLIS—In what capacity were you employed on the Intercolonial Railway?

Mr. HARRIS—As an engine driver.

Mr. ELLIS—In Mr. Maclean's bill there is a provision that it shall be unlawful for any railway company to employ any person as engine driver, who has not been employed for at least five years as fireman on a locomotive engine, or as conductor who has not been employed for at least five years as a brakeman. In regard to that, would you make any observations to the Committee?

Mr. HARRIS—In regard to the branch roads?

Mr. ELLIS—No, I am rather endeavouring to get your experience as an engine driver.

Mr. HARRIS—I went on the I. C. R., working first in the machine shop, then I went out as fireman on the road and worked up to be an engine driver.

Mr. ELLIS—Were you five years as fireman?

Mr. HARRIS—No, sir.

Mr. ELLIS—And you are now manager of the road which you are representing here.

Mr. HARRIS—I am superintendent of the road.

Mr. ELLIS—Do you think there is an absolute necessity for such a regulation? What is your observation in regard to this provision? Engine drivers are promoted from being firemen, or machinists?

Mr. HARRIS—As a rule they go firing and work up from fireman to engineer or engine driver.

Mr. ELLIS—Must an engineer have a certain number of years' experience?

Mr. HARRIS—The intelligence of different men would regulate the thing to some extent, the smartness of the men, but a man ought to have a certain amount of experience before he would be able to take charge of an engine.

Mr. ELLIS—Would he be able to acquire that in five years?

Mr. HARRIS—A man of ordinary intelligence should acquire it thoroughly in five years.

Mr. INGRAM—Could he acquire it in a less time?

Mr. HARRIS—Yes.

Mr. INGRAM—How much less?

Mr. HARRIS—A thoroughly clever man could acquire it in two years.

Mr. MACLEAN—Take an ordinary man?

Mr. HARRIS—I would rather that an ordinary man should have at least 4 years' experience.

Mr. INGRAM—Would the same rule apply to conductors?

Mr. HARRIS—I never ran as a conductor, but I think the same rule would apply.

Mr. ELLIS—The effect of a law like this would be, that a man, no matter how competent, could not be promoted until he had served 5 years.

Mr. HARRIS—I think that would be unjust to the man and to the company.

Mr. POWELL—How would this 5 year provision affect you on the branch lines?

Mr. HARRIS—I would consider it, using a strong word, as absurd.

Mr. POWELL—As a matter of fact how long an apprenticeship have the people you employ in this capacity to serve?

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Mr. HARRIS—Generally two or three years.

Mr. POWELL—Would it be against the interests of the branch lines to have that provision?

Mr. HARRIS—Yes.

Mr. ELLIS—Against the interests of the men employed on the branch lines, the rising men?

Mr. HARRIS—Yes, very much against their interests.

Mr. CASEY—You have been an engine driver, you say?

Mr. HARRIS—Yes, sir.

Mr. CASEY—Have you had charge of trains with air brakes?

Mr. HARRIS—No, sir; the vacuum brake was in existence when I was on the I. C. R. They changed from the vacuum to the air brake when I was on the other road.

Mr. MACLEAN—Do you know, that they have a law in the United States compelling the roads to be equipped by 1900 with automatic couplers and air brakes?

Mr. HARRIS—No, I was not aware of that law.

Mr. INGRAM—Read the last section of bill No. 2 providing that the number of employees shall be sufficient to ensure safety and keep the road and plant in good repair. Do you always insist that there shall be enough men in each department of your road?

Mr. HARRIS—Yes.

Mr. INGRAM—What number of section men do you have on each section?

Mr. HARRIS—Four men on each section in the summer time and two in the winter.

Mr. INGRAM—How long are your sections?

Mr. HARRIS—Nine miles.

Mr. INGRAM—Pretty long sections.

Mr. HARRIS—Yes.

Mr. INGRAM—Do you find that you can keep up your sections with four men in summer and two in winter satisfactorily?

Mr. HARRIS—Yes, satisfactorily to the speed that we can afford to run at.

Mr. INGRAM—How long is it since your road was constructed?

Mr. HARRIS—About 12 years.

Mr. INGRAM—Have you commenced to relay new ties and put up new bridges?

Mr. HARRIS—Yes, we have put in on an average about 10,000 sleepers every year since about the sixth or seventh year.

Mr. INGRAM—You consider it your bounden duty as a company to keep your roadbed in a proper state of repair?

Mr. HARRIS—Yes.

Mr. INGRAM—For the safety of your rolling stock and your passengers?

Mr. HARRIS—Yes; for the safety of our rolling stock, passengers and employees.

Mr. INGRAM—Do you see any necessity for section 8 becoming law? Perhaps you can get at this as a practical railway man. Have you travelled over railways that you did not think were as smooth as they ought to be for the safety of the rolling stock and the passengers? Do you know of any branch lines that are rough owing to an insufficient number of men being employed on the railway?

Mr. HARRIS—Well, you can take that in more than one way. Of course, when the road is rough, you simply would reduce the speed to make it perfectly safe.

Mr. INGRAM—That would not change the roadbed, would it?

Mr. HARRIS—No.

Mr. INGRAM—Do you know as a practical railway man that trunk lines are obliged to keep a good roadbed?

Mr. HARRIS—Yes.

Mr. INGRAM—Is it not a fact that branch lines sometimes keep up good roadbeds?

Mr. HARRIS—Not as a rule as good as the trunk lines.

Mr. INGRAM—Is that owing to insufficient men or insufficient ballast?

Mr. HARRIS—It would be insufficient ballast in some cases, because it is difficult to get.

Mr. INGRAM—If you had sufficient ballast, would the number of men be sufficient to keep it up which you have mentioned?

Mr. HARRIS—Our road is kept so that the train runs at a perfectly safe rate. We have no trouble getting off the track or injury to rolling stock.

Mr. INGRAM—You consider that to be a good state of repair?

Mr. HARRIS—Yes; for the demands of the traffic on the road.

Mr. CASEY—Let me put that question in another way. Mr. Ingram has asked you if you saw any reason why this should become law. This section has been introduced at the request of the railway employees through their regular channels of organized effort, and they are particular about having it in. Do you see any objection to it on the other hand?

Mr. HARRIS—No.

Mr. CASEY—Do you think it would do any injustice to the railways?

Mr. HARRIS—I would not consider, according to my judgment, that we could do more than we are doing. We keep our road in just as safe a condition as if we were compelled to do it by law.

Mr. ELLIS—I suppose there is comparatively little business in winter time on your road?

Mr. HARRIS—There is a small local business. We get some island business in the way of mails and passengers.

The Select Committee of the House on Bill No. 2, further to secure the safety of railway employees and passengers, and Bill No. 3, to promote the safety of railway employees, met on Wednesday, 12th May, 1897.

Mr. J. B. Morford, Division Superintendent of Michigan Central Railroad Company, was present as the representative of the Michigan Central Railroad Company and of the Toronto, Hamilton and Buffalo Railway.

Mr. INGRAM—How many miles of railway do you control?

Mr. MORFORD—About 550 miles.

Mr. CASEY—Have you prepared any memorandum?

Mr. MORFORD—Yes, sir; I have prepared the following memorandum in regard to section 1 of Bill No. 2, providing that cars fitted with air-brakes shall be provided with a device so arranged that the connection between the air-brakes and the air-pump of the locomotive cannot be broken without the knowledge of the engineer. It is as follows:—

“Should be wholly erased; put in for the benefit of an inventor. Should not be passed, because there is no known device that will fill the requirements of such an act, although there are several devices that inventors claim will do it, but as a matter of fact has not been proven; and if such device could not be produced in the required time, the law could not be complied with. Practically it would prohibit the use of all cars in Canada, either for local or through business, not equipped as specified. It might interfere also with Canadian cars being used in the United States as not being considered safe.”

In regard to section 2, providing for the height and capacity of freight cars, and for certain attachments, I have the following memorandum:—

“The word ‘box’ in the first line should be erased, and the standard height recommended by the Master Car Builders of the United States and Canada specified. The words ‘all box and stock freight cars’ be inserted after the word ‘and’ at the end of the fourth line.”

Mr. POWELL—What insertion is that?

Mr. CASEY—The section would then read, “All freight cars built for use on Canadian railways shall, after passing of this Act, be of the standard height recommended by the Master Car Builders’ Association in the United States and Canada, and all box and stock freight cars shall be provided with the following attachments, etc.” What about paragraph A of section 2, regarding outside ladders? Have you any notes upon that?

Mr. MORFORD—Our equipment on our box cars is all with end and side ladders.

Mr. CASEY—Both end and side?

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Mr. MORFORD—Yes, that is our system. And in addition to that at the top of the car we have a hand rail running along the end and the side of the car which is known as a grab iron, for the trainmen to catch hold of when climbing up the ladder.

Mr. CASEY—So that in that respect your cars already come under the provision of this bill?

Mr. MORFORD—Yes. In regard to paragraph B, providing for arched iron rails, I have the following note:

“Paragraph B is ambiguous. Practice recommended by the Master Car Builders and now in use on some 250 railways on United States and Canadian cars, should be recommended.”

Mr. CASEY—State what the practice is that you recommend.

Mr. MORFORD—It is as I have described. A hand rail at the end of the car and the top of the ladder.

Mr. CASEY—Here is a sketch of what is proposed, giving a side and an end view.

Mr. MORFORD—As I understand it, this arched iron rail runs from the side of the car to the running board. That I consider would be dangerous, for the reason that when men are running over the top of a car on the running board they are liable by the oscillation of the car to get a few inches off the running board, and are liable to catch their foot in this arched iron rail, as you call it, and fall between the cars. I know of no road in the United States that has an iron of that description, and we, being a Canadian line, of course are handling cars from the American roads. Their not being equipped with this iron, the employees of the American roads are liable to injury or accident, and we have in the United States a large number of Canadian trainmen, which you know as well as I do. To adopt a device of that kind would not only be injurious to those men, but it would be a detriment in my opinion to the men running in Canada for the reason I have given.

Mr. CASEY—The danger of tripping on it?

Mr. MORFORD—Yes; it comes up just high enough not to be seen in the dark, and a man's foot would get under it.

Mr. CASEY—Could you suggest the construction of a rail of that kind that would not cause danger of tripping?

Mr. MORFORD—No, not unless you adopt the grab iron on the top of the cars I have suggested here, at each side and end, about nine or ten inches long.

Mr. INGRAM—How high should it be?

Mr. MORFORD—Just high enough for a man to grab hold of.

Mr. INGRAM—Two inches?

Mr. MORFORD—Say three inches.

Mr. CASEY—Grab irons are what you have now?

Mr. MORFORD—Yes. In regard to section 5, providing a penalty for failing to comply with the provisions of this Act, I would say:

“Section 5 practically prohibits the use of any foreign cars in Canada and would re-act against any road operating in Canada and throw the business to their competitors, the American roads, unless section 5 refers only to Canadian built cars which are the property of Canadian roads for use in Canada.”

Mr. CASEY—Have you any remarks to make upon section 7 providing for compensation in case of injury or death by accident?

Mr. MORFORD—No, sir.

Mr. CASEY—Have you anything to say regarding section 8 providing that the number of employees shall be sufficient to ensure safety?

Mr. MORFORD—Clause 8 I think is covered to a large extent by section 205 of the General Railway Act. Should this section become law it would make it compulsory on the part of the railway companies to keep up their tracks, etc., while section 205 of the General Railway Act of Canada provides the remedy in case a railway or any of its tracks are not in a proper state of repair. I shall read section 205 of the Railway Act:

“Whenever the Minister of Railways receives information to the effect that any bridge, culvert, viaduct, tunnel, or any portion of any railway, or any engine, car, or carriage used or for use, on any railway, is dangerous to the public using the same from

want of repair, insufficient or erroneous construction, or from any other cause or whenever circumstances arise which in his opinion render it expedient, he may direct one or more engineers to examine and inspect the railway or any portion thereof or of the works connected therewith or the engines and other rolling stock in use thereon, or any portion thereof, and upon the report of the inspecting engineer may condemn the railway or any portion thereof or any of the rolling stock or appliances used thereon and with the approval of the Governor in Council may require any change or alteration therein or in any part thereof or the substitution of any new bridge, culvert, viaduct, or tunnel or of any material for the said railway, and thereupon the company to which such railway belongs or the company using, running or controlling the same shall after notice in writing proceed to make good or remedy defects in the said portions of the railway or in the locomotive, car or carriage which has been so condemned, or shall make such change, alteration or substitution as has been required by the Minister."

I take it that the Chairman riding upon a railway and finding the track not in good shape for the speed that is run at or for the amount of traffic it has to handle, or finding any defects in its cars or locomotives has the right to make a report to the Government Engineer and it will be his duty under that clause to send an expert to examine the road, on your complaint. In the event of the report made to the Minister that the report from you was true, the Minister could compel the railway company to reduce its speed and to make necessary repairs or stop running the road.

Mr. CASEY—That is your reading of the law as it stands?

Mr. MORFORD—Yes, I think clause 205 of the Railway Act covers section 8.

Mr. CASEY—Now, as that is all your original statement, I propose to ask the Committee to arrange in this way that I ask the witness a few questions from notes on his evidence, and that then we have a general questioning.

Mr. INGRAM—Would it not be better for us all to ask questions as they occur to us?

Mr. CASEY—I think it would be better if I, as promoter of the bill, were to ask him some questions in succession, and then every member will have the same right. Now, Mr. Tait told us in reference to an automatic device in the air brakes, that they had tested some of these devices and that he knew of one that was perfectly efficient, but his objection to it was in the loss of time. The drift of his statement was that the only device known of which would accomplish the purpose was Mr. Deyell's. Did you ever try it?

Mr. MORFORD—No, sir. Mr. Deyell brought his device to my office two or three years ago. I looked it over very carefully, but did not recommend it for just the reason Mr. Tait expresses there.

Mr. CASEY—Would that objection be material if the device were applied to passenger trains where there is no cutting out?

Mr. MORFORD—There is some cutting out on all passenger trains.

Mr. CASEY—Always?

Mr. MORFORD—On our road we always cut out when changing at St. Thomas, and at Windsor, for the boat, trains are always broken up.

*By Mr. Casey:*

Q. How much is the delay usually?—A. The delay in bleeding would take, I should judge, over one minute to release the cylinder, and it would no doubt cause a good deal of delay.

Q. Would it cause more delay than stopping at stations?—A. Well, we allow time for switching at St. Thomas on all passenger trains and freight trains, changing engines; yet some trains do not get in for 30 minutes or an hour on account of delays in switching elsewhere.

Q. Have you ever heard of any device to sound a whistle to notify the engineer when anything is wrong with the brakes?—A. I have heard of none. The whistle is operated by the conductor, but if trains break in two it does not sound automatically.

Q. Have you known of accidents from the failure of the air brakes to work?—A. Not to my knowledge.

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Q. I mean from anything you have heard. I know there are very few accidents on your road.—A. We read of accidents occurring that way.

Q. Were you at St. Thomas when the London and Port Stanley train met with the accident there? Was it not caused by the failure of the air brakes to work?—A. It was supposed to have been caused by the engineer and conductor not testing the air brakes.

Q. Was it not given in evidence that they tested them and yet that they failed to work?—A. Well, it was so stated.

Q. But you don't believe they tested them?—A. I don't believe they tested the air brakes at all.

Q. Do you believe that if tested before starting it is a sufficient protection?—A. Yes. Our mode is that the conductor tests from the rear end of the train. The middle and rear brakemen take their places in the centre, and the head brakeman at the head of a train, and when released at the rear, it is followed right through the centre and head to the engine. The brakes are tested two or three times. The engineer can readily see if the air is passing through by the gauge on his engine.

Q. How often are they tested?—A. At every division point where we make up trains.

Q. How far apart are they?—A. From 110 to 115 miles, and we also test every time we cut trains in or out.

Q. You use the Westinghouse air brake?—A. Yes.

Q. Is it impossible for it to get out of order between the test points?—A. No; for the smallest leak in any part would cause a leakage of air which would stop the train gradually, and if the hose broke it would stop the train instantaneously in so many car lengths, according to the speed the train was going at.

Q. Is it not possible for it to get out of order by the cock shutting?—A. No; for if the air brakes work on five cars, but not on the sixth, there is something wrong with the sixth. We have a rule that we throw straight air through that to the next and we could always tell if the brakes would not take effect back of this car.

Q. You would not know till you tried the brakes whether they were working?—A. We would know when we tested them.

Q. But suppose your train between stations, say between London and St. Thomas, might not something have occurred in that 44 miles to put the brakes out of order without the engineer's knowledge?—A. I don't know of any such case.

Q. Can't you imagine?—A. No.

Q. Could not a tramp get in and put the brakes out of order?—A. No; for the reason that the air cock is well back under the buffer, and when open it is in line with the train pipe. I don't think that anything could hit it and knock it out of order. It could not be hit by a tramp or anything else. In the first place, a tramp could not get down between the draw-heads and reach around to get hold of the cock as he would put himself in danger of being squeezed by the draw-heads. In that case (between stations) our rule is, and it is always observed to test the air every half mile after leaving stations. As the speed is often from 15 to 20 miles an hour the engineer could tell by his air gauge if the brakes were all right. I have never known an engineer fail to do this.

Q. Now we come to box freight cars. I want to ask your reasons for suggesting the change mentioned in your statement?—A. Well, you say in that bill, "all box cars." There are many other kinds of cars, such as stock cars, refrigerator cars, furniture cars, and there are those refrigerator cars which are built very high for the purpose of carrying meat in halves through Canada and from the point of slaughter to tide-water.

Q. Then your object in making this amendment is to leave the size of the ordinary freight cars as provided by the Master Car Builders' Association, and allow other cars to be used of all heights, as needed?—A. That is the idea, because the large commodities we carry have to be arranged for. You have seen in furniture cars, for instance, large bedsteads that cannot be thrown down.

Q. I don't think I have ever seen such big bedsteads.—A. I have seen them eight feet. We have had them with us that they could not get them into the car easily.

Q. Now, in regard to the limit of 60,000 lbs. capacity, for which the promoters had some reasons. Why do you object to the limitation?—A. Well, a 60,000 lb. car would be about 38 feet in length, and we consider that a car that length is sufficient.

Q. Then you don't object to the limit of 60,000 lbs.?—A. Yes, we do object, because there are cars on the Carnegie Road which carry 50 tons.

Q. Do you consider them proper cars?—A. Yes, they are as proper as cars carrying 10 tons.

Mr. CASEY—Then I think we went into the ladder question pretty thoroughly. There is no objection to the clause providing for ladders so far as your road is concerned?

Mr. MORFORD—No.

Mr. CASEY—You have them on both end and side?

Mr. MORFORD—Yes.

Mr. CASEY—And I understood you to recommend that they should be on both end and side?

Mr. MORFORD—Yes, for this reason: When a man comes out of his way car or caboose and there is a flat car or two next to the caboose he has to have something to help him to get on top of the box car. He can possibly swing around from the corner of the flat car and grab the side ladder but he is endangering himself in doing it. With my experience I would not attempt it, because on a dark night a man cannot see. A car may be placed on a siding on a tangent with the main track, it may be left projecting. A man undertaking to get off a flat car on to a box car by going over to the side ladder is liable to be killed. Not only that, but he is liable to be hit by switches or some other obstruction.

Mr. CASEY—You think there is need for a ladder, both at the end and at the side?

Mr. MORFORD—Yes, I would recommend that.

Mr. CASEY—You have not offered any opinion in regard to the compensation clause, but I want to ask you a question or two concerning that. Mr. Wainwright of the Grand Trunk Railway handed us that little book setting forth the particulars of an Insurance and Provident Society which they have. Have you anything like that?

Mr. MORFORD—We have an insurance. We have what we call the Railway Insurance of the men. Most of our men pay into the fund 50 cents a month. This amount is put on my pay rolls, deducted from their month's pay and turned over to the Secretary Treasurer of the Railway Hospital Association. Men, who are injured, are sent to the hospital and their maintenance paid at the rate of \$1.00 per day.

Mr. CASEY—Out of this fund?

Mr. MORFORD—Yes, and not only that; they are treated by the company's physician, Dr. Smith and his associates, if they are sick or injured.

Mr. CASEY—Is that free of charge, or is Dr. Smith paid out of the same fund?

Mr. MORFORD—Free of charge.

Mr. CASEY—Who pays Dr. Smith?

Mr. MORFORD—The railway company.

Mr. CASEY—You do not contribute anything additional to the fund of this society?

Mr. MORFORD—Yes; we give \$50 a month, besides paying the doctor's bill.

Mr. CASEY—That is \$600 a year?

Mr. MORFORD—Yes. We contribute to the expense of maintaining the fund, paying the secretary, and that kind of thing.

Mr. CASEY—The Grand Trunk gives \$10,000 a year.

Mr. MORFORD—We do not go quite as high as that. The Grand Trunk has a greater system than we have. They have two or three thousand miles of railway.

Mr. CASEY—Have you divisional surgeons?

Mr. MORFORD—Yes, sir. We have surgeons at Windsor, Amherstburg, Essex, Tilbury, Chatham, St. Thomas, Hamilton, Welland, Waterford, Niagara Falls, and Buffalo. In addition to that we have it arranged for any physician who is telegraphed for under my signature or Dr. Smith's, to come at once and take care of a man who is sick or injured.

Mr. CASEY—Are these divisional surgeons that you speak of paid by the company?

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Mr. MORFORD—The first visit is paid for by the company and the balance by the association out of their fund.

Mr. CASEY—You have an hospital in St. Thomas?

Mr. MORFORD—Yes; we have a ward there that accommodates from four to six people. They get the best of attention and the association pays for it. As an instance, I had a secretary, Mr. McKay, who was taken very sick with paralysis. We put him in there in October, and paid him his salary up to February, and we paid his maintenance in the hospital. We took the best of care of him.

Mr. CASEY—What arrangement do you make with men who are laid off through accidents? Do you allow them a proportion of their pay?

Mr. MORFORD—No; we never pay them any salary. I never knew of a case where they have asked for it. Invariably they say it is their own fault. Of course if they are injured at a station we at once telegraph to the agent there to call in the doctor. Then we bring them back to St. Thomas, put them in the hospital, or send them home and pay them their time just the same.

Mr. INGRAM—In regard to section 1 of Mr. Casey's bill, referring to this cock, you say you have one in use on your road?

Mr. MORFORD—No, I did not say we have one.

Mr. INGRAM—I understood you to say that all cars with air brakes had a device?

Mr. MORFORD—Yes, we have that.

Mr. INGRAM—Where is that attached?

Mr. MORFORD—On the train pipe that the hose is attached to.

Mr. INGRAM—Is that on the car or the tender?

Mr. MORFORD—We have this device on our tenders, which we call a dummy cock. It is worked by the engineer. When it is connected it cannot be released unless the engineer releases it. When we come into a divisional point or a terminal station, we have to tell the engineer to release before we can disconnect with the train. That is our device.

Mr. CASEY—So that the tender cannot be detached from the train without the engineer knowing?

Mr. MORFORD—No; the air cannot be turned off from the train pipe or any part of the train unless the engineer turns it off. This dummy cock is gotten up by our superintendent of air-brakes at Detroit.

Mr. INGRAM—Now, about the angle cock on each coach. In Mr. Tait's evidence he says that it runs parallel with the pipe. In Mr. Hudson's evidence he says that when the cock in the pipe is open the handle is supposed to be hanging straight down, and when it is shut it is parallel with the pipe.

Mr. MORFORD—Mr. Hudson is mistaken, and Mr. Tait is correct. When it is shut it is down, when it is open it is in line with the train pipe. For a long time that has not been in use; we have put it in the other way. There were a few American express cars on the New York Central five or six years ago fitted in that way. We objected to it, and, after communications between the general superintendents, that was fixed. Outside of that, I have never seen an angle cock that was in working order that was not parallel with the train pipe.

Mr. INGRAM—The great objection to the cock hanging down was in case of stones flying while the train was running.

Mr. MORFOED—That was one objection. But a man could possibly reach down when the angle was hanging down, and monkey with it; but the way they are fixed now, being out of the way, it is impossible to do that. It was possible, under the old practice, for a chunk of coal to fly off the train, come in contact with the cock, and shut it off. We have known that to occur.

Mr. INGRAM—Do the railway superintendents have an association among themselves?

Mr. MORFORD—Yes.

Mr. INGRAM—At the association meetings is it not a part of their proceedings to discuss different devices?

Mr. MORFORD—They discuss everything pertaining to the equipment of a train—car and engine.

Mr. INGRAM—I notice in Mr. Hudson's evidence that he refers to Mr. Deyell's patent as being in use on the Canada Atlantic Railway. Have you ever made any inquiries as to how this is working?

Mr. MORFORD—I did so this morning.

Mr. INGRAM—What was the result?

Mr. MORFORD—I called at the office of the manager of the Canada Atlantic Railway. He was out; but I saw his secretary, Mr. J. W. Smith, and I told him of the evidence I had read as given by Mr. Hudson. He said that he knew of no such device as that ever having been adopted by the Canada Atlantic Railway. He said: "In the first place, I purchase everything that is purchased for the road, and there would be nothing of that kind on our road without I knew it."

Mr. CASEY—I did not understand that this had been bought, but only that it had been put on trial, and was in use awhile on a car.

Mr. MORFORD—Then I asked Mr. Donaldson, the master mechanic, if he had this device, and he said "No." Then we asked Mr. Ogilvie, the foreman of the round-house, if he had a device invented by Mr. Deyell, and he said "No." They had one on for about three months, I was informed, but they took it off last fall, for the reason that there were complaints by the trainmen and by the engineers.

Mr. CASEY—Of what nature?

Mr. MORFORD—He did not state. He said that he would write a letter to me and get it here in time for this meeting. Mr. Donaldson, or Mr. Ogilvie, the foreman of the round-house, told me that.

Mr. INGRAM—An objection has been raised as to box cars exceeding 60,000 lbs. What railways in Canada are competent to carry cars of 60,000 lbs. capacity or over?

Mr. MORFORD—I never heard of any that cannot carry cars of 60,000 lbs. or more provided the journals are adapted for it.

Mr. INGRAM—For a car of 60,000 lbs. what sized journal would be required?

Mr. MORFORD— $3\frac{3}{4}$  inch journal.

Mr. INGRAM—For a car of 50,000 lbs.?

Mr. MORFORD— $3\frac{1}{2}$  inch journal.

Mr. INGRAM—For a car of 30,000 lbs.?

Mr. MORFORD—3 inch journal.

Mr. INGRAM—For a car of 20,000 lbs.?

Mr. MORFORD— $2\frac{1}{2}$  inch journal.

Mr. INGRAM—What size would be required for 100,000 lb. car?

Mr. MORFORD—A  $4\frac{1}{2}$  inch journal.

Mr. INGRAM—The roadbeds are strong enough in your opinion to carry 60,000 lbs. Then it is really more in the journal than in the roadbed.

Mr. MORFORD—The journal has everything to do with it. The roadbed may be ever so rough, but if the journal is of the proper size for the carriage of the tonnage there is no trouble about getting it over the road.

Mr. CASEY—As to the security of the roadbed; what effect would loose rails have on the carriage of heavy tonnage?

Mr. MORFORD—If there is a loose rail the engine would be the proper thing to detect that. It would turn that rail over first.

Mr. INGRAM—What is the weight of the engines in use on your road?

Mr. MORFORD—We have engines all the way from 65 tons to 105 tons.

Mr. INGRAM—And what is the condition of your bridges and roadbed?

Mr. MORFORD—Our roadbed is in a good condition and our bridges are of steel and iron.

Mr. INGRAM—Do you employ operators of 15 or 16 years of age?

Mr. MORFORD—No, never nothing less than 18 and we prefer to have them 20. Perhaps I can explain that. An employee will have a young man whom he wants to get into the operating department, he comes to me and the first question I put is, how old is he? The answer would be, 16 years old. I reply that "I am very sorry, but we cannot take him on. When he is 17 send him over to me." Well, when the lad is 17

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he comes in and we let him learn telegraphy and when he is perfect in our system and can pass an examination on the rules after serving an apprenticeship, we will take care of him as an expert telegrapher.

*By Mr. Casey :*

Q. That is after he is 18 years old?—A. That is after he is 18, and if he has applied himself to his study with merit.

Q. But he cannot be an employee until he is 18?—A. No; nor can he be a fireman, driver, nor conductor until he is 21.

*By Mr. Ingram :*

Q. How many freight cars have you on your road?—A. Twenty-five hundred freight cars.

Q. Does that count simply the Canada Southern and lines, or does it take in the new road?—A. No; we have with the new road say 2,700 freight cars.

Q. Now, out of that 2,700 cars, how many are equipped with air brakes and automatic couplers?—A. In three years we have equipped 1,858.

Q. Have you reduced the train service owing to these appliances?—A. No; we have taken off none.

Q. Do you need many cars under control of air brakes in your trains?—A. Not very many.

Q. What is the proportion?—A. We would have about 13 cars with air brakes to hold a train of 30 to 35 cars, but we could easily get more, because we handle many United States cars—50 per cent of the through cars are American—and that would give us a train of from 30 to 40 cars, and about 25 cars with air brakes. We make a point where we have so much dead freight to hold them at division points, and fill in fast freight trains with them.

Q. So you have not an average of one train a day without air brakes?—A. Not that. Not one in 25 has to be braked by hand, and that is an ordinary dead freight or coal train, and runs from 20 to 25 miles an hour, therefore we keep the same number of brakeman on we always had.

Q. Out of the 250 railways in the United States, none have adopted these arched iron rails from the side of the car to the running board?—A. None that I know of.

Q. Would it be good judgment, in your opinion, for Canada to adopt a thing that 250 railways throughout the United States refuse to adopt?—A. No; I think I expressed that in my statement.

Q. For the reason that you think it would be dangerous?—A. Yes; not only dangerous to our men, but to men coming from the United States.

Q. And with respect to insurance; does this insurance you speak of apply to trainmen?—A. To all who are members.

Q. There are two insurance schemes, this one and the Shops Insurance Club?—A. Yes, they have an arrangement between themselves to take care of each other in case of accident through machinery; but we contribute nothing.

Q. Now, how is the money taken out to keep the other up in the operating department?—A. It is deducted from the pay roll opposite the name of each man. On entering the service he signs an agreement to become a member of the Railway Hospital Association and for that he pays in to the Treasurer of the Michigan Central the sum of 50 cents a month, and we pay over to the Treasurer of the Railroad Hospital Association this money as soon as pay day comes and the paymaster remits it.

Q. Is it compulsory?—A. No. We of course urge every man to join for his own protection. We have many young men whose homes are far away and we wish to have them taken care of. When a man is employed we tell him all this and it is rarely that a man does not say, "Put my name down." Since we have taken over the Toronto, Hamilton & Buffalo Road, Mr. Orr has gone over and got over 90 per cent of the men as members. Every man took it up at once, seeing it was a good thing and they could afford it.

Q. About how many freight crews do you run?—A. I have run since the close of last navigation up to the first of this month from 63 to 70.

Q. Five men in a crew?—A. Yes, including the firemen and engineer.

*By Mr. Casey :*

Q. How many trains have you run?—A. From 63 to 70 since the close of navigation. I have run more trains this winter than ever I did.

*By Mr. Ingram :*

Q. How large do they average?—A. All the way from 25 to 50 cars. Fast freight, beef, stock and other cars are made up from 25 to 30 in a train with a 10-wheel engine, rated for 50. Dead freight trains we give the full tonnage. We run our road on the tonnage system. A ten wheel engine is given 1,700 tons of freight but not more than 50 cars in the train, for convenience of getting in and out of the way of other trains. An 8-wheel engine we would give from 1,170 to 1,250 tons, but except with dead freight trains, we don't make them up to the full weight.

Q. You have 65 crews or so; have you any classification of pay?—A. Yes, a brakeman may be promoted as an extra conductor. He gets a train and gets regular pay.

Q. When you employ brakemen are they paid by the day or so much a trip?—A. They are paid by mileage.

Q. Is there no difference between men who have just been employed and men who have been four or five years on the road?—A. No, they get the same pay exactly.

Q. Then there is no classification?—A. A man must serve five years.

Q. Have you read Mr. Maclean's bill providing that a sufficient number of cars shall be equipped with automatic air brakes and couplers to control the train? Have you any objection to section one becoming law?

Mr. MORFORD—As I understand it by this section it provides that a man must run on a railroad five years.

Mr. INGRAM—It is the first section I refer to.

Mr. MORFORD—About air brakes and couplers? Well, I think I have stated that we have them.

Mr. INGRAM—So far as your road is concerned, you have no objection to this section?

Mr. MORFORD—None.

Mr. INGRAM—To subsection "b" have you any objection?

Mr. MORFORD—No objection to that.

Mr. INGRAM—Now, the second section of this bill refers to engine drivers and conductors having to serve a certain length of time. Have you any objection to that?

Mr. MORFORD—Yes; as I take it, that means that a man shall be a fireman for five years before being promoted to be a driver, or brakeman, five years before becoming a conductor. Now the management of a railway company is competent to judge whether an employee is competent to run an engine or competent to run a train as conductor. Some men are brighter than others, and some men are so dull that they would never run an engine or a train. A man who has served two years continuously with other crews and to pass his examination on the rules and regulations in the matter of telegraphic orders, train signals, and so forth, and the superintendent considers he is competent, I think he should say whether that man could run or not. Another thing, our traffic is in the winter at the close of navigation. If that bill passed, would not a man be compelled to work for me on the Canada Southern for ten years at six months a year to get that service of five years? I take it he would have to work ten years, for the bill does not say continuously.

Mr. CASEY—It hardly means that. That is a point which can be settled when the bill is in committee.

Mr. INGRAM—If that is not the effect it would simply mean five years. What is the practice? Are brakemen promoted to conductors, and firemen to engineers short of five years?

Mr. MORFORD—Hardly ever before he has fired or braked that long, because we have enough conductors and drivers on our road—unless we were to have a sickness which would compel them to lay off in a body—to work our road. They come to us and

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we tell them we have nothing to do in summer, and that if we hear nothing against them, no bull-headedness, nor disobedience to orders, we will take them on next winter. If not, we let them go off and say nothing; therefore we are very careful and not a brakeman is hired on our system that I don't see before the train-master sets him to work.

Mr. INGRAM—Therefore I take it, you wish to reserve the right as to when to promote men?

Mr. MORFORD—For this reason, that if we had a labour trouble, I could not handle the traffic, because I have not the men who would be qualified as that bill requires.

Mr. CASEY—I wish to ask a question in connection with what he said in his first evidence as to this benevolent society. Is it purely for hospital treatment, or does it give an allowance to the man while being laid off?

Mr. MORFORD—They give an allowance of \$3.50 a week, besides hospital treatment, nothing in case of death, only we have arranged if an employee is killed or dies from an injury the company pays \$30 of the funeral expenses. We have done that ever since I have been in Canada. I have made an arrangement with an undertaker for this purpose.

Mr. CASEY—Does the hospital treatment apply to cases of ordinary illness as well as accidents?

Mr. MORFORD—To everything. A man gets treatment if he is taken sick, the same as if he is hurt.

Mr. ELLIS—In regard to this matter of employing men the point is raised that railway companies having men a long time in their service take advantage of the younger men coming up to set the older men aside and treat them unjustly by the manner in which they are able to promote brakemen into conductors, and firemen into engineers.

Mr. MORFORD—It is not so with us.

Mr. ELLIS—I suppose railway companies promote men quickly if they are good men.

Mr. MORFORD—If I had a man a year and a half or a year, and he was a bright and intelligent fellow I would put him to work.

Mr. ELLIS—The effect of this law would be to prevent the promotion of capable men. This would prevent any person being employed as a driver or conductor until he had served a certain number of years.

Mr. MORFORD—When I was 17 years old I was just as competent to run a train as when I was 30 years old, and I did run a train when I was 18 years old on the Erie road. We do not want a brakeman unless we can promote him to be a conductor, or a fireman unless we can make an engineer of him.

Mr. INGRAM—Have you ever killed a passenger on your road?

Mr. MORFORD—We never killed a passenger on the Canada Southern Railway since its existence began 27 years ago; not only that, but I have known 18 months at a stretch to elapse without my derrick car being sent out to a wreck.

Mr. POWELL—As to the part of Mr. Casey's bill respecting sick benefits and pension in case of death, the railway interest and the employee's interest are rather antagonistic. The railway interest will be subserved by not giving a man anything.

Mr. MORFORD—Yes.

Mr. POWELL—Your interests are antagonistic in respect to this provision of the bill.

Mr. MORFORD—If a man is worthy we have in some cases made him a present of a month or two months' pay.

Mr. POWELL—Are your interests antagonistic in respect to the clause that regulates the cars?

Mr. MORFORD—No, sir; we would live up to the Master Car Builders' specification.

Mr. POWELL—What is your interest in respect to the condition of the road is their interest.

Mr. MORFORD—Certainly.

Mr. POWELL—You are both interested in having the road preserved as well as possible?

Mr. MORFORD—Certainly.

Mr. POWELL—Your interest would be to preserve your own property.

Mr. MORFORD—Yes.

Mr. POWELL—And in doing that you would protect your interests and preserve life.

Mr. MORFORD—Yes.

Mr. POWELL—Of course that would not apply as respects these ladders and other appliances. Your interests would not be necessarily antagonistic, but from a business standpoint there would be no necessity for you looking after their interests, and consequently you might not look after them as sharply in that respect.

Mr. MORFORD—I think it is the duty of every railway company to look after the interests of their men.

Mr. POWELL—Apart from humanitarian instincts there would not be any necessity to do what is in their interests.

Mr. MORFORD—I do not suppose there would be.

Mr. POWELL—In reference to this five years' promotion, their interest and your interest is not antagonistic. The interests of good men are better subserved by leaving the matter as it is at present?

Mr. MORFORD—Certainly.

Mr. POWELL—This provision gives mediocrity as good a chance as ability.

Mr. MORFORD—Yes. There are men who after a year and a half or two years' time can do as well as a man who has been on the road for 20 years, and get the same pay. There is one question you asked me, Mr. Chairman, that I have thought of since in regard to the clause providing for compensation. An employee may be injured through his own carelessness or neglect and in doing things that he has been instructed when employed not to do.

Mr. CASEY—In case there has been negligence on the man's own part he has no claim.

Mr. MORFORD—I have not had time to prepare anything on that point.

Mr. CASEY—You spoke of the telegraph operators and their duties. What hours do you work telegraph operators?

Mr. MORFORD—Twelve hours.

Mr. CASEY—You do not know of any cases where telegraph operators are worked longer?

Mr. MORFORD—No, we would ask a man that works days to work the extra hours in case of necessity and never keep a night man on longer than twelve hours.

Mr. CASEY—Have you men to relieve the operators?

Mr. MORFORD—Yes, we have some thirteen or fourteen relieving operators, that we can send to any point on the line and we do not allow our men to work over twelve hours, or give young men reason to get sleepy on account of not getting their rest.

Mr. CASEY—Do your operators have to perform switching duties?

Mr. MORFORD—No, we never allow any men except the trainmen themselves to turn the switches.

Mr. CASEY—Do not they set their semaphores?

Mr. MORFORD—No, we do not have any semaphores between stations. They are all handled by the trainmen.

Mr. CASEY—But when you have to set a semaphore against a train is that not done by the operator?

Mr. MORFORD—Yes, that is done by the operator. Right here is the handle. He gets an order to hold a train and he simply turns the handle.

Mr. CASEY—Have your operators anything to do that requires them to leave their offices?

Mr. MORFORD—Nothing without permission. We do not allow an operator to leave his office unless he asks the chief despatcher for leave to go out. We have operators at the smaller stations where train orders are very few who take care of a switch light or two in connection with their duties. The day man puts the light out before going on duty and the night man takes it in so he is away by seven o'clock.

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Mr. CASEY—You said you had no objection as to the clause in Mr. Maclean's bill providing for automatic couplers and you say that you have 1,858 cars so equipped out of 2,700 cars ?

Mr. MORFORD—Yes.

Mr. CASEY—Do you believe that the rest of the work can be completed within the time mentioned in this bill—three years ?

Mr. MORFORD—That will depend, Mr. Chairman. We have a lot of cars that have done us good service. As fast as one of these cars is condemned it is sent to the shop, torn to pieces, and rebuilt. It would take longer than that to get rid of that class of cars. They are good for 20 or 30 tons, and it would not pay to put the cylinder attachment and equipments into one of these cars.

Mr. CASEY—As I understand you, upon the whole you have no objection to this clause ?

Mr. MORFORD—Not at all.

Mr. POWELL—Do you think there is any point in the objection raised by Mr. Tait that one company having a monopoly of the supplying of these appliances it would be putting you in an unfair position to pass this bill ? Is there anything in that ?

Mr. MORFORD—I do not think so. It costs us \$40 for the air cylinder, and \$20 for the equipment and pipes, or about \$60 a car for the air-brake device. Upon our 1,858 cars which we have equipped, we have spent \$111,480, or nearly \$112,000.

Mr. INGRAM—Is it in the interest of the company to provide this equipment as soon as possible ?

Mr. MORFORD—Yes ; and we are doing it as soon as possible.

Mr. CASEY—According to the law in the United States, they are obliged to have their cars equipped by the 1st of July, 1898.

Mr. MORFORD—They cannot do it in that time.

Mr. CASEY—They cannot take your cars after that date ?

Mr. MORFORD—Not unless they get the time extended.

Mr. INGRAM—Mr. Powell asked you a question about the railway company and the men being antagonistic to each other from a business point of view. Your answer, I do not think, quite filled the bill. Do you try to make it as agreeable as possible for your men in the matter of keeping your equipment in as good a state of repair as possible ?

Mr. MORFORD—Yes ; and we consider it our duty to do so.

Mr. INGRAM—Supposing you did not do that, and a brakeman going over a train met with an accident because of an improperly equipped car, and fell off, would that not naturally result in loss to the company by the fact of the railway and train getting damaged ?

Mr. MORFORD—It usually would.

Mr. INGRAM—And for that reason you would keep your cars in a proper state of repair ?

Mr. MORFORD—Yes ; for that reason.

Mr. INGRAM—So that from a business point of view your interests are not antagonistic ?

Mr. MORFORD—Not at all. It is in the interests of the company and the men to keep the road in a proper state of repair.

Mr. CASEY—I understood in your opening remarks that you did not wish to offer any statement in regard to this compensation clause.

Mr. MORFORD—No.

Mr. CASEY—You do not wish to be understood as having expressed any opinion for or against it ?

Mr. MORFORD—No.

Mr. ELLIS—Did I understand you to say that the telegraph operators worked 12 hours ? Is that continuously ?

Mr. MORFORD—Yes.

Mr. ELLIS—I find that 12 hours' continuous work is too long for my men.

Mr. MORFORD—They do not work all that time. They have an hour off at noon, which gives them 11 hours a day. There are hours when they do not have anything to

do, beyond sitting in their offices reading a paper or reading a book, or doing something else. It is not laborious work.

Mr. ELLIS—Still it is a continuous stretch of work.

Mr. MORFORD—We have operators who don't work very hard.

Mr. CASEY—Do you know the time on other roads?

Mr. MORFORD—Yes.

Mr. CASEY—Is that the usual time on other roads?

Mr. MORFORD—Yes.

Mr. POWELL—It is on the Intercolonial.

Mr. ELLIS—I think 8 hours is enough.

Mr. MORFORD—Where would you have a man if he worked from 11 to five? On his bicycle, going around the country, or riding to Aylmer, getting home at midnight, and waking up tired next morning. He would not be fit for his duties, so that he would be better off in the office than getting out like that.

Mr. CASEY—There is the question of strain to be considered.

Mr. MORFORD—Strain is not much. They don't do a thing they don't have to do.

Mr. CASEY—But there is the responsibility.

Mr. MORFORD—His responsibility is only in the one thing of getting the train signal out. Anyway the despatcher would know in a minute if an operator did not put out his signal, for he has to leave his key open while he does it.

Mr. ELLIS—Does the bill propose to stop long hours?

Mr. CASEY—That is not a matter dealt with in this bill.

Mr. INGRAM—You have an interlocking switch system on your road?

Mr. MORFORD—Yes; at several places.

Mr. INGRAM—Do your trains wait or stop at level crossings?

Mr. MORFORD—Yes; we have a few trains stop at crossings.

Mr. CASEY—Would you say for the committee's information what it does?

Mr. MORFORD—The interlocking switch system is a device worked from a tower through levers, cutting out one road and so leaving the other clear. A de-rail curves outward from each track, so that if a driver does not obey the semaphore his train will run off, and his name is Dennis, if he is not killed. He would never work another minute on our road.

Mr. HUDSON—I will say for Mr. Morford's benefit while he is here, that his road is better equipped than many other roads. We want a law to make other roads do as his is doing. He is very fair on several points.

CANADA ATLANTIC RAILWAY CO., OFFICE OF THE GENERAL MANAGER.

OTTAWA, Ont., 12th May, 1897.

MR. MORFORD,—I enclose you locomotive foreman's statement *re* Deyell's cock tested on this line.

Yours truly,

J. W. SMITH.

CANADA ATLANTIC RAILWAY CO.

OTTAWA STATION, 12th May, 1897.

E. J. CHAMBERLIN, Esq., General Manager.

DEAR SIR,—*Re* Deyell's patent air cock, would say that in a test which we have made, we find that this cock has no particular advantages over the usual air cock supplied by the Westinghouse Co. In fact, we have had several complaints from connecting roads and have had it off, off and on, several times for repairs, &c., the engineer in charge of the engine wishing to have it taken off on account of leakage.

Yours truly, JAMES OGILVIE.

The Select Committee of the House appointed to consider Bill No. 2 further to secure the safety of railway employees and passengers, and Bill No. 3, to promote the

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safety of railway employees, met on Wednesday, May 26th, 1897, Mr. Casey, the Chairman, presiding.

Mr. A. B. Lowe was called.

Mr. CASEY—What position do you hold?

Mr. LOWE—I am Secretary of the Dominion Legislative Board of Railway Employees of which Mr. Hudson is Chairman.

Mr. CASEY—How is this Board constituted?

Mr. LOWE—It is composed of the representatives of all the different railway orders, engineers, firemen, conductors, trainmen, trackmen and operators.

Mr. CASEY—Have you any statement you wish to make in regard to these bills?

Mr. LOWE—These bills have been considered two or three times by committees of railway men—men who are actively in the business to-day, engineers, firemen, conductors, trainmen, operators and trackmen. They considered these bills very carefully. They struck out of them what they thought was a little hard on the companies and left in what they thought was perfectly fair to both men and companies, making the bills as they think of the very greatest practical use.

Mr. CASEY—Is bill No. 2 as approved by you?

Mr. LOWE—Bill No. 2 and the bill which we amended and sent out to the different organizations are exactly the same except that they are numbered differently. We have the numbers as you had them in your first bill. What was sent out to the different organizations is exactly the same as Mr. Casey's bill. The bills were printed at our expense and sent to the different orders.

Mr. CASEY—Is bill No. 3 as approved by you?

Mr. LOWE—No, Mr. Maclean's bill is not as we finally amended it. There is this difference, that we cut down the number of years that a man should continue to be a fireman before he could be an engineer to three years and the number of years that a brakeman should serve before he could be a conductor to three years. We also put in another clause stipulating that railway companies should furnish employees with a certificate specifying the time and nature of the service of such employees when applied for. The reason of that was this: Suppose that an engineer were being dismissed to-day he would not have anything to show that he had ever seen an engine and it would be the same with a conductor. We thought that when the time was specified in which a man should fire or brake before being allowed to run an engine or act as conductor that on leaving the service of the company, the company should be bound to give him a paper showing that he has been an engineer or a conductor the length of time that he had served in either of these capacities. I noticed that Mr. Wainwright and Mr. Tait objected very much to the five year term. They seemed to think that the idea running through our minds was that we were preparing for a strike or something of that kind. Nothing was farther from our thoughts than the idea of a strike and the fact that the men reduced the terms of service to what Mr. Wainwright and Mr. Tait thought was right shows that they were looking at the matter from the company's side as well as from their own. The evidence that Mr. Hudson had given is, I think, almost all that I could give, and I could not give it as well.

Mr. CASEY—Take bill No. 3 and make remarks on the different clauses as you go along.

Mr. LOWE—Personally I am a trackman and I am not as well posted on the bill as the men who have discussed it and framed it, the men who are jumping on the top of cars every day and are to-day. I have very little to say on that part of the business. I just took down the minutes of the meeting. They seem to think that the cars should be equipped with both end and side ladders. The majority were of the opinion that if they could only have one set of ladders they should have them on the side of the car. They preferred to have end and side ladders but they thought that the question of expense would come up and possibly work against the adoption of the bill entirely, and under these circumstances they considered that the side ladders would be best. In regard to arched iron rails they were of the opinion that there should be something of that sort. When a man gets to the top of a car there is an iron grab to take hold of

but when he reaches that point his hands and feet are together. There is nothing to steady him while getting up to a perpendicular position and it is difficult for him to get on his pins on the top of a moving car. The objection that the arched iron rail might trip a man I do not think is worth anything for the simple reason that the roofs of cars are slanting from the running board in the centre and no man unless he got over the car and fell off would be off that running board when the train was moving, so that he could not get in the way of this arched iron rail. They were of the opinion that the two big roads, the Grand Trunk and the C. P. R. were equipping their cars about as fast as it was possible for them to do, but these roads are constantly interchanging cars with the smaller roads that do not have any of these improvements. These smaller roads not having many cars the question of expense would not be as important as in the case of big roads. They think that their lives should not be risked on the cars for the sake of a little expense. Then they thought that there should be compensation for a man who was injured in the discharge of his duty where the injury did not result from his own fault. They were quite free to concede that where a man was injured through his own fault he should receive nothing. They were just as clear and sound on that point as they were on the other side that a man or his heirs should be paid for his injury or death where it was the company's fault. They were not a bit more anxious that a man should be paid where it was the company's fault than they were that he should get nothing where it was his own fault. The thought that seems to have been in the minds of the managers as to the possibility of a strike was not in theirs.

Mr. CASEY—What roads have you been on?

Mr. LOWE—Mostly on the C.P.R.

Mr. CASEY—Have you any benefit society on the C.P.R.?

Mr. LOWE—No; not on the C.P.R.

Mr. CHOQUETTE—I don't think that clause 8 will have great effect about the responsibility of the company, because in any case you would have to have an investigation, and it would just be as well to go to court.

Mr. CASEY—Clause 8 is that every railway shall at all times have a required number of men.

Mr. CHOQUETTE—No; it was clause 7 I meant, which provides that the company shall be liable for damages to an employee when it is the fault of the company. That is a mere question of fact.

Mr. CASEY—By this clause there is the burden of proof on the company. Sub-section 6 of clause 7 reads as follows: "The foregoing provisions as to compensation shall be void in the case of any employee whose injury, disablement or death is caused by his own negligence—the burden of proof of such negligence being upon the railway company: but if such injury, disablement or death occurs in the handling or use of trains, locomotives, cars or appliances which are out of repair or insufficient, or not in accordance with the provisions of this Act, or if the provisions of section 8 of this Act have not been complied with, the railway company shall not be allowed to plead contributory negligence on the part of the employee so injured, disabled or killed."

Mr. CHOQUETTE—That is always a question of fact.

Mr. CASEY—Every question is a question of fact.

Mr. CHOQUETTE—You have the provisions of the common law.

Mr. CASEY—That is not the same everywhere.

Mr. CHOQUETTE—In Quebec we have a special article in the code.

Mr. LOWE—I think there was another thought in our minds. Suppose a fellow got hurt or killed, and his wife or widow sued for damages, the company might take it from court to court, and we thought we could stop that.

Mr. CHOQUETTE—There is nothing in the bill to stop that. In the Flynn case in Montreal, the companies have defied the people, and taken them from court to court; but you can't prevent that.

Mr. CASEY—It is a question whether we should draft the bill to prevent that.

Mr. LOWE—And another thing in regard to companies which have insurance. Most of the men I have met with think us C.P.R. fellows lucky not to have it; with

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the exception of the older men perhaps, who can't get into benefit societies, but we can get better rates from outside societies.

Mr. CASEY—How much does it cost you in your society?

Mr. LOWE—\$1 per death.

Mr. CASEY—But how much a year?

Mr. LOWE—About \$7.

Mr. CASEY—Does that include everything?

Mr. LOWE—No; that is just the assessment.

Mr. CASEY—How much does it cost you for everything?

Mr. LOWE—\$10 a year.

Mr. CASEY—Can you get insurance in the old line companies?

Mr. LOWE—Yes; trackmen can, but trainmen cannot. Then there are the Foresters and other benefit societies. With the majority of the men in the Grand Trunk, except perhaps the old men and those in the train service, they can get insurance much cheaper this way.

Mr. CHOQUETTE—And it costs more in the I. C. R. Society too. The men prefer insuring in the Catholic Order of Foresters, or in the Catholic Mutual Benefit Association, because it is cheaper.

Mr. LOWE—As a matter of fact, the doctors sometimes get more out of it than the men. If you look over the report of the year of the I. C. R. Society, in the districts very often the doctors get more than the men. On the C. P. R., we pay our own bills and get our own doctors.

Mr. CASEY—Now, for instance on the Grand Trunk, they have a benefit society to which the company pay in \$10,000 a year. You don't know anything personally of its working?

Mr. LOWE—No.

Mr. CASEY—Would you rather have things as on the C. P. R., than that?

Mr. LOWE—Yes.

Mr. CASEY—Is that all you wish to say?

Mr. LOWE—About section 8, I want to say that it was thought to be an amendment affecting the safety of the men, the travelling public and the company. It provides that the company shall at all times employ a sufficient number of men. If the company does not keep enough men, they pay more for the accidents that are caused than it costs to keep up the road.

Mr. CASEY—You are a trackman, and the very one we want to give us some information on these points. How many men should there be on each section?

Mr. LOWE—It would depend upon the length of the section.

Mr. CASEY—How long are they on your road?

Mr. LOWE—From 6 to 7 miles.

Mr. CASEY—That would require how many men?

Mr. LOWE—Five or six men.

Mr. CASEY—What is the proper number of men to do the work required?

Mr. LOWE—Three men working, and two out with flags. There is a flag which stops all trains, and almost all the work we do, is work that makes it dangerous for a train to run until the work is done. The rule books of all the large companies provide that men be sent out each way with a flag and frog-signals half a mile or more each way from where the work is being done, and they must stay there to see that the flag is not being interfered with till the train comes along.

Mr. CASEY—Then there should be three men working and two out on watch?

Mr. LOWE—Yes.

Mr. CASEY—Is that kept up?

Mr. LOWE—No.

Mr. CASEY—How many then are usually employed?

Mr. LOWE—The average is three men to three and a-half men to a section.

Mr. CASEY—What sort of difficulties result from not having men enough?

Mr. LOWE—Well, all sorts of accidents. Trains would not stay on the lines, rails would brake, trains would run off, rolling stock be damaged and people killed.

Mr. CASEY—Have you known accidents to happen by neglect in this direction ?

Mr. LOWE—I have known an accident to occur and the force to be increased immediately after.

Mr. CASEY—I want to ask you further with reference to the compensation clause. What is considered total disablement by your society ?

Mr. LOWE—Well, in the case of an engineer, he would be considered totally disabled if he lost a hand, foot or eye, and I suppose a brakeman the same.

Mr. CASEY—Are there any regulations in your society as to total disablement ?

Mr. LOWE—The loss of one hand, or a foot or an eye is total disability in the trackmen's society.

Mr. CASEY—You don't happen to know what it is in the others ?

Mr. LOWE—No, except from hearsay.

Mr. CASEY—This provision of two-thirds of the current rate of wages for any allowance was made on the representation of some railway men, who considered it a fair proportion of pay. Have you anything to say about that ?

Mr. LOWE—Nothing more.

Mr. CASEY—How does that compare with the allowances from insurance societies ?

Mr. LOWE—That would depend on what a man takes out.

Mr. CASEY—On the average, what would it be ?

Mr. LOWE—About the same.

Mr. CASEY—Of course, the \$3,000 is a purely arbitrary sum, and it is entirely open to anyone to discuss whether it should be more or less. But I understand your organization from one end of Canada to the other have fixed a minimum compensation to be paid in case of accidents and under which sum trainmen should not be ready to risk themselves.

Mr. LOWE—Yes, that is strongly their opinion. We had delegates present from Vancouver to Halifax and they were unanimously of that opinion.

Mr. CASEY—What would be the effect of allowing them to make contracts with the railway companies that they would not claim this compensation ?

Mr. LOWE—I suppose the possibility would be that in case of injury a man would not press his claim.

Mr. CASEY—Would it be likely if they were allowed to do that, that the railway companies would make it a condition of employment that they should sign such a contract ?

Mr. LOWE—I think it is very likely that the companies would have them sign such a contract at once. I heard the Hon. Mr. Coffin the other day in Toronto speaking at the Trainmen's Convention of the number of persons in train service in the United States that were killed and wounded. It struck me as something terrible. Looking at the Railroad Trainmen's Journal the other day I came across a little piece in it that I would like to bring to your notice. This is the Journal for February, 1897. It is speaking of the proposed extension of time in the United States for putting in these automatic couplers and brakes from 1898 to 1903, and it says :

“To ask a man to quietly submit to his death because a member of Congress can be found who is so little and so much under the influence of the railroad companies as to request it, is an act that will not be tolerated by the American people, and if this amendment introduced by Mr. Evans is passed there is more than one Congressman who will find it a monument placed over the grave of his political life. Let us look at the solicitude of the companies for the passenger. Every precaution of safety surrounds him. The companies vie with each other in introducing every means of safety known to the genius of the inventor in the passenger service. There is the proud boast that each company uses only the best and the latest of improvements, and the small death rate of the millions transported speaks volumes for the companies and their employees. Look at the death rate of the men in the train service aside from the passenger department. The figures of the Interstate Commerce Commission show that for each 433 men employed one was killed the past year ; and for every 31 employed one was injured. Compare the passenger fatalities. But one was killed for each 22,984,832 carried, and but one was injured out of each 213,651 carried. But take the figures as shown in the

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injuries and deaths of the trainmen and apply them in comparison to the travelling public. An indignant public would mob the railway managers of the country, but the employees are asked to submit to the request of the companies, made through Mr. Evans, that they suffer death or injury because the managers prefer dividends to the expense of applying proper safety devices."

Mr. CASEY—Will you state something about Mr. Coffin as to who he is?

Mr. LOWE—He was a Senator from Iowa. He is a farmer, but for some reason has taken great interest in railway men. He is a railway State Commissioner in Iowa, and in this way came into contact with railway men and found the need that there was for something to prevent this terrible slaughter. He has been doing all he can to improve their condition in the way of getting improved appliances put on cars to prevent loss of life and injury. He is also President of the home for disabled railway employees at Chicago.

Mr. INGRAM—Are you employed on the C. P. R. ?

Mr. LOWE—Not now.

Mr. INGRAM—But you used to be ?

Mr. LOWE—Yes.

Mr. INGRAM—Were you ever engaged in any other department, outside of the track department ?

Mr. LOWE—No, except in construction. I was foreman of a gang on a construction train, but not connected with the train.

Mr. INGRAM—There was a conductor and a trainman beside on the train ?

Mr. LOWE—Yes.

Mr. INGRAM—Do branch lines on the C. P. R. have the same mileage per section as the main line ?

Mr. LOWE—Sometimes more, sometimes the same.

Mr. INGRAM—Generally more ?

Mr. LOWE—Yes, generally more.

Mr. INGRAM—Are they managed by the same number of men ?

Mr. LOWE—No, as a rule there are less men on the branch lines.

Mr. INGRAM—For what reason is that ?

Mr. LOWE—I suppose there is not so much traffic. That is possibly the reason.

Mr. INGRAM—Do the C. P. R. make a practice in the winter time of reducing their staff on the sections ?

Mr. LOWE—Yes, they reduce it.

Mr. INGRAM—For what reason ?

Mr. LOWE—I suppose they can get on with less men. There is not so much work going on in the winter time, in the way of permanent improvement.

Mr. INGRAM—Is the road quite as safe with the fewer number of men in the winter time ?

Mr. LOWE—No, most undoubtedly it is not. It is so much more unsafe.

Mr. INGRAM—Then for that reason you think the companies are not justified in reducing their staff of men in winter ?

Mr. LOWE—No, I think there is a minimum below which it should not be reduced in the interest of safety. I have known increases to be made immediately after an accident. I have seen a passenger train go down 20 feet over a bank with the pullman car on the fence, the dining car beside it and the rest of the train strung out all the way to the engine. Within three days after that accident there was a man more to each division.

Mr. INGRAM—Immediately after the accident ?

Mr. LOWE—Yes.

Mr. INGRAM—Some people are under the impression that the track is just as safe in winter time, or a little safer than in summer time, and for that reason the companies reduce the number of men.

Mr. LOWE—I will tell you my opinion. I have been twenty years a trackman. For certain reasons the track is more unsafe in winter than in summer. As far as safety is concerned, I will keep a track in safer order with less men in summer than in winter.

This is the reason : in summer we have nothing to contend against, except the traffic ; in winter the frost comes in. You might get the track as level as that table, on the 1st of January, and by the 15th of January with a 50 foot rail, there might be one joint five inches higher than the joint at the other end. Two rails might be just as level as they could be made on Christmas day ; on the 25th January one might be three inches higher than the other. That happens no matter whether you are on a branch line with little traffic, or whether you are on the main line with lots of traffic. These are the conditions under which we are supposed to keep the track safe.

Mr. INGRAM—Would you not consider the spring-time the most dangerous time of the year ?

Mr. LOWE—Possibly, yes, when the frost is coming out.

Mr. INGRAM—Because the track is more liable to heave ?

Mr. LOWE—No, it is not more liable to heave. The heaving is done in the early part of the winter. Two rails might be as level as that table on Christmas day and on the 25th January, it will be almost impossible to walk through a passenger car because the frost had heaved the tracks out of shape. The best way to keep the track in shape is to block the rails up with little blocks of wood, about four inches long so that the rails instead of being down solid on the tie, rests on the block. Half of the length of the spikes goes through into the tie. We use longer spikes for this purpose so as to keep them from spreading out.

Mr. INGRAM—You think the winter is more dangerous than the spring ?

Mr. LOWE—No, I say the spring when the frost is coming out, is the most dangerous time. In the winter time the ties are all frozen solid so that the spike holds. In the spring when the tie is wet, the spikes do not hold as well as when the tie is hard.

Mr. INGRAM—Do you find much difficulty in the summer with contraction or expansion ?

Mr. LOWE—No, that is all in our hands, and we can fix it without trouble.

Mr. INGRAM—What have you, split or stub switches on the Canadian Pacific ?

Mr. LOWE—Stub switches.

Mr. INGRAM—Which is best ?

Mr. LOWE—I prefer split switches on account of the contraction and expansion. I know in connection with the Grand Trunk they have them on a good part of their line.

Mr. INGRAM—Are wing rails and frogs blocked ?

Mr. LOWE—Yes, they are blocked on our line, and a man would soon get his walking papers if they were not. There are no chances taken on the C. P. R.

Mr. INGRAM—You never knew of a case of a trainman losing a limb from there being no blocks ?

Mr. LOWE—Yes, right here in Ottawa yards there was such a case. Up here in Parry Sound last winter, a man was killed because a frog was not blocked, but on the C.P.R. all are blocked and anything that happens that way is owing to the carelessness of the foreman of the trackmen ; but very, very rarely an accident happens. I only remember of one in 10 years.

Mr. INGRAM—You spoke about the number of years for trainmen and enginemen and conductors. What is the practice in promoting them ?

Mr. LOWE—The practice is, give the oldest man who can pass the examination, first chance.

Mr. INGRAM—That is, they consider fitness with services ?

Mr. LOWE—Yes, the oldest man should get the first chance, and he does.

Mr. INGRAM—Would you think that a man who has been on the road for say a year and a half and is very fit and another who has been there for three years, not so fit, but who has the length of service, that though he has years he should not be promoted ?

Mr. LOWE—If there is no other man on the road fitter than him, certainly pass the oldest.

Mr. INGRAM—You think that it should be fitness as well as service ?

Mr. LOWE—Yes.

Mr. MCGREGOR—I take it the company would use discretion.

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Mr. INGRAM—But who would use the discretion?

Mr. LOWE—Both on the Canadian Pacific and on the Grand Trunk men have fired longer than 3 or 5 years, and men have braked longer.

Mr. INGRAM—Now, it is said by members of the Committee and some officials of the railway companies, that this clause is promoted largely with a view to helping the men in case of strike. Is there anything in that?

Mr. LOWE—There is the railway men's bill. It is very like what the companies themselves recommend.

Mr. CASEY—Before you came in, Mr. Lowe explained that the time was 3 years instead of 5, as recommended by them.

Mr. LOWE—I notice, and said awhile ago, that there is an undercurrent in Messrs. Wainwright and Tait's remarks to the effect that all this was a preparation for a strike, and that it would help the men, in any tussle between them and the company. The very fact that the men have come down to what Messrs. Wainwright and Tait thought right, shows that there was no thought, certainly not a word uttered, nor a thought given expression to, that referred in the remotest to a strike. And the fact that they came down to the position of Messrs. Wainwright and Tait in regard to the time a man should serve, proves that, though possibly they were not aware that we amended the bill to read "3 years" instead of "5."

Mr. INGRAM—Therefore, so far as the Committee and the railway employees are concerned, there was not the first thought of a strike?

Mr. LOWE—No, nor in Mr. Casey's bill either. It was simply our wish to pass a bill both for the men and for the companies.

Mr. INGRAM—Regarding this arch iron rail. You never had any practical experience through running over the cars?

Mr. LOWE—No; but I have seen men on trains going 20 to 25 miles an hour, and I never saw a man off the running board. It would be almost impossible for a man to be off it and not go falling to the ground, for the simple reason that the roof slopes, and, in running along, the cars sway, and he would hardly stick on. It would certainly be no advantage to run along on top of a roof.

Mr. INGRAM—Suppose in passing over a train of cars swaying with a running board 10 inches wide, do you think he could balance himself?

Mr. LOWE—If he did not, he would run on the ground.

Mr. CASEY—How wide are running boards?

Mr. INGRAM—All the way from 10 to 30 inches.

Mr. CASEY—What is the average width?

Mr. INGRAM—The average is 15 inches, 18 inches, and some 24 inches.

Mr. LOWE—Mr. Ingram, you have a good chance between St. Thomas and Toronto to find out the difference in section. There is no part of the C. P. R. worse than that.

Mr. INGRAM—Yes; I know they have increased section men by two lately.

Mr. POWELL—You spoke about this being the employees' bill. What do you mean by that?

Mr. LOWE—I mean they consider it a bill in their interests, that would tend to their safety.

Mr. POWELL—You say this: (Mr Maclean's bill No. 3) is the employees' bill only with a slight change?

Mr. LOWE—I mean this bill No. 3, as we have had it printed, and sent out to all the organizations in Canada, and in which we recommend that three years instead of five years shall be the time necessary for a man to fire or brake, before being promoted to being an engine driver or conductor.

Mr. POWELL—And is this bill all the railway men ask for?

Mr. LOWE—That is what Mr. Maclean is asking for. We are asking for a little more, in clause 2, subsection "C," than he does. We ask for a certificate because now men don't get that.

Mr. POWELL—It would seem reasonable that they should get it.

Mr. CASEY—People don't know this. Do they refuse to give it?

Mr. LOWE—Yes; the idea of the boys asking for it, is to help them to get employment on other roads.

Mr. INGRAM—Suppose you resign, and ask the superintendent for a letter, can you get it?

Mr. LOWE—I don't know, and never knew it done.

Mr. INGRAM—Suppose a man is dismissed?

Mr. LOWE—He should say what he was dismissed for.

Mr. CASEY—There would be no harm giving a statement of the time served.

Mr. INGRAM—And what discharged for?

Mr. CASEY—Yes.

Mr. INGRAM—That would prevent him getting employment outside?

Mr. LOWE—If the law says he shall serve three years and he is dismissed, and the man goes away to another road and has nothing to show that he ever saw an engine, where is he?

Mr. HUDSON—In regard to Mr. Maclean's bill there are some points that perhaps the Committee are not quite clear upon. The Dominion Legislative Board of Railway Employees took Mr. Maclean's bill up and the committee had some conversation with him; they made an amendment reducing the length of service to three years for a brakeman or a fireman before being promoted. The reason that was done was not for the purposes of a strike at all or with any idea of hampering the big roads. But it was for this purpose: There are several small roads, we have them running into Ottawa, the presidents and managers have taken their relations and put them on the road. After they have fired or worked as brakeman for a few months they have been promoted to be engineers or conductors though not competent in any point whatever. This practice is a source of danger to the public and the railway employees. That is the reason that this clause is put in the bill, and we consider that a man who fires or brakes for three years and is any sort of an intelligent man at all is competent to fill the position of engineer or conductor. That is the reason we reduced it to three years. We have no wish to hamper the companies; we simply wish to protect ourselves and the public. For instance I am sent out on an engine of the Gatineau Valley Road to run around those curves after a year's service, as engineer. I do not understand my engine as I should. It is not possible for me to learn everything about it in that time. The only way that a man can learn to be an engineer or a conductor is by practical work and by experience becoming acquainted with all the different accidents that may happen on a road as Mr. Ingram knows well as a practical railway man. That is the way that a man becomes competent. In reference to the proposition that the company should furnish the men with certificates of the nature and length of their service, I will say that the managers have an association; the superintendents have an association; the master mechanics have an association and to-day if a man is discharged he cannot get anything that will show in what capacity or for what time he has been employed. We do not ask that they shall not state what he has been discharged for—for drunkenness or anything else—all we ask is that they shall be obliged to give that man a letter stating that he was in their service. To-day a master mechanic or a superintendent when asked for a letter of this kind will simply say to the man: "If you get a job on the Canada Atlantic or any other road tell them to write us and we will write them." That man goes there to apply for work. He has no money. The man says to him: "I will give you a job." He writes to the master mechanic or the general superintendent of the applicant's former road. The applicant has no opportunity of knowing what is the nature of the reply. If he could get a letter showing the nature and length of his service when he was discharged and what for that is all we ask. We ask that Mr. Maclean's bill be amended as our copy is here amended by the Dominion Legislative Board of Railway Employees.

Mr. Wm. Hughes of Ottawa, was called.

Mr. CASEY—What is your occupation?

Mr. HUGHES—I am not in the railway service at present; I have had about ten years' experience as a freight brakeman, a passenger brakeman and freight conductor.

Mr. CASEY—What road were you on?

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Mr. HUGHES—The last road I was on was the C. P. R.

Mr. CASEY—What roads have you been on?

Mr. HUGHES—The Grand Trunk, the Canada Atlantic and the C. P. R.

Mr. CASEY—Have you anything special that you would like to say or would you like to be questioned?

Mr. HUGHES—I have nothing further to say. Mr. Lowe has explained everything pretty thoroughly.

Mr. CASEY—You being a trainman and he a trackman there may be something you might say in addition to what Mr. Lowe has told us?

Mr. HUGHES—I can answer any question in regard to brakemen.

Mr. CASEY—Let us come to the question of the arched iron rail. Do you think that that would be a good thing?

Mr. HUGHES—Yes, sir, I think it would be a good thing. At the present time the grab iron on top of the car is just two or three inches high. You cannot get your hands under some of them when you have mitts or gloves on. It is on the roof of the car and right on the edge. When you step up and get hold of it, your hands and feet are on the edge of the car and you have difficulty in getting your balance, whereas if the rail came up a piece, you could get hold of it.

Mr. CASEY—You find difficulty in standing erect?

Mr. HUGHES—You cannot stand erect until you let go.

Mr. CASEY—What is your experience of keeping on the running board?

Mr. HUGHES—There are cases where a man might step off the running board, — in going round a sharp curve you might step off it.

Mr. CASEY—Do you think that if the cars were fitted with the arched iron rail that a man would be in danger of tripping?

Mr. HUGHES—No, sir, the only place that a man gets off the running board is in the centre of the car.

Mr. CASEY—In regard to the ladders, do you agree with what Mr. Lowe has stated, that if they can only have the ladders fixed the one way, you would rather have them on the sides, but that you would rather have them on both sides and ends?

Mr. HUGHES—If they were only going to have one ladder, I would rather have it on the side.

Mr. CASEY—Would it be an improvement to have two ladders, one at the side and one at the end?

Mr. HUGHES—Yes.

Mr. CASEY—Are you aware of any railways in Canada, where they have them at both the side and the end?

Mr. HUGHES—There are none that I know of.

Mr. CASEY—We have evidence from Mr. Morford, that they are fixing them in that way on the Michigan Central?

Mr. HUGHES—Yes, I think they may have them on foreign cars.

Mr. CASEY—You have had something to do with handling air brakes. Have you ever known the air brakes to become accidentally disconnected so that they would not work on any train that you have been on?

Mr. HUGHES—No, sir.

Mr. CASEY—Have you any suggestions to make about air brakes at all from your own experience?

Mr. HUGHES—No, sir.

Mr. CASEY—Have you any suggestions to make about the compensation clause? You have read the bill, I suppose?

Mr. HUGHES—Yes.

Mr. CASEY—You know what I mean by the compensation clause?

Mr. HUGHES—Yes.

Mr. CASEY—Does that seem fair, or have you anything to say in respect to it?

Mr. HUGHES—I think it is fair enough.

Mr. CASEY—You said you had been on the Grand Trunk?

Mr. HUGHES—Yes.

Mr. CASEY—You were under the operations of their Mutual Benefit Society?

Mr. HUGHES—It has been changed since I was on there. It is about ten years since I was there. And it was carried on in a different way then, though they pay the same amount now as at that time.

Mr. CASEY—In what way was it carried on then? Did the men manage it or did the company?

Mr. HUGHES—The company managed it, but they have different grades now to what they had then.

Mr. CASEY—Do you consider this a substantial benefit to the men?

Mr. HUGHES—Well, I do in a way. Yes; if a man is not insured in any other company, and he is railroading—you are compelled to be insured in the company you are working for.

Mr. CASEY—Would you prefer that, or the arrangement in the bill?

Mr. HUGHES—I prefer the bill.

Mr. CASEY—Do trainmen find it difficult to insure with ordinary insurance companies?

Mr. HUGHES—A brakeman has to pay about double in any insurance company.

Mr. CASEY—What does it cost you in your own organization, including lodge dues?

Mr. HUGHES—\$35 a year for \$1,200.

Mr. CASEY—Then yours is much more risky than the trackmen's business?

Mr. HUGHES—Oh, yes.

Mr. CASEY—How much can you get?

Mr. HUGHES—We can get \$2,400.

Mr. CASEY—That would cost \$70 a year?

Mr. HUGHES—That would cost \$6.00 a month. That is for insurance without any lodge dues.

Mr. CASEY—I want to know if that includes lodge dues?

Mr. HUGHES—That would be about 50 cents a month extra.

Mr. STUBBS—Are there any initiation fees?

Mr. HUGHES—Yes.

Mr. CASEY—How much?

Mr. HUGHES—\$5.00.

Mr. CASEY—What sick benefit do you get for that?

Mr. HUGHES—None in the trainmen's society.

Mr. CASEY—Even if laid off by accident?

Mr. HUGHES—No.

Mr. CASEY—If totally disabled, what do you get?

Mr. HUGHES—The full amount of insurance.

Mr. CASEY—What certificate have you to get?

Mr. HUGHES—The doctor that attended you.

Mr. CASEY—Not a doctor nominated by the Brotherhood?

Mr. HUGHES—No.

Mr. CASEY—What is considered as total disability?

Mr. HUGHES—The loss of a hand, a foot, or one eye.

Mr. CASEY—A one-eyed man can be a trackman?

Mr. LOWE—I don't know that he would be taken on; but a foreman will not dismiss him if he happens to lose an eye.

Mr. CASEY—About the cars of smaller roads, I don't know that there is anything special to ask the witness. About the width of running boards, what is the average to-day?

Mr. HUGHES—The general running board is from 18 to 20 inches wide.

Mr. CASEY—Is there anything in the Master Car Builders' standard about that?

Mr. HUGHES—I don't know.

Mr. CASEY—We have a model here; but it shows nothing. However, as it is drawn to scale we may be able to calculate it.

Mr. INGRAM—You say you were employed on the Grand Trunk?

Mr. HUGHES—Yes.

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Mr. INGRAM—And on the Canada Atlantic?

Mr. HUGHES—Yes.

Mr. INGRAM—And on the Canadian Pacific?

Mr. HUGHES—Yes.

Mr. INGRAM—Were you on through freight or local freight?

Mr. HUGHES—On both. We run on the system first in first out, and take whatever there is. To-day we might catch a through freight and to-morrow a way freight.

Mr. INGRAM—There is no regular course?

Mr. HUGHES—No, we take turns. First in first out is the rule.

Mr. INGRAM—Which do you place most importance on; getting from the ground to the top of the car?

Mr. HUGHES—Yes.

Mr. INGRAM—Now, on through freights, there is little getting up from the ground?

Mr. HUGHES—Very little.

Mr. INGRAM—There is more running over the train?

Mr. HUGHES—Yes.

Mr. INGRAM—On those through freights are there many foreign cars?

Mr. HUGHES—At times.

Mr. INGRAM—Is it not a fact that there are more or less at all times?

Mr. HUGHES—Well, you will get two or three in a train of 20 cars.

Mr. INGRAM—On the Grand Trunk or on the Canadian Pacific?

Mr. HUGHES—On both.

Mr. INGRAM—And these would have no arch iron rails?

Mr. HUGHES—Not if foreign cars.

Mr. INGRAM—And you said, it is very seldom that a brakeman steps off while running over the board?

Mr. HUGHES—Very seldom, unless it is on sharp curves and the car jerks.

Mr. CASEY—You never got off?

Mr. HUGHES—In all the years I have been railroading I never run off once.

Mr. INGRAM—You stuck on the running board all that time?

Mr. HUGHES—I did.

Mr. INGRAM—I have run over the tops of trains a good deal, and I was as often off as on.

Mr. HUGHES—I might have got off if I paid no attention.

Mr. INGRAM—Do you know if the end ladder is the best?

Mr. HUGHES—In regard to a man getting on a train in motion the side ladder is the safest and is also the handiest in getting off.

Mr. INGRAM—And suppose you are going from flat to box cars?

Mr. HUGHES—In that case I would prefer the side ladder, provided with a grabhold on the end of the car.

Mr. INGRAM—Would you prefer that to the end ladder?

Mr. HUGHES—Yes.

Mr. INGRAM—Did you ever know a case of a train where the air brakes were properly tested, having a mishap?

Mr. HUGHES—I never knew a case.

Mr. INGRAM—Now, you speak of insurance. In your experience of the Grand Trunk, do the men care much for the Provident Insurance Society?

Mr. HUGHES—The time I was on the Trunk, it was about 11 years ago, none except the engineers and firemen had it. The others had no choice to be against it.

Mr. INGRAM—Were the men perfectly satisfied at this time?

Mr. HUGHES—Yes.

Mr. CASEY—How much do you pay for your insurance?

Mr. HUGHES—The assessment on brakemen is \$35.00 a year for \$1,200

Mr. INGRAM—You consider that high?

Mr. HUGHES—Yes, that is pretty steep.

Mr. INGRAM—How long are you off the road?

Mr. HUGHES—About one year.

Mr. INGRAM—And your last road?

Mr. HUGHES—I was running a train on the C. P. R.

Mr. LOWE—I may say that when the Grand Trunk insurance society was first formed there was no society. Since then other societies have come out; but in those days there was nothing for the men.

Mr. HUGHES—The men have to belong to this, but most of them belonged to other societies.

Mr. INGRAM—In 1883 I was myself a member of the Provident Society, though I belonged to several others. I considered it a hardship in those days to belong to that, when I was already insured up to the hilt.

Mr. POWELL—It is more expensive?

Mr. INGRAM—It was unnecessary in my case.

Mr. POWELL—Mr. Lowe, are you acquainted with the Intercolonial Railway Society. Their's is mutual. Do you know anything about the road?

Mr. LOWE—It is much the same as the Grand Trunk Society.

Mr. POWELL—It is entirely managed by the men. There is an officer, Mr. Pavor, paid by the Government and paid by the men for this?

Mr. LOWE—I don't know anything about it at all.

Mr. POWELL—It is a great deal cheaper than the other?

Mr. LOWE—The trackmen would prefer the Canadian Pacific system. They have to pay a brakeman's risk, and they would prefer their own society.

Mr. CASEY—On the Canadian Pacific Railway each class has its own society?

Mr. LOWE—Each order has.

Mr. CASEY—The trackmen insure each other and the brakemen do the same for themselves?

Mr. LOWE—And they can insure outside if they wish.

Mr. CASEY—On the Grand Trunk, is the society managed altogether by the company?

Mr. LOWE—Yes. If you work on either the mechanical or operating sides you must join it.

Mr. CASEY—That is all the difference between the Grand Trunk and the Intercolonial?

Mr. LOWE—Yes.

Mr. CASEY—But the risk raises the cost to the men?

Mr. LOWE—Yes, and there is scarcely any policy but a man can get cheaper elsewhere.

Mr. POWELL—On the Intercolonial the rates are all the same.

Mr. HUDSON—In reference to some questions put the other day by Mr. Ingram to Mr. Morford, I might be allowed to say a few words. As to the views of the G. T. R. and I. C. R. men in regard to the compensation clause, I may state that a deputation of Intercolonial trainmen and operators were here a month or a month and a-half ago. I had a conversation with them on that subject and they are opposed altogether, as the Grand Trunk men are, to being compelled to insure in the company. They claim that they can get cheaper insurance outside, and at the meeting where these bills were amended they were opposed to compulsory insurance. They claim that a great many of them belonged to the Catholic Order of Foresters, the C. M. B. A., or some of the Protestant societies, and that they had all the insurance they wanted. They simply wanted something as this bill proposes in the case of death, that their families shall be entitled to so much money, that they could not get any less than that. There is nothing in the laws of any of the provinces, or of the Dominion, that states any definite amount. You may come on the company and have a lawsuit and if you beat them you will get whatever is decided by the court, but it is the wish of the men that there should be an amount named that their heirs should get in case of death, or that they should be entitled to in case of disability if it is the company's fault; they desire that they should get 60 per cent of the rate of wages paid to men similarly employed at the time. That is the wish of the Intercolonial and Grand Trunk men *in toto*. They are opposed to the insurance

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scheme of the company, excepting some of the old men who are too old to go into anything else. It is not right that the young men should be compelled to go into the company's societies just for the benefit of a few old men who have been in it all their lives and who cannot get anything else.

Mr. INGRAM—Should they be entitled to compensation whether they contribute to the action themselves or not?

Mr. HUDSON—No, I do not mean that. I mean where the accident is caused through the fault of the company. To-day if a man is discharged he drops all he has paid into the company's insurance fund, whereas in his organization, no matter what he is working with, he can still be a member by paying his monthly dues. With the company he is simply entitled to the benefit while he is employed. However if something has happened him he may be allowed to remain as a member of the insurance. Mr. Pearson in Toronto, who is paralysed, is still allowed to remain, but he is one in a thousand and for that reason they are in favour of allowing the thing to drop so far as the railway companies are concerned. The men consider that the Grand Trunk Company contribute nothing towards their fund, compared with what the men pay in; the men consider the amount the Grand Trunk contribute is simply what the doctors are paid. And the doctors in some of the divisions get more out of the fund than the men; for that reason they are all *in toto* in favour of adopting this bill.

Mr. POWELL—Under Mr. Casey's bill there may be four conditions of affairs; first, it may be owing to the negligence of the company that an accident occurs; second, it may be the negligence of the men; third, there may be no negligence, it may be purely accidental; and fourth, it may be the joint negligence of both parties, neither one of whom may be said to be the real cause. In these four categories it is clear that in the case of the negligence of the company, the company ought to pay, and that in the case of the negligence of the employee the company should not pay. What about the other two cases?

Mr. HUDSON—That would be decided by the court.

Mr. POWELL—But suppose a condition just as I have put it, that it is the negligence of neither party or the equal negligence of either party.

Mr. HUDSON—If the court decided in that way I do not consider the employee would be entitled to anything.

Mr. CASEY—If there is any negligence on the part of the employee the bill provides for that.

Mr. POWELL—But it does not provide for the case as stated. It says: "The foregoing provisions as to compensation shall be void in the case of any employee whose injury, or death, is caused by his own negligence." You see it might be partially by his own negligence and partially by the negligence of the company.

Mr. CASEY—That is a nice point of law.

Mr. HUDSON—I do not consider, if the employee was to blame in the matter at all, he would be entitled to anything. Take my own case for instance: I was to blame myself; still, if the case had gone to court the company was equally blameworthy. It was work done by their employees that caused me to do that by which I lost my hand.

Mr. POWELL—Take a case where there was no negligence and it was a pure accident, your bill would compel the company to pay in this instance. What would you think about that?

Mr. HUDSON—It is very seldom that an accident happens that there is not somebody to blame, either the man or the company. I have never seen one yet in which someone was not to blame.

Mr. POWELL—Take a case of a rail that cracks from the frost or a wheel that may have some defect in construction. It is not the result of negligence that could be guarded against.

Mr. HUDSON—That is perfectly right. But if this bill is adopted and the number of section men is employed that should be employed, a section man will go over the track before every train goes over it.

Mr. POWELL—Take the case of the accident on the Intercolonial at Dorchester where 40 people were injured. They found no negligence or cause which would lead to the accident.

Mr. HUDSON—I have heard the cause stated by a number of Intercolonial men. There was a box car loaded with several thousand pounds of copper in one end and none in the other end, the consequence was that the car jumped the track.

Mr. POWELL—In the absence of a cause they hit upon that?

Mr. HUDSON—There is very fair proof that that was the cause. If you load a car on one end—

Mr. POWELL—Don't let us argue about that. Take another case. I have been on a train when the rails spread.

Mr. CASEY—The rails did not spread without cause.

Mr. POWELL—Yes, they did. I could give you an instance which was due entirely to the action of the heat that warped the track out of line.

Mr. HUDSON—The section boss was to blame for that. In that case the section boss, in the summer time, is supposed to see that the rails have expansion room and he is particularly instructed upon that point. I have heard the roadmaster giving the section boss a lecture for not having sufficient room for expansion between the rails. That is a case where a section boss, in my opinion, would be guilty of manslaughter if it were proved that he did not have a proper amount of room for expansion between the rails.

Mr. POWELL—Suppose that you had one or more men injured, would it be fair to hold the company responsible?

Mr. HUDSON—Certainly, that employee is the employee of the company, and he is certainly supposed to attend to his duty. If he neglects his duty, the company is responsible for his action.

Mr. INGRAM—Let me put a case for you, Mr. Powell, and you can argue out your own case. Suppose you were going along with an engine and cars and a rail breaks and you go off. No one is to blame for that?

Mr. HUDSON—No.

Mr. INGRAM—Now, make your case on that.

Mr. POWELL—In that case the company you think should not be responsible?

Mr. HUDSON—No.

Mr. POWELL—Then your bill makes them responsible?

Mr. CASEY—The bill is supposed to cover all cases.

Mr. HUDSON—The opinion of the employees who met here, was that it should not cover cases of that kind. But there are few of them. Where it is purely Providence and no one is to blame, we don't want it to cover that case.

Mr. POWELL—The reason I mentioned that is, I have always found men reasonable when they get down to that.

Mr. HUDSON—In a case like that of the spreading of the track there is some one to blame. Either the company is to blame for not having enough men, or the men in charge, if there are enough, did not take sufficient care; so that either the boss or the company is to blame for not keeping the track in order.

Mr. POWELL—This strikes me as an important feature, almost a departure. I will ask you another question. In England and Ontario, you have an Employer Liability Act for the protection of employees and workmen. I will state the principles at common law, which are that a fellow workman is not responsible for negligence, or default from which a fellow workman dies.

Mr. CASEY—That is in the common law.

Mr. POWELL—Take another instance: say that Mr. Hudson and I are fellow workmen and any accident happened through your negligence, our common employer is not responsible. That is the common law. It has been remedied by statute in England and they have pushed it to this extent: that if a fellow employee, one in a position of authority, who knows, or should know—and “should know” means that his duty should lead him to know—in this case the head employer is responsible; or if the employer employs any man he knows is unfit for a position, or without using diligence as to whether he was unfit or not. You are pushing it beyond that.

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Mr. CASEY—I would cite a Canadian case: there was an employee at Montreal killed through the negligence of a fellow employee, and the case after going through all the courts was taken to Privy Council, and the Privy Council decided that the employer was responsible.

Mr. POWELL—That is under your Act; it is not the common law.

Mr. INGRAM—Was it another employee who was to blame?

Mr. CASEY—Someone employed on the road was negligent.

Mr. HUDSON—An ordinary fellow employee was the cause of this man's death. It was in this way: if he had not done what he did do, this man would not be killed. Now, I know that Mr. Shaughnessy and Sir Donald Smith contributed money out of their pocket individually to carry that case through and get it tested; and it was decided in favour of the widow.

Mr. POWELL—All this is governed by the Roman law in Quebec; not the English law.

Mr. HUDSON—I know that each of those gentlemen gave \$200 to the organizations to carry that case through, and I know similar cases in Ontario to what you, Mr. Chairman, cite, where the boss was responsible, where it never went to a lawsuit and the company settled the matter with the different organizations.

Mr. INGRAM—Under the Compensation for Injuries Acts, either in Ontario or Quebec, would a man on a Dominion railway receive any compensation?

Mr. POWELL—It has been held he would.

Mr. INGRAM—Is that your experience, Mr. Hudson, under both local Acts? On a Dominion railway, would an employee get any damages?

Mr. HUDSON—Yes. I will mention another case, which happened on the Gatineau Valley Railway, in which a brakeman lost his two feet. The case was carried through to the Supreme Court, because a lawyer in Hull had taken it up on the agreement that he would get \$500 if he won, and Beemer carried it through to the last court, and in the end Beemer was beaten and the man got his money. I claim this was another case where another brakeman was to blame.

Mr. POWELL—That was under the Roman law.

Mr. HUDSON—I have known other cases and we have had no trouble that way, except as to the amount. We never got the amount we thought right. Take this case which happened in Hull: Two men were killed through an open switch, and we were never able to prove who was to blame, though we had a good idea. In order to save the train the engineer and fireman stayed on the engine, which turned over, and they were both scalded to death. We got \$2,700 for the engineer's widow from the company without going to law; and the firemen were successful in getting \$1,000 for the mother of the fireman. Now, the fireman was as much to his mother as the engineer to his wife, and I claim the same should have been paid to each of them. It was taken up by the Engineers' and Firemen's Brotherhoods and that is all they got after a long wrangle. For that reason we claim the amount should be stipulated in all cases, and that is what we ask this legislation for. In regard to the arch iron rails, I was asking several men about the matter since I was last before the Committee and they say there is far more danger from the present handle than from the arch iron rail. An arch iron up to the knees is not more dangerous than those under which they can catch their toes. They claim that it is more dangerous to have an iron two inches high than one which is two feet high; and all I spoke to were strongly in favour of the arched iron rail. I know the same thing is going to be brought before Congress at its next session. A committee wrote me for a copy of our bill, and they will present a similar bill for an arch iron rail. This Mr. Coffin spoken of is the man who has taken hold of it, and will have it put through. In reference to this last clause and all we have heard of strikes, I will say that is something not in the minds of the employees, and we took everything out of the bill that might make people think we were benefitting only ourselves. The thought of a strike was never in our minds. Clause three in Mr. Casey's bill was put in to make the companies comply with the rule books. They have laid down a number of rules, in the making of which we had nothing to say; and in which

they impose penalties of fines and imprisonment, which are passed by the Government here and become law. Anything in that rule book is law, and you can be punished.

Mr. CASEY—That is for not observing it.

Mr. HUDSON—In that book they have rules for trackmen. We want those observed, and if they say that a man shall be sent out half a mile each way, let the men go out and leave a sufficient number of employees to put in the rail, or do whatever is necessary to fix that rail, which is not the case now. All there are in winter are three and sometimes two, and more are required. In summer they put on extra men; but this is to put in the new ties, and not to mind the track. In winter they need more men, for there are more dangers. The frost breaks the rails, the track heaves; snow has to be shovelled; and we claim that this clause should be added to this bill. That simply makes provision for the number of men that is required.

Mr. POWELL—That does not pay them anything.

Mr. HUDSON—All you gentlemen have to take into consideration is this one point: Is the life of a brakeman more important than the making of money for railway companies? Two points are before this committee: Is this bill in the interests of the lives of railway employees, or is it to enable the company to pay dividends to the men who hold their stock? We are only seeking to protect the lives of railway employees and the public in general and not to make money at all. This is the main question before this Committee in these two bills. Which is the more important, life or the making of money?

Mr. CASEY—How is this legislative board of railway employees constituted?

Mr. HUDSON—It is constituted by every organization paying 5c. a member, at least that was the assessment last year. They pay that into a fund to keep this board up. Each sends a delegate to the meetings; or it need not send a delegate, as it may send proxies. At Ottawa, for instance, there are two trainmen's lodges, two firemen's, two divisions of locomotive engineers, one of railway conductors, and one of operators, and when the meetings were being held in Toronto and at St. Thomas, they all joined together and sent one man.

Mr. CASEY—At those meetings what do they do?

Mr. HUDSON—They take up the business before them—any legislation that they wish to ask for—elect officers, and do all the routine business that may be required.

Mr. CASEY—Do the officers constitute the executive?

Mr. HUDSON—No, the officers do not constitute the executive. There is an executive of five elected for the Dominion.

Mr. CASEY—That executive is directly representative of the different lodges of all the orders?

Mr. HUDSON—Yes; the present board is composed of myself as chairman, Mr. Lowe as secretary, Mr. King representing the engineers, Mr. Woods representing the firemen.

Mr. CASEY—What is Mr. King?

Mr. HUDSON—He is a C. P. R. passenger engineer. Mr. Woods is a C. P. R. locomotive fireman. Mr. Brill, of North Bay, represents the trainmen. He is a conductor now, but he belongs to the trainmen's order. Mr. Riley, of Toronto, represents the conductors. Mr. Mills, also of Toronto, an old engineer of the Grand Trunk, is on the executive. Mr. Lowe represents the trackmen.

Mr. CASEY—How is it that you as the executive in charge of the promotion of this bill, have not called a larger number of railway employees to give evidence before the Committee?

Mr. HUDSON—In answer to that question, I may state that on two occasions we have had interviews with the Government. On the first occasion, which was last September, when the House was in session, the Dominion Legislative Board in a body met the Government represented by Mr. Laurier, Sir Oliver Mowat, Sir Richard Cartwright, Mr. Scott and Sir Henri Joly.

Mr. CASEY—Was Mr. Blair present?

Mr. HUDSON—No; we met in the Railway Committee Room and we talked over these bills as well as Mr. Gibson's bill and the Alien Labour bill. The whole executive met Mr. Laurier and other Ministers again last winter in connection with these bills as

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well as Mr. Gibson's bill and the Alien Labour bill. We went through these bills and we asked the Ministers whether the Government would take them up or whether some private members should bring them in. They stated that they would sooner have some private members bring them in, and said they did not see any reason why the Government should not give them their support. At that executive meeting Mr. Lowe and I were instructed to look after these bills. They considered that the executive committee had done all that was necessary, and had been at considerable expense. We were instructed to take those bills in charge and appear before the Committee to give any evidence in respect to them, as we were qualified to do it. Further, they did not want men to place themselves in an obnoxious position to the railway companies that they were working for, and they did not consider it necessary that they should appear before this Committee to give evidence, as we were qualified to do it, and as they had already appeared before the Government. These are the reasons why there are not more here to-day. It is a matter of expense, and there could be no more done if they were here than we can do.

Mr. INGRAM—So far as the balance of the executive is concerned?

Mr. HUDSON—Yes.

Mr. CASEY—So far as other railway men are concerned?

Mr. HUDSON—In the first place, the Dominion Legislative Board in a body met the Government and pressed these bills.

Mr. CASEY—Did your legislative board decide that it would not be wise to call other railway men in active service before this Committee?

Mr. HUDSON—The Dominion Legislative Board instructed the executive to go ahead with these bills. The executive last winter placed them in the hands of Mr. Lowe and myself to carry them through. They decided it would not be wise to call them together again unless something occurred.

Mr. CASEY—Did they decide that it would not be wise to call other railway employees in active service?

Mr. HUDSON—Yes, for the reason that at these committees they would meet railway officials. There have been cases where an employee not being posted upon the work of the committee would, without meaning to do any harm say or do something that was objected to. When the first opportunity came he was let go by the companies.

Mr. INGRAM—Would the Committee have any objection to hearing employees on active service?

Mr. CASEY—Certainly not.

Mr. INGRAM—I would be happy to furnish the names of two or three that would be glad to give evidence.

Mr. HUDSON—I can give some, too.

Mr. CASEY—I also could give some.

Mr. HUDSON—There are lots of men that would be willing to give evidence if the Committee wished it.

Mr. INGRAM—I do not think the Dominion Legislative Board represents all the railways in the country.

Mr. HUDSON—Yes, there is not a division or lodge of the different railway orders that has not paid its fees. The engineers paid theirs through Mr. Bell of Brockville, the conductors through Mr. Riley of Toronto, and the others individually.

Mr. INGRAM—There is an important man in Ottawa who would be glad to give his evidence, Mr. F. C. Jones. He has been a conductor on the Grand Trunk for a number of years.

Mr. HUDSON—What is he doing now?

Mr. INGRAM—He is in the insurance business.

Mr. HUDSON—Of course I don't know anything about him. We have no objection to his being called.

Mr. INGRAM—He is a man of wide experience in railway organizations.

Mr. CASEY—I merely brought out the reason why the promoters of the Bill did not give more evidence.

Mr. LOWE—I was speaking to Mr. Riley in Toronto on Wednesday last. He had a letter from Mr. Hudson to come here; but he had been down and met the government twice, and thought they knew what the men wanted. The Bill was there setting forth our needs.

Mr. POWELL—Regarding subsection 2 of section 8 of Mr. Casey's Bill, I want to see what your view is. The first subsection compels them to do a certain thing, the absence of which, of course, is negligence under the law. Now, take subsection 2 and just to take an illustration, suppose they have not a sufficient number of telegraph operators, say at Montreal, in connection with the Canadian Pacific, and that a cow is killed in Simcoe, or some other far off, distant place, it would scarcely seem the correct thing that the limitation of the number of telegraph operators at Montreal would have anything to do with the killing of the cow. And yet subsection 2 would have that effect, for it says, "If it fails to do so, it shall be held responsible for all injury to life, person or property in connection with its operations," I imagine what you want is, "which results from such default."

Mr. HUDSON—What comes to my mind is about property on trains.

Mr. CASEY—I think property on trains is meant.

Mr. HUDSON—Suppose you have a lot of property, of valuables, on passage with you and the train is wrecked through the neglect of the company not having a sufficient number of operators, it is not right that you should lose that.

Mr. POWELL—Why not strike out the words "in connection with its operations"?

Mr. CASEY—I drew up the Bill, and my intention was that it should apply to loss to life, person or property on trains.

Mr. POWELL—Your view is that it should read, "Injury to life, person or property resulting therefrom."

Mr. HUDSON—That was our intention.

Mr. CASEY—It was not my intention, in drawing the clause, to cover any accident that happened on a train, that it should apply to property off a train, and that view did not occur to me. They should suffer the penalty whether the cause is direct or not; but I, am not now arguing in favour of it. I will also state my view of the compensation clause, as I introduced it. We have spoken of cases of accidents which were apparently causeless, I first contradict the idea that these were causeless, for in every case either plant, roadway, or something is out of order. But, even suppose there could be a causeless accident, it seems to me that train service is a peculiarly risky service, and that the whole responsibility of that risk—even the risk of causeless accidents—should not be borne by the employee, but that there should be a minimum of risk to the employee, even when the company is not at fault, but in that minimum I did not intend to put that compensation at such figure as the men might recover by law or justice, but simply that they might get something as a fixed contribution to their risk.

Mr. POWELL—Take the case of a man walking along the running board and thrown off through no negligence of the company or himself. Would you say that under such circumstances you would give the man something?

Mr. CASEY—Yes, give something—\$3,000 is simply put in as tentative—give a man something for the risk involved.

Mr. LOWE—One reason men stumble on running boards, and perhaps the only reason, is that the track is rough. Where the track is straight men can walk all right.

Mr. CASEY—A gust of wind might blow them off.

Mr. INGRAM—I have walked off the board hundreds of times and hundreds of our men do the same thing.

Mr. HUDSON—Of course the Canadian Pacific has a wider running board than most roads. They use a standard of 20 inches to 24 inches, and most of them are 24 inches—two boards laid together—but I have seen cars, especially on western roads, with very narrow running boards, and a man cannot stay on them.

Mr. INGRAM—And he does not try to.

Mr. LOWE—And then the speed has nearly doubled this last ten years.

Mr. POWELL—I have a very strong prejudice for the ladder at the end instead of the other, from all I have observed.

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Mr. CASEY—Would you have both?

Mr. POWELL—Or both. I heard what Mr. Morford told us, but from my own observation also of a lot of flat cars interspersed with box cars, I think that it is the dangerous time, when men need something at the end; and to get on you want a ladder at the side.

Mr. HUDSON—The reason the trainmen gave themselves to the Dominion Board, was this: That a side ladder, if getting up or down, was handier, and they are not liable to fall between the cars. While probably it is not as handy getting off the side ladder they could, with an iron to take hold of. I know that Mr. Morford, in answer to Mr. Ingram, said that with the side ladder a man was liable to get knocked off by switches or by cars if they are too close. Now, if they do, the company is to blame; because the Dominion law states that there shall be nothing within a certain distance of the tracks. Therefore, the Canadian Pacific have on all sidings placed a block, inside of which the cars are supposed to be. The switch stands are supposed to be so many feet from the rail, and so are telegraph poles and other obstructions, and it is impossible for a man to get knocked off unless some one has failed in his duty.

Mr. INGRAM—Do you say Mr. Morford was opposed to either the side or the end ladder?

Mr. HUDSON—No, but you asked his opinion of the side ladder and he said that he considered the end more advantageous than the side ladder.

Mr. INGRAM—I asked which he would prefer, side or end, in getting from one car to another, and he said that a man swinging around to a side ladder was liable to strike something.

Mr. LOWE—I was going to tell Mr. Powell that the men preferred ladders both on the side and on the end especially on the Intercolonial line where they handle a great many coal cars. The conclusion they arrived at was that if they could only have one they would have the side ladder but they would prefer having both side and end ladders if they could get them.

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The Select Committee of the House upon Bill No 2 further to secure the safety of railway employees and passengers, and Bill No. 3 to promote the safety of railway employees met on Tuesday, June 1st 1897, at ten o'clock.

Mr. T. C. JONES, of 49 Askin Street, London South, was called.

Mr. CASEY—You have been a conductor?

Mr. JONES—Yes, sir.

Mr. CASEY—On all kinds of trains?

Mr. JONES—Yes, on all kinds of trains.

Mr. CASEY—And you have been working in other grades of railway service?

Mr. JONES—Yes, sir; I have been 26 years in railway service on the Grand Trunk and formerly with the Great Western before it amalgamated with the Grand Trunk.

Mr. ELLIS—How long have you been a brakeman?

Mr. JONES—Eight and one half years.

Mr. CASEY—Are you still in railway service?

Mr. JONES—No, sir; I severed my connection with it one month ago.

Mr. CASEY—Have you read Bill No 2?

Mr. JONES—Yes.

Mr. CASEY—Have you any general remarks in regard to it or would you like to be questioned?

Mr. JONES—I would prefer that you should question me on any point that you want information upon.

Mr. CASEY—How long did you say that you had been employed on the Great Western and Grand Trunk Railways?

Mr. JONES—Twenty-six years.

Mr. CASEY—Never on any other railway?

Mr. JONES—No.

Mr. CASEY—Take this bill in the order of its clauses. Clause 1 deals with air brakes: cars fitted with air brakes to be provided with an automatic alarm. Have you

ever known an accident to occur for the want of some such device as this where the engineer tried to apply the air brakes and found that they did not work?

Mr. JONES—Not in my own experience. I have heard of one case but the Westinghouse people make the claim that it cannot occur.

Mr. CASEY—We are not dealing with the claims of the Westinghouse people.

Mr. JONES—From my own experience I have not known it.

Mr. CASEY—Have you known an accident to occur within your own knowledge from the failure of the air brakes to act?

Mr. JONES—I could not say that, because the company will claim certain things and the men certain things, but after examining and investigating it has been proved to the satisfaction of the men.

Mr. CASEY—Do you know of any accidents where the air brake did not act?

Mr. JONES—Yes, one. It was so claimed by the men.

Mr. CASEY—I think we are both referring to the same case. It is quite evident the brakes did not act because the train did not stop.

Mr. JONES—Yes.

Mr. CASEY—You do not know why they did not act?

Mr. JONES—No.

Mr. CASEY—Do you think such an attachment as this will be useful?

Mr. JONES—Yes, very useful.

Mr. CASEY—Do you know of any contrivance that would affect the object of clause one?

Mr. JONES—No.

Mr. CASEY—As to box freight cars; this bill says that there should be uniform standard of height and that the capacity shall not exceed 60,000 pounds. What do you think of this provision?

Mr. JONES—I entirely approve of it. I would like to see something added, however, that the height from the rail to the coupler should be standard. This is, perhaps, as important as the height of the car, and it would make the provision apply to flat cars in addition to box cars. The height of the couplers from the rail should be made standard.

Mr. ELLIS—Why?

Mr. JONES—The difference in height of the draw bars adds to the danger of coupling cars. You get a high and low draw bar, but they are fewer than they used to be, and the companies are making them of standard height.

Mr. CASEY—Then you think that the couplers should be of a uniform height from the rail as well as the roofs of the cars?

Mr. JONES—Yes.

Mr. CASEY—We have been told that that last point is impracticable because of the different kinds of cars required to carry different kinds of things.

Mr. JONES—The company will claim that it is impracticable, though it may be done. One great source of danger to railway men is the difference in the height of the cars. They have put on furniture cars and cars to carry bulky light freight which they have heightened. If it is impracticable to have a uniform height, it should be just as impracticable to have a uniform width. You never find two cars differing in width. They have to be uniform there, and I cannot see why they should not be uniform in height just the same as in width.

Mr. CASEY—Then you think that it would be fair to say to the railway companies: "You shall not build cars above a safety height for the purpose of carrying the bulky freight; you should sacrifice the capacity of the car in this particular to the safety of the employee."

Mr. JONES—Yes; I think that should be done.

Mr. CASEY—Is that a fair statement of your view?

Mr. JONES—Yes, sir.

Mr. CASEY—There is a limitation to 60,000 lbs. capacity. What reasons are there in favour of that limitation? Why should they not be more than 60,000 lbs.?

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Mr. JONES—In my opinion a car that exceeds that at present—in the future they may get something that will hold 100,000 lbs. as safely as they now carry 30,000 lbs.—adds to the risk of breaking loose. It is like tugging at a mountain when the car exceeds 60,000 lbs. It makes very much heavier haulage and adds to the danger of breaking loose, which is one of the risks which railway men are subjected to.

Mr. CASEY—Does it increase the wear on the track seriously?

Mr. JONES—Yes, it certainly does. In hauling 60,000 lb. or 40,000 lb. cars, and they have to make a heavier rail and ballast the rail up differently to what they had to do in the old days when they had lighter cars.

Mr. CASEY—We have had evidence from the railway managers that cars are being made to carry 100,000 pounds, and that they consider them as safe as any other.

Mr. JONES—The car might be quite as safe and might be quite as strong, but in the haulage of that car there are additional risks. With light cars the slack of the train is more easily taken up than with heavy cars. With the 60,000 lb. cars it is like pulling on a solid rock, and this adds to the danger of jerking and of uncoupling the cars.

Mr. ELLIS—Well, I suppose in railway work when you say that rails must be heavier and more heavily ballasted, that simply means better conditions.

Mr. JONES—Yes, but still with these conditions the breaking loose of the heavier train and the jerking of the train would add to the risk. The road-bed would not prevent that.

Mr. ELLIS—Would not the same conditions which make for the increased rail and ballast make for an increase of heavier cars and all that? That would follow, don't you think?

Mr. JONES—Oh, yes, to a certain extent.

Mr. CASEY—The next subsection has reference to ladders, outside ladders, etc. Now the Grand Trunk and the Canadian Pacific employers who were here have urged that outside ladders were not as safe as end ladders. They said that there was a danger of a man being brushed off by obstacles, and a difficulty in getting from box to flat cars. On the other hand, Mr. Morford, of the Michigan Central, said he believed outside ladders on the whole were useful in most cars; but he would prefer both.

Mr. JONES—I thoroughly agree with Mr. Morford. The more hold a man can get between cars the better. At the same time, where a man has to use the ladders to get up when the train is in motion, the outside ladder is undoubtedly the best. But if the car was equipped with end and side ladders, it would be much better, because the rungs of the ladder on the end would provide a hand hold when coupling in between cars.

Mr. CASEY—Look at this end plan, of a car with end hand grabs.

Mr. JONES—That is good.

Mr. CASEY—Do you approve of that?

Mr. JONES—I approve of that decidedly.

Mr. CASEY—The next thing is the hand rail also shown on that plan, reaching from the top of the ladder to the running board. Do you think that would be a useful attachment?

Mr. JONES—That has been approved by the railway organizations and while there has been a little difference of opinion about it, the bulk of the men want it.

Mr. ELLIS—What is your opinion?

Mr. JONES—I would prefer an attachment to the mast of the brake, and have that as a support to the brake. I believe the Master Car Builder's Association are having all new cars built with the ladder on the same side as the brake, and something similar could be put on and the attachment to the brake would form a portion of its support, as well as a hand grab for men getting up.

Mr. INGRAM—Your meaning is to put a rail around the brake.

Mr. JONES—No; that is not it. The sketch shows what I mean (sketch put in). Taking all the new cars built by the Master Car Builder's Association it about covers that.

Mr. INGRAM—There would be no difficulty in providing for that in connection with this clause, that this should be on the same side as the brake. The brake is only on one end.

Mr. JONES—Yes.

Mr. INGRAM—Then on the end opposite that there is none.

Mr. JONES—There are on some cars what are known as double connected brakes on both trucks, operated from one end of the car.

Mr. INGRAM—But there is only a brake-head on one end?

Mr. JONES—That is all.

Mr. INGRAM—Then in case you provide a rail at one end you will have another rail as provided in the Act attached to the ladder at the opposite corner?

Mr. JONES—I would like to see the deck kept as clear as possible.

Mr. INGRAM—What do you mean by the “deck”?

Mr. JONES—The whole top of the car.

Mr. INGRAM—Then you would have no rails?

Mr. JONES—Yes, but the big bulk of railway men differ from me on that point, and want the rails.

Mr. ELLIS—I don't clearly catch Mr. Jones. Assuming there is only one of these ladders, either end or side, and taking the average of railway work all over, which is the best?

Mr. JONES—If we had to choose between the two, the side ladder; but I would like to see every car equipped with both end and side ladders.

Mr. CASEY—Now, we will turn to the compulsory compensation clause. You have read this clause and you might make your own statement on it?

Mr. JONES—I cover the whole thing, in saying that no railway man but will concur in supporting what the bill contains as to compensation for injury.

Mr. CASEY—The clause provides that no employee shall be allowed to contract himself out of this; that is, he shall not be able to agree with the railway company that for such and such wages he shall relieve them from responsibility. Is this wise?

Mr. JONES—Yes, sir; there is or was—it is so long since I joined the Provident Society, that I can hardly remember—a provision that one thing you signed, was that you accepted the compensation of the Provident Society in lieu of all damages you might contract by injuries, and the men figured up and found the provision itself was not worth the paper it was written on; but which they were, in a measure, forced to sign.

Mr. CASEY—If they were allowed to contract out, no doubt the railway companies would insist on every man signing the agreement?

Mr. JONES—I think they would.

Mr. CASEY—What is your opinion as to the amount of compensation? This provides for 60 per cent of a man's wages, while laid off as the result of injury. Do you think that is a fair proportion.

Mr. JONES—It is pretty hard to say. If I were an injured man I would not like to accept 60 per cent of my wages for the time I was laid off; and take any injured man, he would hesitate to accept that. The harder he works the smaller the compensation he receives, and the greater the risk, and 60 per cent does not pay him for the loss of time. It would not pay a man to go into the injury business for that sum.

Mr. CASEY—What we want to get at is this: supposing this clause passes to fix a fair rate of allowance to one who is injured. We have put in 60 per cent as a tentative amount and we ask everybody who knows anything about it, whether he thinks this is a fair figure, or what other proposition he would suggest. We want your personal view of the question. How does it compare with the allowance made by the societies that you subscribe to?

Mr. JONES—This is about the ratio, about two-thirds.

Mr. CASEY—Then in connection with the Provident Society of the Grand Trunk, was it a fact that everybody had to sign?

Mr. JONES—To the best of my knowledge. I remember at the time of the amalgamation of the old Great Western Provident Society, with the Grand Trunk Provident Society that we had to do that.

Mr. CASEY—Then there was a Provident Society in the Great Western?

Mr. JONES—Yes.

Mr. CASEY—Did the company contribute?

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Mr. JONES—They claimed to do so.

Mr. CASEY—Who was it managed by, the company's officials?

Mr. JONES—Yes, largely by the company's officials and the men together.

Mr. CASEY—You were not compelled to sign any release to the company, in regard to damages?

Mr. JONES—No, sir.

Mr. CASEY—After the amalgamation you were compelled to sign a statement?

Mr. JONES—Yes, to the best of my knowledge: it is rather dim now, it is so long ago, but I will be almost positive that that provision was insisted upon.

Mr. CASEY—Taking the operation of the Provident Society as a whole, has it been satisfactory to the employees of the Grand Trunk?

Mr. JONES—No, it has not.

Mr. CASEY—You have been in a position to know as to that?

Mr. JONES—I have been connected with it ever since it was inaugurated.

Mr. CASEY—I understand you held some position in connection with a committee of the employees whose business it was to look after their interests as between them and the company?

Mr. JONES—I have been chairman of the joint grievance committee for the Grand Trunk conductors and trainmen.

Mr. CASEY—What were the duties of this joint grievance committee?

Mr. JONES—Their duties were to take up any matters that might arise between the men and the company and to adjust them at the annual meeting at which we mutually agreed to discuss such things.

Mr. CASEY—You met the officials every year and discussed these matters with them?

Mr. JONES—Yes, sir.

Mr. CASEY—So that any grievances between the men and the company came to your personal knowledge?

Mr. JONES—Yes.

Mr. MCGREGOR—Why do you say that the Provident Society was not satisfactory?

Mr. JONES—The men claimed that the compulsory feature is very objectionable and especially this contract that they have to sign that by reason of the company helping to support the Provident Society they waive all claims for damages or injuries. This is the most objectionable feature.

Mr. MCGREGOR—What do you mean by the compulsory clause?

Mr. JONES—Every employee of the Grand Trunk must be a member of the Provident Society. That is a condition of his employment.

Mr. MCGREGOR—And his subscription is taken out of his wages?

Mr. JONES—Yes.

Mr. ELLIS—That is no worse treatment than the civil service get, is it?

Mr. JONES—I personally do not grumble about it at all. The fact that the company deducted from my wages saved me on account of my collection and I am perfectly well satisfied, but I know the will of the men.

Mr. CASEY—Have you any fault to find with the administration of the fund by the officials of the society?

Mr. JONES—Yes, the fact that it is left almost entirely to the company to decide whether a man is incurable and then to compute his insurance in some way or other giving him a certain amount for total and permanent disability and throwing him out of the fund is not satisfactory. I might in one or two days give you more information on this matter, I have not studied it up, but I know of cases occurring and when I return to London I could give you more information.

Mr. CASEY—You will please communicate it to the secretary or to myself. Do you find any friction arising between your organization and the officials of the Grand Trunk, in consequence of your mutual discussion of grievances every year? Do you find that employees are punished, dismissed, kept back or in any way hardly used by the company in consequence of grievances that they have brought forward?

Mr. JONES—You cannot answer that question and give positive proof that it is so. It is easy for the company or an official, when a man has become objectionable, to find some reason for dismissing him. There is no law laid down that a man shall be dismissed or fined or punished in any given way for any certain offences, yet if a man gets too prominent the company can easily get rid of him. You cannot prove the statement and it is a hard question to answer.

Mr. CASEY—That is all I wish to ask you on that point. Section 8 provides that the number of employees shall be sufficient to ensure safety. The intention of that clause was to prevent railway companies from economizing in expense at the cost of letting the road-bed run down and making operators, trainmen, section men, etc., work longer hours than they should. You have never been a trackman at all?

Mr. JONES—No.

Mr. CASEY—We would like to have your ideas on this clause generally?

Mr. JONES—I think the clause is good, generally speaking.

Mr. CASEY—Have you known the road to run down in condition on account of not having sufficient men employed upon it?

Mr. JONES—Yes, sir.

Mr. CASEY—The consequence of which would be increased risk?

Mr. JONES—Certainly, increased risk of injury.

Mr. CASEY—You do not know anything of about how many men there should be on a section?

Mr. JONES—Yes, I do; I do not think that a sectionman can do justice to his section short of four men and himself.

Mr. CASEY—You would put five men on a section?

Mr. JONES—Five men on a section.

Mr. CASEY—We have been told that two men are required as signal men?

Mr. JONES—Yes, and three to do the work and handle the hand-car. I do not think a man can do justice to himself or to his work with a less number of men.

Mr. CASEY—Is the bad condition of the road bed especially dangerous to brakemen and others who have to run along the top of the cars?

Mr. JONES—Yes; undoubtedly it increases the risk.

Mr. CASEY—It is not only dangerous to those who have to run on top of cars, but to property and to the general public.

Mr. JONES—Yes.

Mr. INGRAM—How long have you been chairman of the executive?

Mr. JONES—Until last November, from 1892; that is the time when we formed a joint committee of brakemen and conductors on the Grand Trunk. Previous to that, I was chairman of the O. R. C., that is the Order of Railway Conductors.

Mr. INGRAM—Was it at the instance of the Grand Trunk that you organized in that shape?

Mr. JONES—No.

Mr. INGRAM—Was it done by the men themselves?

Mr. JONES—Yes; by the men themselves.

Mr. INGRAM—Did you find any difficulty in arranging at any time with the company to have your grievances heard?

Mr. JONES—Very little in our experience.

Mr. INGRAM—That is under what management?

Mr. JONES—Under the old management.

Mr. INGRAM—Who were the old management?

Mr. JONES—Mr. L. J. Seargent was the general manager and Mr. James Stephenson was the general superintendent.

Mr. INGRAM—In the time of those gentlemen you found little difficulty?

Mr. JONES—Well, after 1892 till we had an understanding we had some, but not in the arrangement of meetings?

Mr. INGRAM—How often did you meet the management?

Mr. JONES—Once a year till 1892, when the agreement called for annual meetings?

Mr. MCGREGOR—Were they satisfactory?

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Mr. JONES—After 1892.

Mr. INGRAM—The present manager is Mr. Hays. Now, have you met Mr. Hays?

Mr. JONES—No; but we saw the General Superintendent, Mr. McGuigan; Divisional Superintendents Webster, Cotter and Fitzhugh.

Mr. INGRAM—How has your committee been received by these gentlemen?

Mr. JONES—Well, after the first hitch, when there was a question as to our representative capacity, we thought that they were very fair.

Mr. INGRAM—Is there anything in the report that the management declines to deal with the committee, and prefers to meet the men individually?

Mr. JONES—Not to my knowledge. We had arranged at that time in November that this spring they would again meet the committee and adjust the question of pay and other grievances.

Mr. INGRAM—And you found them as convenient to meet as the old management?

Mr. JONES—Yes.

Mr. INGRAM—Then there is nothing in the rumour that the management declines to meet the committee?

Mr. JONES—No.

Mr. INGRAM—Or the rumour that they prefer to meet the men individually?

Mr. JONES—No. The question came up whether the committee represented the majority of the men, and it was on that point the only friction arose. We were able to show and will be able to show that we represent a large majority of the men.

Mr. INGRAM—So far as you know, this committee in arranging with the management were perfectly satisfied in adjusting grievances?

Mr. JONES—Yes.

Mr. INGRAM.—Has the committee ever brought up the question of insufficient appliances or the latest appliances?

Mr. JONES—Yes; on several occasions.

Mr. INGRAM—Before the management of the Grand Trunk?

Mr. JONES—Yes.

Mr. INGRAM—Did you bring it before any other road?

Mr. JONES—This committee has dealt with the question of other cars handled by the Grand Trunk.

Mr. INGRAM—But you never had anything to do with other companies?

Mr. JONES—No.

Mr. INGRAM—Now, in discussing appliances, how did the management seem to take on that or discuss it?

Mr. JONES—Invariably, they received all suggestions with courtesy, and where we could make a point, they complied to carry them out. I remember notably one case where they did this.

Mr. INGRAM—Did they quote any figures or give any information to show that they were doing what they could?

Mr. JONES—Yes, sir; they did.

Mr. INGRAM—And satisfied the committee they were doing that?

Mr. JONES—Yes.

Mr. INGRAM—Now, with respect to this first section, Mr. Jones, you have run a passenger train for some years?

Mr. JONES—Yes.

Mr. INGRAM—And what has been your experience in leaving divisional points, or putting off or taking on coaches, were you in the habit of testing the brakes?

Mr. JONES—Every time.

Mr. INGRAM—If properly tested, is there any danger of the air getting out? Any case of an accident where the air has been properly tested?

Mr. JONES—There is the case Mr. Casey referred to.

Mr. MCGREGOR—That is a disputed case, of course?

Mr. INGRAM—That is what I wanted to bring out.

Mr. CASEY—You mean the accident on the Michigan Central, and the London and Port Stanley Branch?

Mr. JONES—No ; I mean one at Ingersol, in which the engineer claimed that something occurred to his brake after his thoroughly testing and working it.

Mr. INGRAM—Do you think with your practical experience, that if the air is properly tested and the angle cock is parallel to the train pipe, it is possible for the air to go out, if properly tested ?

Mr. JONES—No, there is no reason for it doing so.

Mr. INGRAM—From your practical experience, you would say that if the air is properly tested, there is little danger of that ?

Mr. JONES—Yes.

Mr. INGRAM—In the case of the Port Stanley accident, and the one you speak of, and one which happened close to St. Catharines, are you of opinion that if the air had been properly tested these accidents would not have occurred ?

Mr. JONES—I am not sufficiently conversant with the St. Catharines accident to say ; but the others were due to improper testing of the brakes.

Mr. CASEY—Was there any investigation in the Port Stanley case ?

Mr. JONES—Yes.

Mr. CASEY—What did the evidence at the inquest go to show ?

Mr. JONES—I don't remember clearly.

Mr. INGRAM—I think that the evidence went to show that the trainmen said that they tested the brakes, and having tested them, something went wrong. Now, with respect to the first section, you think that if there was some proper appliance satisfactory to the railway companies and that would give good service, it would be good ?

Mr. JONES—Yes.

Mr. INGRAM—Would you apply it to all box cars, or simply to passenger coaches ?

Mr. JONES—I would like to apply it to all trains.

Mr. INGRAM—Well, in that case, take a train of 30, 40, or 45 cars, all having this on, you are aware it takes a certain time to recharge the brakes.

Mr. CASEY—Some other appliance might be brought out. Mr. Jones says he knows none at present.

Mr. INGRAM—They have on the Michigan Central. We will bring that out by Mr. McKenzie. Now, about the 60,000 lb. cars, would there be anything in this point ? With the Grand Trunk 28 cars are a load. With some device, would it be better for the men and no danger for the company, if instead of having 28 cars of 40,000 lb capacity, they would only have 20 cars of 60,000 lbs ? Would there be any advantage in having fewer cars and greater capacity, provided the road-beds, bridges, and rails were competent to carry them ?

Mr. JONES—Well, it would be hard to tell which would be best. Every trainman likes his caboose to be as near the engine as possible, and as few cars as possible between ; but I think the maximum weight should not exceed 60,000 lbs.

Mr. INGRAM—If you get them higher than that they become very rigid and, irrespective of the length of the train, they are hard to handle and the jerking increases the risk to the employee working on that train.

Mr. JONES—Well it is a fact that a trainman likes his train to be short.

Mr. CASEY—What about jerking ?

Mr. INGRAM—The heavier you get a car the more rigid you must build the frame and that destroys the spring.

Mr. CASEY—If a man were standing on the top of a car when it started would he receive a worse jerking on a heavier car than on a light one ?

Mr. JONES—Yes. The further one of these 60,000 lb. cars is from the engine, with lighter cars between, the heavier the jerk and the more risk there is of breaking some portion of the coupling gear.

Mr. CASEY—Very long trains with a heavy car add to the risk ?

Mr. JONES—Yes.

Mr. CASEY—Take a long train of light cars and a shorter train of heavier cars and which would you prefer ?

Mr. JONES—The train of light cars.

## Safety on Railways.

Mr. INGRAM—Are you taking into consideration that the train is controlled by air brake or by the hand brake?

Mr. JONES—Irrespective of that.

Mr. INGRAM—Of course I could understand that in speaking of two or three dead engines. There is no doubt as to the truth of what you say in respect to that.

Mr. JONES—Get ten or twelve cars back from your engine and it pulls as if they were made out of solid iron.

Mr. INGRAM—You spoke of a standard height of couplers from the rail. Is it not a fact that the Master Car Builders have a standard height?

Mr. JONES—Yes.

Mr. INGRAM—And all the cars that are built now are built to a standard height?

Mr. JONES—Yes.

Mr. INGRAM—As to couplers?

Mr. JONES—Yes. And as fast as they get the old equipment into the shops they are re-equipping in that way.

Mr. INGRAM—You said that you thought that the boxes should be of the same height?

Mr. JONES—I would like to see it.

Mr. INGRAM—As a practical railway man, do you think it is possible to do that?

Mr. JONES—I do.

Mr. INGRAM—Then you would have a furniture car no higher than a meat, refrigerator or hay car; you would have them all the same height?

Mr. JONES—Yes; I claim that if it is possible to make cars uniform in width, it should be equally possible to make them uniform in height. It opens up a wide question as to freight rates, but I am speaking purely from point of view of the man who gets on top of the car.

Mr. INGRAM—Are you taking into account that the trains are being equipped with air brakes and automatic couplers, or are you giving your evidence on the basis of the old hand brake?

Mr. JONES—Irrespective of the air brake, the man has to be on top of the car. There is no road, to my knowledge, that does not insist that their men shall be on top in case of the failure of the air brake to work and the necessity of applying the hand brake?

Mr. INGRAM—Is it a fact that when a train is supplied with air brakes there are less brakes to set?

Mr. JONES—There are less brakes to set.

Mr. INGRAM—And less running over the cars?

Mr. JONES—In case of necessity the men have to be on top of the cars. On the Grand Trunk especially there is an order that every man must be on top passing every station, railway crossing, drawbridge, etc.

Mr. CASEY—They have to be there ready to work the brakes if required?

Mr. JONES—Yes.

Mr. INGRAM—Supposing you had the hand brake: a man going down grade wishes to stop; he is obliged to pass over five or six cars at least at the head and tail end to stop that train; and he has to pass back and forward more or less releasing and setting up his brakes in order to stop at the water tanks. If he had air he would not have to do that?

Mr. JONES—No.

Mr. INGRAM—Therefore a man does not really pass over a train as much with the air on as if he had to apply the brakes by hand?

Mr. JONES—No.

Mr. INGRAM—So that if each train were supplied with these appliances the necessity of making the boxes of uniform height would not be the same as if hand brakes had to be applied?

Mr. JONES—It all depends on the amount of travelling you would do up and down. On the Michigan Central, where the road is thoroughly equipped with air brakes, the

conductor does more travelling than the brakeman, because it is handier for him to get to his car from the front over the train.

Mr. INGRAM—Why does he do that?

Mr. JONES—To save time.

Mr. CASEY—As a matter of practice, does the conductor as well as the brakeman have to run about over the top of the train?

Mr. JONES—Yes, certainly. On the Michigan Central each station is represented by an order board; the man having orders to that station must not pass that order board. A conductor running a train of 45 cars finds it better for him to go over the top while the train is running and be there when the engine stops to get further orders. Of course he might wait until the train stops and, like an everyday passenger, walk along the side of the track. If he failed to do what he now does he would soon become a back number.

Mr. INGRAM—Suppose a conductor gets injured in passing over a train in that way would the company hold him blameless or would the company condemn him for doing something he is not obliged to do?

Mr. JONES—I do not think so. I do not know that I ever heard of a case. I think the company would consider that this is one of the risks of the profession.

Mr. INGRAM—Speaking of the height of box cars, do you think that if the company were to adopt a uniform height it would involve increased freight rate for hay, furniture and all light freights.

Mr. JONES—I think it would, although we would not object if they would make every car as high as they have them now.

Mr. MCGREGOR—The higher they are the harder they are to pull against the air?

Mr. JONES—Yes.

Mr. INGRAM—You believe in the end and side ladders?

Mr. JONES—Yes.

Mr. INGRAM—Take the arched iron rail as you see it on that plan running from the side ladder over to the running board on top. What is your opinion of that again?

Mr. JONES—My personal opinion differs from that of the bulk of the men. Personally I would like to have the top of the car as clear as possible.

Mr. INGRAM—There is a plan of it drawn out showing the rail running from the side of the car to the running board.

Mr. JONES—Yes.

Mr. INGRAM—How high would you have that rail extending?

Mr. JONES—About two feet; in that neighbourhood. It acts as a support to the brakemen.

Mr. CASEY—Would you like to have it so that a man might catch hold of it without stooping much?

Mr. JONES—Oh, he would have to stoop.

Mr. INGRAM—You mean from the side of the car to the running board?

Mr. JONES—Yes. Encasing the brake rod.

Mr. INGRAM—Would that not be the same as the other?

Mr. JONES—The way I differ from that is that they would put it on each end of the car and personally I prefer to have nothing but the brake as an obstacle to a clear runway on the train.

Mr. CASEY—What he proposes is to have the rail only at the brake head end of the car. There would only be one instead of two.

Mr. JONES—That is it, but as I say I differ in that personally from the great bulk of the trainmen.

Mr. INGRAM—Regarding running boards, in your experience as a brakeman did you always keep on the running board, passing over trains?

Mr. JONES—I could not say I swayed very often.

Mr. INGRAM—Did you ever run over on the box, that is on the top of the car?

Mr. JONES—Oh yes.

Mr. INGRAM—As much on the box as on running boards?

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Mr. JONES—No, I could not say that. You generally keep in the middle of the road.

Mr. CASEY—Generally you come to get on the running board before stepping from one car to the other?

Mr. JONES—Yes.

Mr. CASEY—And as a rule, it is only at the end that there is any serious danger of tripping over?

Mr. JONES—As I said, I would like to see the deck clear.

Mr. CASEY—But come to the point: Is there any danger?

Mr. JONES—A little but not much.

Mr. INGRAM—The great bulk of railway men favour this?

Mr. JONES—Yes.

Mr. INGRAM—By the bulk, you mean of the brakemen?

Mr. JONES—Yes. I speak of the bulk, as I tried to carry my way and could not; they were too many for me.

Mr. INGRAM—You spoke of the Provident Society, do you know whether the men lately are compelled to sign this contract?

Mr. JONES—I don't know. I have taken no interest in it for years.

Mr. INGRAM—As a Grand Trunk man you should know were not the employees excluded from compensation for injuries?

Mr. JONES—Yes.

Mr. INGRAM—And that is the chief reason for dissatisfaction?

Mr. JONES—Yes.

Mr. INGRAM—And why was the Act applied to them?

Mr. JONES—Well, I will tell you one thing: Every man likes to have his own way in managing his own money. You find men joining things outside, the same as men on the Grand Trunk did, and they would prefer to leave it and join other things which they claim give as good benefits for less cost.

Mr. INGRAM—Do you know instances where Grand Trunk men belong to as many other societies as they can keep up and think it a hardship to belong to this?

Mr. JONES—Yes, lots of them.

Mr. INGRAM—Then, something by which the men could leave it would be welcome?

Mr. JONES—Yes. Speaking as Chairman of the Grievance Committee, it was brought in by that committee on several occasions.

Mr. CASEY—You mean men with as much insurance as they can provide for?

Mr. JONES—Yes. They should not be compelled to take this with all they have to carry.

Mr. INGRAM—That is where a man has sufficient insurance, he should not be compelled to sign this contract. You spoke of five men as necessary to keep up a section, and of roadbeds which were in bad order for need of that number.

Mr. JONES—I have known such roads.

Mr. INGRAM—Is that a common occurrence?

Mr. JONES—It has been in the past.

Mr. INGRAM—How many men should a section have?

Mr. JONES—It would depend entirely on the nature of a section. Take a man on a section which is rock-bottom and well ballasted. He could take a longer mileage, and have less trouble than a man whose section ran through a swamp. It would depend entirely upon the nature of the roadbed.

Mr. INGRAM—But the practice is that whether soft or hard, good or bad, the mileage is the same?

Mr. JONES—Yes.

Mr. INGRAM—So that is not taken into consideration?

Mr. JONES—No.

Mr. INGRAM—But it should be, in your opinion as a railway man?

Mr. JONES—Yes.

Mr. CASEY—That is a good point. I should think it would be considered.

Mr. INGRAM—Except perhaps on side lines?

Mr. JONES—Or in yards.

Mr. CASEY—How many cars do you think a brakeman should have to look after, taking all risks of weather and everything else into consideration; say with 30 cars, how many men should there be?

Mr. JONES—That is about the same question Mr. Ingram asked. On some roads there are 80 cars in a train and I have known 120 cars on one engine; but I don't think that two brakemen should look after more than 35 cars; it is more than he can do to look after more than that.

Mr. CASEY—That would be one for every 15.

Mr. JONES—One for every 15 or 20; but I don't suppose any railway manager on earth will agree with me on that.

Mr. John McKENZIE, of St. Thomas, Ontario, being present, was called.

Mr. CASEY—How long have you been employed in railway work Mr. McKenzie?

Mr. McKENZIE—Since 1868, about 29 years.

Mr. CASEY—From 1868 until the past winter?

Mr. McKENZIE—Until the 2nd of February last, when my railroad services ended.

Mr. CASEY—Then you are no longer in the service?

Mr. McKENZIE—No.

Mr. CASEY—What roads have you worked on?

Mr. McKENZIE—I have worked on 3 or 4. I worked on the Grand Trunk Railway of Canada and on the Chicago and Grand Trunk for a time; that was the time they amalgamated, and then I worked on the New York Central for a year. The last 14 years I have been with the Michigan Central. I went to them in 1883.

Mr. CASEY—What positions have you held on the railway?

Mr. McKENZIE—I have held the positions of car checker, brakeman, conductor, yard-master and general yard-master.

Mr. CASEY—How long were you a conductor?

Mr. McKENZIE—I have been a conductor off and on since 1873.

Mr. CASEY—And brakeman?

Mr. McKENZIE—I was brakeman and yardmaster. I only broke a short time, and worked in the baggage car between 4 and 6 years. Of course I was car checker for a short time and then I broke for nearly three years, and attended the baggage car.

Mr. CASEY—Long enough to know a brakeman's business?

Mr. McKENZIE—Yes.

Mr. CASEY—Have you read Bill No. 3 through carefully?

Mr. McKENZIE—Yes.

Mr. INGRAM—Have you any remarks to offer on section No. 1 in regard to air brakes?

Mr. McKENZIE—I believe all cars should be fitted with air brakes.

Mr. CASEY—This provides an automatic device to give the engineer notice if anything goes wrong with the brake. Do you know of anything of that kind.

Mr. McKENZIE—I don't know of any device in existence, and I think that when air brakes get out of order at the present time, they will get sufficient notice of it.

Mr. CASEY—How would you get sufficient notice?

Mr. McKENZIE—The least thing that goes wrong with the air brakes is noticed. If the hose coupling should be broken and the air leaks they know it immediately by the working of the pump on the engines. If the air brake falls in two the train stops immediately.

Mr. CASEY—Suppose something occurs to shut off the connection between the engine and the train, suppose the angle cock gets turned how would they know that?

Mr. McKENZIE—They have no means of knowing that until they undertake to test the air.

Mr. CASEY—Exactly. It is something the engineer at present has no means of knowing if the air is shut off from any car?

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Mr. MCKENZIE—No, he would not know it unless something happened that would start a break in the train and a leakage in the train pipe.

Mr. CASEY—A device which would give him notice in case the air was shut off from any car would be a useful thing?

Mr. MCKENZIE—I should judge it would be.

Mr. CASEY—Do you happen to know of any such device?

Mr. MCKENZIE—It looks feasible enough but I do not know of any device.

Mr. CASEY—There are two men whose devices have been tested with certain degrees of success.

Mr. MCKENZIE—I did not know there was such a thing.

Mr. CASEY—What about a uniform standard height of box freight cars weight and capacity?

Mr. MCKENZIE—The capacity is fully great enough here in my estimation. A car that you put an extraordinarily heavy load on is hard to handle on the level or on hills. I would like to see cars as nearly uniform as is possible as far as the height is concerned. As to the capacity of a furniture car it will not be interfered with if the car were made longer; in fact they are made longer. A furniture car is from 38 to 40 feet long whereas our box cars run 35 feet over all. The furniture car is usually a foot and a half higher than the average box car.

Mr. CASEY—Is that a source of inconvenience and danger to brakemen?

Mr. MCKENZIE—Yes, it is a great inconvenience.

Mr. CASEY—Do you consider it a danger?

Mr. MCKENZIE—There is a liability of its being dangerous. But of course people use more care on these cars.

Mr. CASEY—But it is an extra risk?

Mr. MCKENZIE—Yes. It is easy for anybody to see that if we had to jump from this table down to the floor, it would be more inconvenient than if we had to step across on the level.

Mr. CASEY—I suppose at night you do not know when you are coming to these high cars?

Mr. MCKENZIE—We have to keep our eye looking out. It is a matter of business with us.

Mr. CASEY—You have heard Mr. Jones' statements as to the effects of an unduly heavy car on a breaking of the train. Do you agree with these in general?

Mr. MCKENZIE—Yes, quite. I agree with them because a heavy car placed in the middle of light cars makes a bad load, but railway companies, especially that for which I have worked—I think it is one of the best in this country—endeavour to put their loads altogether at the head of the train, the empties in the rear, and flat cars in the rear of these again.

Mr. CASEY—That is not always possible?

Mr. MCKENZIE—It is sometimes hard to do that, but it is generally done in our yards, in making up trains for through traffic.

Mr. CASEY—As I understand the reason it is this, that between the cars ahead of this heavy car there would be a considerable amount of slack, and that when this slack was taken up when the train started there would be a sudden and sharp pull on the heavy cars?

Mr. MCKENZIE—They would find the heavy car when they came to it.

Mr. CASEY—And if anyone were standing on that car?

Mr. MCKENZIE—He would feel the effect of it a little bit.

Mr. CASEY—Now about the ladders, what is your opinion?

MCKENZIE—There should be four ladders on the car, two at the end and two on the side at opposite corners.

Mr. CASEY—If you only had them one way which way would you prefer?

Mr. MCKENZIE—The side ladder by all means. By all means the side ladder. But I tell you the two ladders are right.

Mr. CASEY—It has been urged against the outside ladders by the railway managers—Mr. Wainwright I think it was particularly—that a man running over a flat car and

encountering a box car, will have difficulty in climbing up to the top if there was no end ladder. This plan laid before you illustrates the terms of this bill?

Mr. MCKENZIE—In several states of the United States they have these side guards, they have been adopted by the Senate of the United States (the witness indicated diagonal handles shown on the end plan of car) I do not find any great objection to it, but I would prefer having both end and side ladders.

Mr. CASEY—As to the arched iron rail?

Mr. MCKENZIE—I would find no great objection to it.

Mr. CASEY—Mr. Jones' plan shows the rail running from the brake to the side of the car. That needs to be only 14 inches high.

Mr. MCKENZIE—They have this on the New York Central? A frame around the brake and it is honestly a benefit.

Mr. INGRAM—Does it extend from the brake to the side of the car?

Mr. MCKENZIE—To the side of the car. It is a support made around the brake. It is a safeguard and a strength to the brake rod.

Mr. INGRAM—Would you prefer the rail to be extended to the side of the car?

Mr. MCKENZIE—To the side of the car, yes.

Mr. CASEY—Do you share Mr. Jones' objection to the iron rail at each end of the car, as provided for in subsection "b" of section 2?

Mr. MCKENZIE—This is all right, because it is a handrail for you when you climb up the side of the car.

Mr. CASEY—You approve then of this provision for an arched iron rail, except that you think it should be on the same side as the brakehead at one end of the car as shown in Mr. Jones' plan?

Mr. MCKENZIE—On the face of this plan a man goes up the side and catches the arch iron rail and goes to the brake. On the other corner he has no brake. I would approve of the arch iron rail up to the top on the other side of the car.

Mr. CASEY—Do you think there is any risk of tripping over this rail in passing from one car to another?

Mr. MCKENZIE—Not necessarily; if you go across the centre. The running boards on the New York Central are three feet wide. Take a man on top of a good running board, and he will not get off it. In Mr. Ingram's remark to Mr. Jones about men getting off, it is because that the running board is so small they could not stay on it. You know that, Mr. Ingram.

Mr. INGRAM—Yes; I have gone off, because of that.

Mr. MCKENZIE—I don't believe if you give a man a good running board on top that he will take to the side, unless for a case of necessity, as to see a signal which is close to the side of the car.

Mr. INGRAM—I will give, as an instance, the Michigan Central which has a perfectly good track and I have felt as safe on the side as on the running board.

Mr. CASEY—That is an exceedingly good road. All of section 2 you approve of?

Mr. MCKENZIE—Quite so.

Mr. CASEY—Then passing over the penalties we come to the question of compensation. When you were on the Grand Trunk, was this Provident Society in existence?

Mr. MCKENZIE—They organized something; but it is so long ago I don't remember. It was not the Provident Society. It was 16 or 17 years since I left. There was some kind of society for the protection of the employees, but I forget what it was.

Mr. CASEY—Do you remember what you had to sign?

Mr. MCKENZIE—It was compulsory to join it, and there was a cast-iron agreement. I know it was obnoxious to a great many of the employees. Others did not care.

Mr. CASEY—Do you know whether railway men generally are in favour of this proposition, to give the men compensation? Are you in a position to judge of this?

Mr. MCKENZIE—Well, any compensation you have placed here, I think all railway men would concur with that recommendation, very much; because very few of them have provision made.

Mr. CASEY—Would you think the contribution by a railway company of say, \$10,000 a year to a railway men's fund would be as good as this provision in this Bill?

Mr. MCKENZIE—Oh no; it would not.

## Safety on Railways.

Mr. CASEY—What do you think of the amounts? 60% of a man's wages while laid off and \$3,000 for death or disability.

Mr. MCKENZIE—It is very fair, because the State of Michigan gives \$5,000 and the State of New York the same.

Mr. CASEY—These are points which we wanted to get information on. The State of Michigan compels a sum to be paid.

Mr. MCKENZIE—This is what they compel companies to pay for death. So far as injury is concerned, the law defines that and they sometimes get it in the neck pretty hard.

Mr. CASEY—Were you on the Michigan Central?

Mr. MCKENZIE—Yes; but I never ran in the State of Michigan.

Mr. CASEY—But you were on the Chicago and Grand Trunk?

Mr. MCKENZIE—That was only as yard master around Fort Gratiot. Take the New York and Michigan laws, it binds the companies very closely on that point of compensation for death by injury.

Mr. JONES—I had at one time a document that showed the compensation given in different places, but I could not find it when I was coming here.

Mr. CASEY—Do you know where it was issued?

Mr. JONES—No; but it gave all these figures.

Mr. CASEY—How do these provisions compare with the amounts payable by your railway benefit societies in case of death or injury?

Mr. MCKENZIE—They are similar, \$3,000. Of course, we pay for that as we feel disposed. In the Order of Railway Conductors, a man must take out \$1,000 at any rate, and it accords with his age up to \$5,000, and he must pay for that at the different rates.

Mr. JONES—It runs from \$14 per \$1,000, and they pay total disability for the loss of a hand or arm.

Mr. MCKENZIE—The loss of a hand or arm is a total disability, in our organizations.

Mr. CASEY—And they pay the full amount for total disability?

Mr. MCKENZIE—Yes; for the loss of an eye, hand or foot, we pay the full amount, the same as for a dead man.

Mr. CASEY—Have you any remarks to offer on section 8, respecting the employment of a sufficient number of men?

Mr. MCKENZIE—I think they should employ a sufficient number to conduct business in a safe manner.

Mr. CASEY—You heard what Mr. Jones said: what are your opinions about the number of sectionmen, for instance?

Mr. MCKENZIE—That would be a good thing, but of course the company would have to define as to how long a section would be for five men.

Mr. CASEY—We have been told here that the proper number was two men signalling and three to handle the rails.

Mr. MCKENZIE—Well, it is little enough, because if you put three men handling a 30-foot rail at 80 lbs to the yard, they get a pretty hard job. If you have two men flagging you want enough left to lift the iron. Iron is getting heavier, and 80 lbs to the yard is general.

Mr. CASEY—Do you know if five men are, as a rule, employed?

Mr. MCKENZIE—Not in several instances. Not on the Michigan Central, which is about as well-equipped a road as there is in the country. In summer they generally have on three or four men; but in winter they take off one or two. Of course they do not pretend to do as much grading or tamping or anything like that.

Mr. CASEY—The Michigan Central is a remarkably straight road, where it is easy for the section men to see the train approaching and to send out a signal man?

Mr. MCKENZIE—Yes, you can see a train approaching for ten miles except on two or three sections, there is one continuous stretch from Essex to Charing Cross of 40 miles and the next straight run is from Charing Cross to St. Claire Junction of 50 odd miles, so that we have an extremely straight road.

Mr. JONES—The Michigan Central have all their curves on the Niagara branch.

Mr. CASEY—So that the Michigan Central might be operated with a less number of men?

Mr. MCKENZIE—Yes.

Mr. CASEY—And it would not be safe to have small gangs on the ordinary road?

Mr. MCKENZIE—Not on a road that has grades and curves. I think the Michigan Central Road employs all the men that are necessary.

Mr. CASEY—How about the number of brakemen to a certain number of cars?

Mr. MCKENZIE—I think very much the same as Mr. Jones. I think they have been working the trains with a great many more cars than I consider right, that is 20 cars to a brakeman. Most of our through freights do not run over 35 or 40 cars with the exception of a long string of empties, and then we go down the line as far as we can see and take them away with us.

Mr. JONES—I asked a Michigan Central man how many cars they carried and he said “I do not know; I never counted them.”

Mr. MCKENZIE—About 80 cars.

Mr. CASEY—How many cars should there be in a loaded train?

Mr. MCKENZIE—There should be two brakemen to 40 cars. We have an exceptionally fine road.

Mr. CASEY—As an average what would you say; one brakeman to every 15 cars?

Mr. MCKENZIE—Anywhere from 15 to 20 cars.

Mr. CASEY—Does the conductor have any necessity to run on the top of the cars?

Mr. MCKENZIE—No, in reality he need not do it, but we do it as a matter of business and if we did not do it we would be a back number and all our people would be down on us. We go over the train, get our telegraph orders and get away from the station as fast as possible. This is a matter of business. We take this chance, but our company do not say to us that we must take this chance. Running over the cars while in motion is forbidden, but still they know we do it and they do not find any fault with us. We do it for the sake of convenience.

Mr. INGRAM—You say you have not railroaded since the 2nd of February, you have left the business?

Mr. MCKENZIE—Yes.

Mr. INGRAM—You are still employed by the company?

Mr. MCKENZIE—Not exactly, Mr. Ingram.

Mr. INGRAM—Not exactly?

Mr. MCKENZIE—No. I happen to be bailiff for the second and third division court in St. Thomas. Since the 2nd of February, I have done no railroading at all, though I was in the employ of the company till a few weeks ago. But I feel that my interests are as identical with those of the company to-day as they were when I left.

Mr. INGRAM—I wished to bring that out so that we shall have the evidence of some railway employee.

Mr. MCKENZIE—I have given evidence in connection with our road just the same as if I were employed upon it.

Mr. INGRAM—You have worked on the Grand Trunk, the Chicago and Grand Trunk, the New York Central and the Michigan Central?

Mr. MCKENZIE—Yes.

Mr. INGRAM—And you know of no such device as mentioned in section 1 of the bill?

Mr. MCKENZIE—I know of no such device.

Mr. INGRAM—You ran a passenger train on the Michigan Central?

Mr. MCKENZIE—Yes.

Mr. INGRAM—Did you ever hear them speak of a device they had on their tanks?

Mr. MCKENZIE—That device on the tank did away with the angle cock on the tank, and that released the air from the train pipe, so the brakeman could undo it.

Mr. INGRAM—He could not undo it until the engineer released it?

Mr. MCKENZIE—He could, but it would be a dangerous proceeding.

Mr. INGRAM—But the engineer had that under control?

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Mr. MCKENZIE—Yes. That came in vogue at the time of the trouble at Battle Creek. The engineer in that case claimed that the air brake had been tampered with between the baggage car and the engine. The result was an accident where there were seven or eight people killed and several injured. Our people wanted to overcome anything of the same kind happening again, so they did away with the angle cock on the engine leaving all cocks belonging to the engine under the control of the engineer in the cab.

Mr. INGRAM—This company invented a device which they applied to each engine handling passengers and freight.

Mr. MCKENZIE—I do not think it was an invention at all.

Mr. CASEY—They applied it?

Mr. MCKENZIE—Yes.

Mr. CASEY—Was it in use before, anywhere?

Mr. MCKENZIE—No, it was not necessarily new.

Mr. CASEY—Was this contrivance in use before they applied it to their trains?

Mr. MCKENZIE—The train pipe on the car?

Mr. CASEY—No, but this particular device?

Mr. MCKENZIE—Oh, I do not know.

Mr. CASEY—They have adopted a device which puts the brake under the control of the engineer?

Mr. MCKENZIE—This one pipe that belongs to the thing is put under the control of the engineer.

Mr. CASEY—But that doesn't apply to the rest of the train?

Mr. MCKENZIE—No, I do not know that they can apply it.

Mr. INGRAM—You have worked on the Grand Trunk, the Chicago and Grand Trunk, the New York Central and the Michigan Central. The Canada Southern division of the Michigan Central handles a lot of American cars?

Mr. MCKENZIE—A great many.

Mr. INGRAM—More American than Canadian?

Mr. MCKENZIE—Yes, in the winter traffic they do, but in summer traffic they do with their own rolling stock as far as possible.

Mr. INGRAM—Is it a fact that we have American high furniture cars coming over?

Mr. MCKENZIE—Oh, yes, cars as big as this room.

Mr. INGRAM—Suppose a law were enacted here compelling the Canadian companies to manufacture cars of a standard height whatever height be agreed upon. How would that work with American cars passing over the Michigan Central?

Mr. MCKENZIE—It would not make any material difference. We would still have to contend with foreign cars just the same, notwithstanding all the laws regulating the manufacture of our cars.

Mr. INGRAM—Then there would still be high and low cars?

Mr. MCKENZIE—Most assuredly. We cannot have any control over foreign territory.

Mr. INGRAM—In that case would you be doing the Canada Southern Railway Company an injustice by compelling them to build a uniform height of cars and still have high and low cars belonging to the American road passing over their road?

Mr. MCKENZIE—It would be doing them an injustice; that is a fact. It would be doing them an injustice, but they are building freight cars higher than they did a few years ago. I remember when I first went into railroad service that 100 barrels of flour were a car load; now 175 barrels of flour are a car load.

Mr. CASEY—This act does not say that they shall have a high or low car. It only says that they should be uniform; make them of a height.

Mr. MCKENZIE—Make them of a height; that would be the idea.

Mr. INGRAM—Then you would have the Master Car Builders' standard, which is much lower coming in?

Mr. MCKENZIE—It is pretty hard to get all these cars of a uniform height, Mr. Casey, on account of these foreign cars. On the Michigan Central, we have many Armour cars, Hammond cars and beef cars. These are all high cars, and put them

alongside hay cars or furniture cars, and there is not much difference because they are higher. They only run 33 feet long, whereas furniture and hay cars run 80 feet, and they are building longer cars now.

Mr. CASEY—Do these foreign cars not come on through trains?

Mr. MCKENZIE—Yes; but very often they are used in local work. Take the company running empty cars home and requiring them for their own use, they use them. Railway companies are not out for the good of their health at all; it is a matter of business. They borrow their neighbor's cars and use them as they are taking them home.

Mr. CASEY—Then they could be bunched at one end of the train so as to have all high cars together?

Mr. MCKENZIE—Yes; it can be done, but it would be an awful job. It would be like putting big numbers together out of a crowd of little ones.

Mr. HUDSON—Are American cars that are built now, refrigerator and box cars, about the one height?

Mr. MCKENZIE—Just about as near as possible. Take the main of refrigerator cars; they won't vary six inches.

Mr. INGRAM—You say the Hammond and Armour cars are high; are they not higher than the New York Central or West Shore box cars?

Mr. MCKENZIE—The West Shore has a squat car; the Merchants' Despatch has a solid high car, and just about as standard as possible, and so has the M. B. T. refrigerator car.

Mr. INGRAM—Suppose the Canadian roads built as high cars and used them for coal and ordinary freights, would there not be an unnecessary expense in lumber building them to the extra height?

Mr. MCKENZIE—Yes, there would.

Mr. INGRAM—Suppose, taking as Mr. Jones says, it would make some difference in freight rates, if cars were built to carry hay and furniture in ordinary cars, and take the Canada Southern, that is a competing line with the South Shore from the west and in competition with others from west to east, would it put that Canadian road at a disadvantage in competing with other parallel lines running from the west to the east?

Mr. MCKENZIE—That would all depend how they ran freight. If by the pound, there would be no difference, but if they ran by the car load it would. A man sending hay to market wants the biggest car load he can get.

Mr. CASEY—Is there no limit to the weight you can put in a car?

Mr. MCKENZIE—Oh, yes; there is a limit, and they are all stencilled on the side with the weight they will carry; but all roads like to get as much in as possible.

Mr. INGRAM—Now, speaking of ladders, you prefer the side instead of the end, if you only had a choice of one?

Mr. MCKENZIE—Yes; I prefer the side, because it is most convenient.

Mr. INGRAM—Take the Canada Southern, which is the most used, side or end ladder?

Mr. MCKENZIE—The side ladder.

Mr. INGRAM—Why?

Mr. MCKENZIE—Because it is most convenient.

Mr. INGRAM—But why, most used?

Mr. MCKENZIE—Because it is most convenient. Take a lot of trainmen along a train and start it out. They will take a side ladder, and if there is none on the car near them they will wait till a car with a side ladder comes along.

Mr. INGRAM—Here is the distinction, if I am correct: The Canada Southern is a short line and little switching is done by through trains.

Mr. MCKENZIE—That is a fact. There is a little switching, but not much.

Mr. INGRAM—But rarely on through trains?

Mr. MCKENZIE—Rarely.

Mr. INGRAM—And the side ladder is the best?

Mr. MCKENZIE—Yes.

Mr. INGRAM—Suppose you had a lot of switching to do, would you find it convenient to have the end ladder?

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Mr. McKENZIE—At times ; but not always. The position would make the convenience. As an illustration : If I were standing between two cars, and alongside the freight shed, I would go up the end ladder ; but if I were not standing beside an impediment, I would take the side ladder.

Mr. INGRAM—I want to bring out a case where the end is better than the side ?

Mr. McKENZIE—Well, not where there are impediments, as in a yard.

Mr. INGRAM—Take the case of a car well loaded, and the draw bar standing out, would there be any difficulty if you were compelled to use a side ladder ?

Mr. McKENZIE—Yes.

Mr. INGRAM—Then in that case the end ladder would be preferable ?

Mr. McKENZIE—Yes.

Mr. INGRAM—Do you think there is sufficient cause to demand both end and side ladders ?

Mr. McKENZIE—Yes ; that is in accordance with the Master Car Builders' rules.

Mr. INGRAM—Well, you approve of section 2 of this Bill (No. 2). That is the attachment for box cars. We have discussed the uniform standard height. You believe in outside and end ladders, and you are a thorough believer in the arch iron rail too ?

Mr. McKENZIE—The arch iron rail would be a convenience.

Mr. INGRAM—Take for instance your road ?

Mr. McKENZIE—Now, we have on our road in reality that arch iron rail, only in a different position. This plan shows it from the end leading to the top. We have it on top leading round the corner of the car.

Mr. INGRAM—How high is that above the roof ?

Mr. McKENZIE—About 3 or 4 inches. It is a handrail we grab hold of the car with.

Mr. INGRAM—It is not as high as that plan ?

Mr. McKENZIE—This would be 16 inches, I should judge.

Mr. INGRAM—Would you prefer yours to that ?

Mr. McKENZIE—I don't think I would. That seems a feasible way to get up. It is a manner of getting to the top of the car ; that is all it is.

Mr. INGRAM—Well, in cars passing over Canadian roads, you would find lots of cars not having this ?

Mr. McKENZIE—Lots.

Mr. INGRAM—Do you know whether brakemen run over trains ?

Mr. McKENZIE—Often.

Mr. INGRAM—Do you know whether with the number of American cars not having this attachment and the number of Canadian cars having it there would be danger ?

Mr. McKENZIE—I don't think there would. It does not interfere with the running board.

Mr. INGRAM—Do you confine yourself to the running board ?

Mr. McKENZIE—Yes. Of course in your time you did not, but the running board is the best place for a man and he will confine himself to it.

Mr. CASEY—Suppose it was known that these attachments were on, would they confine themselves to the running board ?

Mr. McKENZIE—Of course they would.

Mr. INGRAM—In what way are more railway men killed ; in handling trains, what is the most dangerous occupation ?

Mr. McKENZIE—I think coupling.

Mr. INGRAM—I think you are quite right, for I looked into the statistics and found that it was so.

Mr. McKENZIE—Sometimes timber or something slides out and catches a man, and now and then you find where he has tripped his foot and fallen under a train. Coupling is by far the most dangerous act in railway service.

Mr. INGRAM—On the Canada Southern division of the Michigan Central what proportion of trains are handled by the hand brake.

Mr. McKENZIE—We do not handle any ; we do not pretend to unless it would be a matter of local work.

Mr. INGRAM—It is rather a common thing to have trains on the Canada Southern division of the Michigan Central handled by the air brake.

Mr. MCKENZIE—We do not have anything else but what we handle by air brake.

Mr. CASEY—Does that apply to local freights also?

Mr. MCKENZIE—No. Local men will take cars together so that they will have a few cars together without the air.

Mr. INGRAM—Have you read Mr. Maclean's bill.

Mr. MCKENZIE—Yes.

Mr. INGRAM—The first section refers to air brakes on trains, a sufficient number of which must be on each train to control the train. That would be no hardship to the Canada Southern division of the Michigan Central, would it?

Mr. MCKENZIE—It would be a dead snap because they have them already. But there are roads in this country that do not have them.

Mr. INGRAM—Subsection *b* refers to automatic couplers. What are the Canada Southern doing towards putting on automatic couplers?

Mr. MCKENZIE—Every new car is fitted with an automatic-coupler.

Mr. INGRAM—Therefore it would be no hardship if this provision were adopted?

Mr. MCKENZIE—No hardship, because they are fulfilling this law as fast as they can.

Mr. INGRAM—The next section refers to the qualifications of engine drivers and conductors. It says that a fireman shall fire for a certain time before he can be appointed as engine driver and that a brakeman shall serve a certain time before he can be promoted to be a conductor. This bill makes the term five years. How long do you think they ought to serve before being promoted?

Mr. MCKENZIE—Well, Mr. Ingram in answering you a plain question I would say that that depends upon the head work of the individual. There are lots of men who would make good conductors in three years where other men in ten years would not make good conductors, and the same remark applies to engineers. I believe that they should serve three or four years anyway before being promoted.

Mr. CASEY—Allow me to lay before Mr. McKenzie the bill as approved by the railway men. Mr. Maclean has not followed that line exactly in his bill.

Mr. INGRAM—You have worked on the Grand Trunk, the Chicago and Grand Trunk, the New York Central and the Michigan Central. Has the practice been to promote men after serving less than three years or less than five years?

Mr. MCKENZIE—On the New York Central it all depends on how big a pull you have. You can get there in six months if you are the right kind of people.

Mr. INGRAM—It is not a matter of competency but of pull?

Mr. MCKENZIE—Simply the pull you have regardless of competency.

Mr. INGRAM—What do the Grand Trunk and Canada Southern division of the Michigan Central do?

Mr. MCKENZIE—They are all right; they give good men the preference. In all our freight service on the Michigan Central good men go to the front.

Mr. INGRAM—Do you think it ought to be a law that no fireman should be promoted to an engineer before a certain time?

Mr. MCKENZIE—I do.

Mr. INGRAM—For what term of years?

Mr. MCKENZIE—I do not want to define the term. I am only one man.

Mr. INGRAM—We have to define the term.

Mr. MCKENZIE—I say three years.

Mr. INGRAM—That would be preferable to five?

Mr. MCKENZIE—Yes, because some men can graduate in three years and some cannot.

Mr. INGRAM—The management of the railways say that if this becomes law the men will take advantage and it will be to the detriment of the railway companies in a strike. Is there anything in that?

Mr. MCKENZIE—In cases of strike they would employ anyone, whether experienced or not, to defeat the strikers.

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Mr. INGRAM—Do you think they would do that?

Mr. MCKENZIE—Why, certainly they would. That would be their business.

Mr. INGRAM—In that case it would be to the advantage of the men to have the years stated by law that any employee should serve as brakeman or fireman before he can be promoted.

Mr. MCKENZIE—To the advantage of the men, it would.

Mr. INGRAM—So then, in that case it likely would be to the advantage of the men in case of a strike?

Mr. MCKENZIE—Well, we don't want to have any strike; but it would be to the advantage of the men in case of a strike.

Mr. INGRAM—Would it be in the interest of the public? Would it insure to the public that these trains, notwithstanding the strike, would be run by practical men?

Mr. MCKENZIE—It would insure that very fact. I don't believe myself that there is any man capable of running a train without having had from 3 to 4 years' practical experience. I was barely 23 when I was running a train, and when I was 32 I knew less about running a train than I did at 23. The older I got the less I found I really knew.

Mr. INGRAM—So that it would be to the detriment of the company in preventing them from getting inexperienced men; but, on the other hand, it would be to their advantage in protecting property by getting experienced men, and to the interest of the employee and the public?

Mr. MCKENZIE—Most assuredly.

Mr. INGRAM—And public interests would be regarded?

Mr. MCKENZIE—Yes.

Mr. CASEY—And it would be a benefit to the public and the employees both to have such prohibition?

Mr. MCKENZIE—Most assuredly. Not only that, but as I look at it, and I am only one, any railway manager can prevent a strike if he sees fit. A good manager can buy the average railway man for a five cent piece.

Mr. JONES—I rise to object to that.

Mr. MCKENZIE—You need not; you know it is right.

Mr. INGRAM—What do you mean by that?

Mr. MCKENZIE—I mean by getting down and getting him to do business at a 5 per cent advance he will fall in line with the management. The principal thing that causes a strike is autocracy on the part of the management. We have conservative men who can go before any management and defend our rights, and they do it.

Mr. CASEY—You say that any concession would prevent a strike?

Mr. MCKENZIE—Yes.

Mr. INGRAM—What you have just said was in no disrespect?

Mr. MCKENZIE—No, I do not wish to be disrespectful to my fellow workers; what I meant to convey was, the average railway strike can be quelled for a five cent piece.

Mr. INGRAM—There is another question, and then I will be through. You will have noticed in this proposed bill by the Executive of the Railway Trainmen subsection "c" of section 2, which reads:—

"All railway companies shall furnish employees with a certificate specifying the time and nature of service by such employees, when applied for."

Mr. MCKENZIE—That is right.

Mr. INGRAM—What is the practice, Mr. McKenzie, supposing you are dismissed?

Mr. MCKENZIE—The practice is simply this. If I am discharged or the company find me guilty of some little thing that might have happened I do not get anything. I go off to a foreign road and get employment through force of circumstances. They ask, "What road did you last work for?" I reply, "For such and such a road." They say, "We will write to them," and in the meantime you wait. I wait possibly four or five days standing round the corners watching the trainmaster or the superintendent. Probably in three or four days I get nothing. The trainmaster says, "We have concluded not to give you a job." The idea I gather from that is this, that the reply from

the last superintendent has been to my detriment. We infer that, although we do not know, as we have no evidence.

Mr. INGRAM—You are speaking now of a dismissed employee?

Mr. MCKENZIE—Most assuredly. I think when a man is dismissed the company ought to say what he is dismissed for. If it is for being drunk and disorderly he should get it straight if they can prove it.

Mr. INGRAM—Suppose a man resigns will he get a letter?

Mr. MCKENZIE—Yes.

Mr. INGRAM—And if he gets that letter and takes it with him and a railway company chooses to give him employment he has none of these other risks to run at all?

Mr. MCKENZIE—No. The idea is that when a man asks for this letter he should get it no matter what he is discharged for. If they want to embody that in the certificate it is their business and it is his business to show it if he wishes to.

Mr. HUDSON—In regard to clauses "a" and "b" providing the terms for which men should be employed as firemen and brakemen before they may be promoted to be engineers and conductors respectively, do you think the railway men have any idea of putting that in for the purpose of strikes?

Mr. MCKENZIE—Railway men do not want strikes. They never put it in for a strike.

Mr. CASEY—I want to ask Mr. Jones a question on Mr. Maclean's bill. You have heard Mr. McKenzie on that. What do you think of it?

Mr. JONES—I concur entirely with what he says.

Mr. CASEY—Have you any special remarks to make?

Mr. JONES—Just on that one thing. I don't think I ever met in my 20 years' of railwaying, a man who would go into a strike if there was any available means to keep out. I speak from knowledge, as Chairman of the Grievance Committee on the Grand Trunk.

Mr. CASEY—The railway men don't want strikes?

Mr. JONES—No.

Mr. MCKENZIE—Railway men don't go into strikes without being clubbed.

Mr. CASEY—Would that provision help strikers?

Mr. JONES—Yes.

Mr. CASEY—It was testified here by the Railway Men's Executive that they did not put that in with such a thought.

Mr. JONES—I am satisfied they had not a thought of strike in framing that portion of the bill.

Mr. CASEY—Do you think the proposition to give a certificate is fair?

Mr. JONES—Yes. A railway company should give the cause of a man's dismissal.

Mr. CASEY—And the number of years' service?

Mr. JONES—Yes.

Mr. CASEY—So he could prove to any other railway company that he was a practical man?

Mr. JONES—Yes.

Mr. HUDSON—Did your different lodges receive copies of this bill?

Mr. JONES—Yes.

Mr. MCKENZIE—We did.

Mr. HUDSON—Did they agree on its provisions?

Mr. JONES and Mr. MCKENZIE—Yes.

Mr. HUDSON—Did they think this provision had anything to do with strikes?

Mr. JONES—This is the first time I have heard mention of any such thing.

Mr. HUDSON—When Messrs. Tait and Wainwright were answering questions put to them by the Committee, they said this clause was put in for that purpose, to protect ourselves and defeat the railway companies in case of a strike.

Mr. JONES—They were entirely wrong in saying so.

Mr. MCKENZIE—If I had heard them I would have told them that they intended to have a strike.

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Mr. HUDSON—Here are some suggestions which we made to the government (handing them in): We presented them to the government on two occasions. In the second clause headed, "Arbitration and Conciliation" the Dominion Legislative Board of Railway Employees decided, "To ask the government to place on the statute-book the Ontario law relating to arbitration and conciliation," to show that we were desirous to do away with strikes.

Mr. CASEY—That is the second item on these recommendations, I will put it in.

Mr. MCKENZIE—These two first recommendations we have embodied in our company, the Michigan Central. I know they have blocks in all their frogs and that we have in our agreement with the company this other provision in regard to arbitration.

Mr. HUDSON—Still, in face of that clause, and after we had met the government the representatives of three roads coming into the city of Ottawa met the minister of railways and canals and induced him to give them permission to leave frogs unblocked in winter, and one man was killed on one of those roads since. In connection with the air brakes you stated that you did not know of any way that they could get out of order in case that the train had been properly tested. Has it not occurred to you that a tramp could get on the cars and turn the angle cock, Mr. Jones?

Mr. JONES—Oh, yes; that can be done.

Mr. HUDSON—I just wish to state that and make it clear, because I have known cases where I was on the train, and I have heard of other cases where it has happened where tramps have turned the angle cock.

Mr. JONES—In the case I have referred to, in which George Phipps headed into another passenger train at Ingersoll, there was no way of accounting for the air brakes not working unless the angle cock had been turned. He had made a stop at Woodstock and at the C. P. R. crossing, and coming into Ingersoll he had slowed down, and at these points the train was tested; therefore the angle cock must have been shut off in some way. I do not think it was ever satisfactorily ascertained how that occurred. When he wanted to make his stop the air was not there to work.

Mr. HUDSON—We have had instances in Ottawa and elsewhere where the brakes would work properly when tested, and it would be found afterwards that the air was shut off. Every railway man knows what it is to find five or six tramps on the train.

Mr. INGRAM—I would like to ask Mr. McKenzie another question, as he represents the Michigan Central. Did you ever find any fault with the Rule Book of the Michigan Central?

Mr. MCKENZIE—No.

Mr. INGRAM—Did you ever know any good reason why you should have something to say as to how the rules should be framed?

Mr. MCKENZIE—We never thought of such a thing. Sometimes new rules would come in; railway men are naturally kickers, and they would object to the rules when they first came into force, but they would obey them just the same.

Mr. INGRAM—I would like to ask Mr. Jones if the Grand Trunk men have made any objection to the Rule Book of the Grand Trunk? Is there anything in it that you would like to have changed?

Mr. JONES—Yes, a number of things.

Mr. INGRAM—Of course the Rule Book is approved by the governor in council before being adopted by the railway company. Do you think the employees should have something to say as to the formation of these rules?

Mr. JONES—I think the Dominion Legislative Board of Railway Employees should have something to say. I do not think you should take a vote generally among the railway men, but that you should take the boiled down essence of the railway men. I think it would be a benefit to the railway employees and the travelling public if they had something to say about the rules before they were approved of by the governor in council.

Mr. INGRAM—Mr. Jones, you are a Grand Trunk man, or at least you have been. The management of the Grand Trunk Company has been changed to an American man-

ager, and a number of American superintendents have been brought in here. Is it the impression among the employees that there is to be more American labour brought in?

Mr. JONES—Yes, that is the impression.

Mr. INGRAM—To supplant Canadian labour?

Mr. JONES—Yes. I will say in answer to your question that it is the general opinion of the men, but at the last meeting in Montreal the statement was made by Mr. McGuigan, the superintendent, that he did not intend to introduce any American labour.

Mr. INGRAM—Such as conductors and engineers?

Mr. JONES—Such as conductors, brakemen or engineers? He further said in regard to that matter, while he had a number of applications for employment of that kind, that he had a stereotyped reply in which he stated that he had plenty of the very best material on the Grand Trunk, and that there would be no place for an American conductor or brakeman, engineer or fireman. I say that in justice to this American management, which has been pretty roughly handled in the press.

Mr. HUDSON—I would give you, Mr. Chairman, and Mr. Ingram, a statement of facts right here at Ottawa. We have a number of unemployed railway men here and others who are put to great trouble getting their pay and getting all the money due them on one road. That gentleman has sent off to employ a general superintendent, an American, and this spring in putting on an extra train, he saw fit to send to Buffalo for a man to run it.

Mr. INGRAM—What road is that?

Mr. HUDSON—The Gatineau Valley. This line is getting subsidies from the government, and on it we have great trouble in getting the men paid. They are eight or nine months behind and numbers of good Canadian railway men are unemployed in Ottawa.

Mr. Casey read a statement which had been prepared by the clerk showing the number of railway men and passengers killed in Canada during the past 10 years.

Mr. HUDSON—I will leave this question with you and Mr. Ingram. Do you think that the extra safety appliances had anything to do with lessening the death rate?

Mr. JONES—Without a shadow of doubt, that was the cause of the decrease.

Mr. HUDSON—And with more safety appliances there would be a greater decrease?

Mr. INGRAM—You say it is largely due to the safety appliances adopted that there was less loss of life?

Mr. JONES—Yes.

Mr. INGRAM—Is there not something in the character and conduct of employees?

Mr. JONES—Yes.

Mr. INGRAM—That is, they are more steady.

Mr. JONES—Employment has become more steady and calls for a better class of men.

Mr. INGRAM—I have no doubt they are a better class of men.

Mr. JONES—That is so.

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The Select Committee on Bill No. 2, further to secure the safety of railway employees and passengers, and Bill No. 3, to promote the safety of railway employees, met on Friday, June 4th, at 10 a.m. Mr Geo. M. Clark, Q.C., Solicitor of the Canadian Pacific Railway Company, was present and, by invitation, addressed the committee as follows:—

*Mr. Chairman and Gentlemen of the Committee*:—I do not propose to occupy your time more than a few minutes and not at all in respect to the ordinary practical part of this legislation as it is distinguished from the legal. I shall confine myself to clauses 7 and 8 of Bill No. 2, the Bill introduced by yourself further to secure the safety of railway employees and passengers. I think, sir, upon consideration that the committee will come to the conclusion that these two clauses of the Bill are not desirable legislation. I think this is an attack upon railway companies, and upon capital invested in the development of the country through railways, which is highly inexpedient. At the present time railway companies are answerable, as you very well know, to all the employees of the company who are injured in any way by the negligence of the company

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in not providing proper implements of any sort or through the action of any of their employees resulting in injury to another employee, in fact if there is any negligence whatever on the part of that company or any of its employees and a person is injured in consequence thereof the consequence is certain that the company has to pay damages, and large damages as a rule. We all know that negligence being the foundation of the liability of the company it is necessary for the tribunal to find that negligence has been established before the company is liable, but we also know that the natural tendency of the mind of judges and juries trying a case between a man who was hurt in the services of a railway company and the company—none of us could help having that sympathy which juries have naturally in favour of a man as against the company, and if there is any reasonable doubt on the question whether there has been negligence or not, we know that juries and almost everybody who would hear such a case would give the benefit of the doubt to the man who was injured or to his family. But this is all based on the theory that the company has done something wrong. This seventh clause is founded upon the theory that the company ought to be liable to pay damages whether it is negligent or not. For instance a man driving along the road on a load of hay sometimes falls off through negligence. He puts his foot where he ought not to or does not put his foot where he ought to and is hurt. In the railway service any of these risks are to be no longer existing on the part of the servant.

Mr. CASEY—If there is contributory negligence on the part of the man he can not claim damages.

Mr. CLARK—But if the company is in any way negligent it cannot plead contributory negligence on the part of the man. This is a variation of the order in law. Upon this question of liability I may say that by clause 7 it is proposed to do away with the necessity of proving any negligence whatever, or with the necessity of proving any negligence on the part of the company. In other words it says, if the company be ever so careful if it provides all the services, all the servants, all the proper machinery and implements of every kind to carry on the business, and if an accident happens to a person in its employ that must result in the payment by the company of the sum of money which is mentioned here. That is not the law of the land at this time. This bill will put on railway companies a liability which does not now exist.

Mr. CASEY—Quite so, that is the intention of it.

Mr. CLARK—I submit to you, as a matter of broad good government, that it is not desirable to give the capital of the world to understand that it cannot be invested in the railways which we want for the development of this country without the company being liable to paying damages, and without being subject to laws in this respect differing from those which prevail in respect to all other undertakings. I think I may say without fear of contradiction, by yourself or by anyone, that there is no other business in Canada where that liability is cast upon a company. We all know that in different kinds of business there are risks which are necessary in carrying on the business. For instance we heard the other day of two or three men falling into a vat in a brewery or distillery because the gas was of that character which became fatal within a certain range of the bottom of the vat or something of that kind. No one thought under these circumstances that the company or the proprietors were liable for the injury which resulted in the death, I think, of two or three men. This principle is a very dangerous one to start in your legislation. I submit with great deference that it will lead to similar legislation in other branches of business; if not it is still mere objectionable as being confined to one kind of business. If it is introduced generally into the law of the land, wherever people are employed when there is no negligence on the part of the employers, that the employers must provide for them in case of injury, or for their families in case of death from injury, a principle will be adopted which the British law does not recognize and which is a very unsafe one for a country to adopt, inasmuch as it will possibly have the result of deterring capital from investment.

Mr. CASEY—Are you aware of any legislation introduced in England and passed by both Houses this session or last or introduced and not passed by a member of the government?

Mr. CLARK—I am not aware of it, but I was told by somebody that something of that kind was being considered. If that were before us and we understood all the surroundings and how far it was applicable to this country it might be necessary to consider it. I submit that the principle of the legislation is particularly inexpedient in a new country where we have to depend largely for the development of the country on railways and where if we want railways we have to depend on capital outside of the country. It is not so in England where they have an immense amount of capital seeking investment and where they may choose for their own purposes to do something of this sort. It may be desirable at a later time to do something in this direction. I have only to say that the circumstances are such as to make it very desirable that parliament should go slow in attacking capital. We all know how pleasant it is for us to say to our constituents, if we happen to represent them, or to people around us or to poor people, the law will protect you under any circumstances. Our sympathies go out towards such people and I don't wonder at members of parliament and others in business meeting these people being anxious to help them; but after all it is not only what we would like to do, but what is possible to do when we come to shape legislation. I only submit with deference that the principle of this legislation is not one which, under existing circumstances, it would be wise for parliament to adopt. It is premature under present conditions to adopt legislation which is so hard against railway companies. A feeling on the subject of rates has led to widespread desire to have railway companies controlled and restrained in many directions where rates are paid, but this is a new and an entirely different subject. I would like to point out one other feature of the railway case in Canada. Everyone knows that in Canada railways have failed to pay any money on the first capital. Out of all the companies not one instance do I know, where the original shareholders have got their money out of it.

Mr. CASEY—Not the Canadian Pacific?

Mr. CLARK—Except, perhaps, the Canadian Pacific and one other company, I forget which. Out of 30 or 40 companies given in papers quoted in England and which I went over with Sir George Stephen, I think he said there was only the C. P. R. and one or two others which had paid anything to the original shareholders. The broad proposition is that all the capital put in the first place to build and stock the roads has been entirely without return. Those who put in bonds were more fortunate as they got the whole or a large portion paid. But these railway companies are not merely arrangements by which capitalists put in money in the hope of returns. The theory I hold is that parliaments creates them for the use of the Dominion to be instruments in the hands of the dominion government for dominion purposes. In the first place the government compels them to build in a certain time. Then they have to make rates to suit the public, and rates cannot be fixed without the governor in council being satisfied.

Mr. CASEY—Is that so on the Canadian Pacific?

Mr. CLARK—Well, yes; after a certain time. Of course I don't suppose there is any object in going into that particular question. The clause about the Canadian Pacific is, "after it pays ten per cent on the amount of money put in," not on the nominal amount of money or bonds; in other railways fifteen per cent is the rule. Our company was the lowest. Then in addition to having all that control, the government can take control of the roads for postal services or for the services of the militia; and the more one knows about the Act, the more it is palpable to me that the whole system of the law relating to railway companies makes them dominion railway companies, instruments for the use of the Dominion, if required, and if the government keeps that control over each, that it shall be continually affected by the parliament of Canada. That is the plain result of the whole legislation. Therefore, I think it is not right to approach the subject as if it was just how we shall deal with those people who put their money into these companies. There is another reason why we should not interfere with the development of capital in dominion railways. This legislation will have a bad effect. I have only another word in respect of clause 8. I consider the basis of it such as to make it extremely onerous and difficult to carry out. In fact, that it will create a

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liability against railway companies that is probably further than you intended to go. It is that, "every railway company shall at all times employ a sufficient number of telegraph operators, trainmen, section men, and other employees and workmen, to safely carry on its business, and to keep its bridges, track, roadway, rolling stock and plant in good condition. If it fails to do so it shall be held responsible for all injury to life, person or property in connection with its operations." Now it may not be possible for the human mind to contemplate all the contingencies that may happen. This is to insure safety. Under the present conditions if a railway does make arrangements and keeps enough men to meet any accident likely to happen they should not be made liable to a greater extent.

Mr. CASEY—I don't think it goes further than that.

Mr. CLARK—Yes, it does. If they employ three men and at any time it turns out that they should employ four men, they are liable for not having employed four men in the first place.

Mr. MCGREGOR—The general law would hold you if you were short of men?

Mr. CLARK—No, the law would hold us if we were negligently short of men.

Mr. CASEY—That point has been raised. We were told that the law of liability provided for that case. Please state your opinion for the benefit of the committee?

Mr. CLARK—My opinion of the law as it stands (and I feel quite sure of it) is this: If the company failed to provide such a number of men, and efficient men, as would seem, under the circumstances, what they should reasonably have expected to be required, they are answerable. But this provision goes further than that; this says they shall provide a sufficient number of men whether their judgment considers it reasonable or not.

Mr. CHOQUETTE—Who is to decide?

Mr. CLARK—That is for the court, I suppose.

Mr. CHOQUETTE—What is the use of that clause? I think it is useless, for in Quebec we have the Civil Code.

Mr. CASEY—You must remember that is not the general law.

Mr. CHOQUETTE—The section of the Civil Code puts it as fault, negligence, imprudence, or something like that.

Mr. CLARK—I will tell you about that, as it goes to the root of what I am saying. The language in your law is "fault or negligence."

Mr. CHOQUETTE—It goes as far as imprudence.

Mr. CLARK—Imprudence means the absence of such prudence as a reasonable man would have, and in the same way fault or negligence means the absence of care that a reasonably prudent man would exercise. Wherever a railway company is carried on with any of these things it is at present liable. This is a declaration that no matter what judgment or prudence has been displayed in their estimation, if it turns out that they have not had a sufficient number of men for a particular occasion they are liable.

Mr. CASEY—Then your objection is not so much to holding the company responsible for their failure to employ a sufficient number of hands as to the wording of this clause.

Mr. CLARK—If they fail to supply a sufficient number of men, for want of that care which a prudent man would exercise, they will be held liable.

Mr. CASEY—Suppose that clause were amended by inserting the words "under ordinary circumstances"?

Mr. CLARK—At the present time the law goes as far as you need. The present law declares if they do not take that care which you would expect a reasonable man to take, and because of that they provide an insufficient number of men, they are liable; but if they do exercise proper prudence they are not answerable, because the human mind is not expected to be always wise.

Mr. CHOQUETTE—That is all in our law now, so that the clause is quite useless.

Mr. CLARK—The liability is based on the theory that there has been imprudence or negligence or something of that kind.

Mr. CASEY—Is this provision that you speak of in the present law a statutory provision or does it depend upon common law practice?

Mr. CLARK—It is the law of the land; it is not in any statutes, but it is a common statute. It is a law known wherever British law prevails—that if a duty is cast upon a person or company to do any particular act, or to omit to do any particular act, or to exercise prudence or care, or to fulfil some duty towards other people, and they fail to do that, and another party is injured thereby, the result is inevitable and irresistible. I may mention a case by way of illustration of what the law is now. It would strike most of you as being singularly severe, but it is good law. A short time ago in Montreal there was an excavation being made for us. The man who was in charge of the work was rather careless; he did not watch the interests of those who were labouring under him as he ought to have watched them. He allowed a man to go under a bank a little too far to make an excavation, which he ought not to have done, because the bank was overhanging and there was danger. The man was hurt, and the claim came before me. It was considered by myself and others, and we considered that the company was liable for the want of proper care by that man. That was one of its liabilities. I assure you that the absence of reasonable and proper care on the part of any company makes them liable for the claims of their workmen or anybody else. This clause 7 proposes to make them answerable whether they have exercised proper care or not. I submit there is no occasion for that clause at all. I think you would be satisfied with the law as it is if you came to consider it carefully. This is not a question of altering the wording of the clause; it is a question of taking it out altogether.

Mr. CASEY—If there is a law already I do not see why you should object to putting this clause in the bill.

Mr. CLARK—You might do so if you like, but it should not be in that way. You might say, “Every railway company which negligently employed an insufficient number of telegraph operators, trainmen, section men, etc., to safely carry on its business shall be liable.”

Mr. CASEY—Or which did not have a sufficient number of men to carry on its business under ordinary circumstances?

Mr. CLARK—You may be sure that the minister of justice will tell you that this is the present law, and if it is it is not desirable to throw any obstacle against railway companies.

Mr. CHOQUETTE—Can you tell me the number of suits which you have had to defend?

Mr. CLARK—I could not tell you the number, but the practice of our company is to settle claims if there is any reasonable doubt, and we also settle them where there is no reasonable doubt. The policy of our company is that men hurt in their employ ought to be liberally dealt with, and I do not think there is a case where a man is hurt in our employ that he is not so treated unless he does it in a rascally way. I think that is the case with most railway companies. They find it better tactics to settle when there is not a good legal claim than to go to law and have the feelings of the juries aroused against them. I may just say shortly that the principle of making a railway company or any other person or body liable to pay damages if there is no negligence on their part is an unsafe and pernicious piece of legislation, and is likely to deter capital from investment in railways.

Mr. POWELL—Judge, you are familiar with railway legislation and also the Employees' Protection Act?

Mr. CLARK—Yes.

Mr. POWELL—Well, your view is that legislation on that line is ample?

Mr. CLARK—Oh, yes, sir. It is generally understood to be very ample. It is pretty severe; but after all it does not go as far as this bill, which says that a company should be liable without any negligence.

Mr. POWELL—The employees struck at the removal of disability of an employee as against a common laborer. You don't object to that?

Mr. CLARK—Oh, no; I think we have always submitted to that. For a long time the law in England was that if a person in a man's employ was injured by the mistake or fault of another employee of the same company, they could not make the principal responsible, because it was the fault of a co-laborer, and that he would not be able to

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get damages. That particular feature has been substantially removed by the legislation of different provinces.

Mr. POWELL—Is there any decision in Ontario which says that the local Act applies to railways?

Mr. CLARK—No, I don't know that there is; and I am rather of the opinion that it would be *ultra vires*. My own opinion, and I say it with hesitation, because I don't think it is common among lawyers, is that for the purpose of building and carrying out dominion railways on the theory of their good to the country, no provincial legislation can affect them.

Mr. CASEY—Your contention is that dominion railways are quite outside the provincial Acts regarding employer's liabilities?

Mr. CLARK—Yes, sir. It is a very interesting subject to me, and my theory is that it may be necessary to put something in an Act embodying this. A dominion railway is an implement in the hands of the government for government purposes, managed by the dominion parliament. It declares the conditions under which companies shall build, the same as a light house or a fortification, and it is inconsistent for a local government to interfere.

Mr. CHOQUETTE—You don't go so far as Quebec or Ontario laws, making laws against railways passing through our provinces.

Mr. CLARK—There is no limit. If it is good for anything, it is good to this extent. If the government want a railway built say from Toronto to Montreal and want it built through every provincial parliament ground and every grave yard, it is sufficient—it may be bad judgment but good law—for them to say so. If it is wanted and authorized by the dominion parliament, which means that it is wanted for Canada, no local legislation can affect it in any way.

Mr. POWELL—That is disputed.

Mr. CLARK—Of course. I only give you my theory, as I have said.

Mr. CHOQUETTE—Do you mean to say that we have no right in the provinces to pass legislation as to whether fences shall be a certain height or that they shall be wire instead of wood? We do that.

Mr. CLARK—Yes, I know that we are carrying a case to the privy council. Some local municipality in Quebec passed by-laws as to drains across railways and that the railway inspector might give notice, and so on. A case was commenced against us and taken to the privy council to find out if the provinces could say anything against us.

Mr. WAINWRIGHT—Being present, said:—Some remarks have been made at meetings of the committee in regard to the Provident and Insurance Society in operation on the Grand Trunk, and clause 7, which Judge Clark was discussing, and as I saw the chairman, and told him I thought, if the committee was agreeable, I should like to bring here representatives of our employees, who have charge of the fund, and who could give to the committee information which I thought would tend to prove to you that the parties giving evidence a few days ago must have been misinformed as to the feeling among the staff in regard to this society. So I asked Mr. Moore, the chairman of the society, and from Toronto, Hamilton and Montreal, representative men who understand the working of this society and how the men feel on it to come here to-day.

Mr. CASEY—We did not expect more than one, but perhaps one witness can state practically what you have to say and the others can say that they agree with it. Probably this is the last meeting of the committee and that is why I want it to be brief. I am sorry I have not been able to submit Mr. Jones' evidence before.

Mr. POWELL—I have a letter forwarded to me from the chairman and secretary of this society on the Grand Trunk expressing entire satisfaction with it, which I hand in.

Mr. H. B. Moore, of Montreal, was called.

Mr. CASEY—Mr. Moore, will you kindly tell the committee what you know about this society?

Mr. MOORE—Mr. Chairman and gentlemen, I have been requested by Mr. Wainwright to ask you to allow me to make a few explanations on this bill. Not that I know very much about it; but judging from the papers, some of the clauses jeopardize the property of 12,000 members who have six million dollars invested in this society.

Any legislation which may induce the Grand Trunk Company to withdraw their monetary and moral aid from this society, would, to all intents and purposes, eventuate in the disruption of this society altogether, and therefore I say that it represents the investment of 12,000 men, amounting to \$6,000,000, some of these having subscribed from 15 to 18 years on the plan of the assessment. One of the points, I believe, made here was as regards compulsory membership in this society. This so-called compulsion as understood by the members themselves, those who think about the matter, is the fundamental security of the society. It means that our assessments go on from year to year and assure our existence through this system complained of. The Grand Trunk Company on our behalf, not on theirs, have agreed that they will not employ any outside person who does not pass our medical examination and qualify for membership in our society. They also limit the age up to which they will accept employees to forty years, which secures an average death rate in our society, and in that consists the fundamental principle of the security to our members. This society in its present shape is formed from the old Grand Trunk Accident Society and from the old Great Western Provident Society, both societies having amalgamated in 1885. The old Grand Trunk Provident Society was established in 1875. The membership was made optional with the understanding that all employees unconnected with it were of necessity to become members of the society. Out of 10,000 copies of the forms of application for membership we sent around only 1,500 were sent in during the first six months. Within two years the whole of the Grand Trunk employees came in and there were only about 1,000 or 1,500 changes or new ones who became members of this old Provident Society voluntarily. The Great Western I believe was formed in the same manner, made perfectly voluntary and I believe all their employees entered it. The Great Western Society was more extensive inasmuch as it included general life insurance. Then as regards compulsion; compulsion we must have if we are to exist. There was a remark made in regard to the government of this society. On the committee of management there are certain ex-officio officers named by the company and delegates from local committees. The system is divided into four sections each having its own committee. These committees are composed of elected employees from the employees themselves and they are elected by ballot. There are also ex-officio subordinate officers of these committees according to their locality. The number of elected and ex-officio members was generally about equal, but this year, on account of the arrangement of a new system, there were actually on three of these committees nearly double the number of elected members to that of officers. Since the inauguration of the society I do not think that upon that central committee of management or upon any local committee has there ever been more than one-third of the ex-officio officers present at a meeting. That is the greatest difficulty we have, and that proves that the members have the full management of their society, there is no compulsion about that or crowding out.

Mr. MCGREGOR—Do they make their own by-laws?

Mr. MOORE—They make their own by-laws. No by-law can be passed without a general meeting of the whole of the members of the society. Every member gets notice and a proxy form in which he can appoint a proxy or make his vote by proxy. The *ex officio* officers are very seldom in evidence in the management of this society. The executive committees in any case have an excess of their own elected members. The central committee of management, in which there is an excess of *ex officio* officers, have nothing to say in regard to the admission of members. The company actually throws upon the employees themselves the onus of accepting the company's own employees. The employees have to accept the people that the company may have to work. The central committee of management cannot control the executives; they accept their members, and they can throw out any application that comes in. The doctors are under the control of the executive committees so far as the examination and admission of members go. If the doctor does not report favourably the committee of management cannot say, "We will have that man whether you like it or not."

Mr. POWELL—Do I understand that in the first place it is compulsory among the employees to have this benefit or insurance?

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Mr. MOORE—The company itself will not accept any employee who has not insurance.

Mr. POWELL—Then it is practically compulsory?

Mr. MOORE—Yes.

Mr. POWELL—By their arrangement with them they cannot accept anybody unless he is insured?

Mr. MOORE—Not as a permanent employee of the company.

Mr. POWELL—And these local committees have the right to say who shall be insured?

Mr. MOORE—They have.

Mr. POWELL—So that practically it gives the employees the right to say from whom men shall be employed?

Mr. MOORE—Yes.

Mr. CASEY—How many local executives are there?

Mr. MOORE—Four.

Mr. CASEY—I understand by the by-laws that they appoint two men each to the central committee of management, that four are appointed by the directors of the Grand Trunk, and that nine officials of the company are *ex officio* members, so that thirteen of the committee of management are appointed by the company and eight are elected by the employes.

Mr. MOORE—It is the committee of management; it is not the executive committee.

Mr. CASEY—Clause 12 of the by-laws reads: "The affairs of the society shall be managed by a central committee, to be called the committee of management." That is what the constitution says?

Mr. MOORE—Yes.

Mr. CASEY—That is the managing body?

Mr. MOORE—Yes. If you go on to the executive committees you will see that each executive committee deals directly with the members.

Mr. MCGREGOR—What amount of assessment is there?

Mr. MOORE—The amount of our assessments for injuries is the cheapest on record, eleven dollars a thousand.

Mr. MCGREGOR—What is the number of your members?

Mr. MOORE—In round figures they are 12,000.

Mr. MCGREGOR—Does that assessment include the expenses and everything?

Mr. MOORE—Everything. That is the life insurance and then we have what we call a provident fund in which there is a special fixed fee. The insurance assessment entirely depends on the death rate. The insurance is paid by levies on the men and in addition to that there is a rate of 40 cents per month that members pay which provides them with a certain amount of money per week. This gives them a weekly rate of indemnity and provides them with medical attendance.

Mr. CASEY—What is the indemnity?

Mr. MOORE—\$3.00 a week for 26 weeks and it continues thereafter in case of a member's sickness if there is any possibility of his recovery any number of months or years.

Mr. CASEY—In case of permanent incapacity what does he get?

Mr. MOORE—He gets \$100 with the option of changing his subscription to our insurance fund or he may commute his insurance for half.

Mr. CASEY—He can get half his insurance, cash down?

Mr. MOORE—Yes.

Mr. CASEY—What is the \$100?

Mr. MOORE—A bonus when he is taken off the sick fund. That leaves him the option of keeping up his subscription for the full amount of his insurance. Most of our sick or old men take the \$100 and use part of it to pay their subscription for their life insurance for the one or two years which they may be expected to live and their families get the full amount of their insurance.

Mr. CASEY—What is the smallest sum for which you insure?

Mr. MOORE—\$250.

Mr. CASEY—That is the only amount compulsory?

Mr. MOORE—That is the only amount that is compulsory. There was also a statement, I saw in the newspapers, that some employees, especially those interested in other associations, were overtaxed in the society.

Mr. CASEY—Let me ask you another question. Mr. Jones said that when he was employed on your line sometime ago, that one thing you signed in joining was that you accepted the compensation of the Provident Society in lieu of any damages you might contract by injury.

Mr. MOORE—That was the case, but is not now.

Mr. CASEY—Then the men accepting benefits can make any other claim?

Mr. MOORE—Yes.

Mr. WAINWRIGHT—We paid \$5,000 to a widow the other day on such a claim?

Mr. MOORE—I may explain that clause was adopted from the American associations where their law provides for that and justly so. On the Grand Trunk we assure men 25 per cent and in some cases they have mulcted the company in damages besides.

Mr. CASEY—Can you tell us the states where the law provides a minimum compensation?

Mr. MOORE—The Baltimore and Ohio, the Pennsylvania, the Philadelphia and Reading and nearly all the trunk lines have similar associations worked as independent parts of the company.

Mr. CASEY—But I asked you if you knew any states where the law had such provision?

Mr. MOORE—No; but I know the laws have maintained that clause that the men can only choose between accepting that clause or taking what a court may allow them.

Mr. MCGREGOR—What is the company's contribution to the fund?

Mr. MOORE—They pay in actual cash \$13,000.

Mr. MCGREGOR—Does the Grand Trunk assist you any further than this concession?

Mr. MOORE—Yes, I say they pay in actual cash \$13,000, but that is only a small portion of what they give us.

Mr. MCGREGOR—But how long do they pay it in?

Mr. MOORE—Every year.

Mr. CASEY—Last year according to the balance sheet the company paid in \$15,868.

Mr. WAINWRIGHT—It is all worked by the company without charge.

Mr. MOORE—I am estimating continually, and find that we get our working expenses done for 4 per cent. The lowest of any mutual benefit association is 15 per cent and the expenses of standard companies go up to 35 and 40 per cent. If you estimate the difference between 4 per cent and 15 per cent, you can see what the company does for us.

Mr. MCGREGOR—You have no people going around looking for business, and that makes a big difference.

Mr. MOORE—I am only going to speak about the one point of the reported taxation of our members. The greatest taxation is on the hazardous class. The fee of 40 cents is raised to 50 cents for them and the average cost for \$250 is 22 cents a month, making 72 cents per month as the outside taxation on train hands who earn \$80, \$90, or \$100 per month.

Mr. CASEY—Then \$8 a year insures them for \$250?

Mr. MOORE—No; for it gives them every benefit besides. It gives them all the sick benefits and medical attendance when sick, hospital dues, and we even give them specialist attendance. We have the best specialists in Canada for our men, as many of those on the road suffer from eye and ear troubles. We have Dr. Buller of Montreal, and Dr. Burnham of Toronto, who will attend all men needing a specialist. But about taxation. I was looking over our books yesterday and find we have 1,447 conductors and brakemen. Out of these there are 437 that have availed themselves of the lowest class of insurance. The whole of the other thousand have taken higher classes as much as eight times that, or \$2,000, the maximum insurance. Then 500 have taken \$1,000,

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four times the minimum, and 127 are insured for \$2,000, voluntarily insured for these higher amounts. Out of 437—and the local secretaries will be able to bear me out—a great number are only members just come in and they wisely take the lowest class and wait to see what the cost will be; but when they are in a year or so and see what benefit it is, they take higher classes. Of that 437 men they are not taxed and have nothing to kick at. But as matters stand there are the figures to show that.

Mr. MCGREGOR—Are your funds capitalized in a solid way?

Mr. MOORE—Our capital is our compulsion.

Mr. MCGREGOR—But on your accident contribution of 40 cents a month?

Mr. MOORE—That is generally in excess of what we require; but lately, on account of very great reductions in the staff, we fell a little behind. Sometime ago we introduced a rule when we were getting rapidly ahead that we can reduce the rates, but we cannot raise them, and it is generally understood that, if necessary, the Grand Trunk will come to our aid. The Grand Trunk Act allows them to subscribe 150 per cent of what the men pay.

Mr. STUBBS—Suppose an employee pays in for years, and is discharged, what becomes of his contribution?

Mr. MOORE—They have the right to keep up their insurance. The 40 cents for accident benefit only goes on from day to day, but the real investment is the insurance. They are allowed to keep that up.

Mr. MCGREGOR—Supposing a man is employed by the Grand Trunk and is discharged for some reason and that he goes on to the Canadian Pacific or the Michigan Central, would you allow him to continue his insurance?

Mr. MOORE—Certainly. And that gives me another point as regards the popularity of the society. It has been stated that the society is unpopular.

Mr. MCGREGOR—I don't think that was it. It was that there were other associations which could render more value.

Mr. MOORE—That is a moot point, and I would like to have the figures of these associations. The railway associations cost \$14 per thousand and ours \$11. But as regards this question I am going to show you what the members think of it. At first there was a little doubt among the men when they got old or crippled as to keeping up their insurance after leaving the company, and this right was only availed of to the extent of one-half per cent, or between twenty and thirty men. Now every single year in 12 years that has increased. Out of 300 or 400 men discharged in the five months up to the 1st of May the number I took off my books yesterday showed 120 applicants to continue our insurance. We have now on our books 600 ex-employees all over the world who pay their assessment every month.

Mr. POWELL—You have regular meetings of these different branches?

Mr. MOORE—They must meet quarterly, and sometimes they meet oftener.

Mr. POWELL—Do you attend these meetings?

Mr. MOORE—The local secretaries do.

Mr. POWELL—Having laid that foundation I have one question to ask you. Have you heard that there has been any demand among the employees of the road for these special articles that are embodied in this bill, particularly for the payment of \$3,000 in case of death? Is there any general demand among the men for such legislation?

Mr. MOORE—There is no doubt about it that any legislation that gives a railway employee more money than he gets now would be favorably received, but I have not heard anything about it. The first time I heard of this bill was when the matter was brought to my notice by one of our own members. A great many of the C.P.R. employees would like to have an organization of the kind but it is a difficult thing to organize. The Intercolonial employees sent a committee to me for information as to the organization and they voluntarily organized a very successful society.

Mr. INGRAM—You have been general secretary of this Provident society for a great many years?

Mr. MOORE—Yes.

Mr. INGRAM—There has never been any other general secretary?

Mr. MOORE—Not of this society in its present form.

Mr. INGRAM—Have you read over any of the other evidence in respect to the Provident society.

Mr. MOORE—I just glanced for a moment at the evidence given by Mr. Jones at the last meeting.

Mr. INGRAM—In that evidence there are objections taken to the men being compelled to join the Provident Insurance society on the ground that a man might be sufficiently insured in other companies. They consider it a hardship for men accepting position on the Grand Trunk to be compelled to join the society, Do you find many complaints of that kind?

Mr. MOORE—We never have a complaint because the employee voluntarily fills up the application to be a member of the society, when he wishes to become an employee. The company does this to protect the society. I never heard any complaints.

Mr. INGRAM—In securing employment on the Grand Trunk is it not a fact that they are compelled to join the society?

Mr. MOORE—I have stated that they are.

Mr. INGRAM—You know of no case where men consider that a hardship?

Mr. MOORE—No, sir.

Mr. INGRAM—In the evidence they have offered that is one objection they have to the society. The compulsion to join it and they think that if there were some provision in your constitution or rules that where an employee is sufficiently insured he should not be obliged to become a member of this society, it would be a relief.

Mr. MOORE—I have heard that stated.

Mr. INGRAM—Now as to the election of officers. Some of the men state that the company have it largely in their own control as to what officers shall be elected. They say that the local officials do not give these proxies out in a way that is fair to the employees. Is there anything in that?

Mr. MOORE—I have heard no complaints about that.

Mr. INGRAM—Then there is another complaints, I think, in the evidence. It is that when men leave the service of the company all the money they have paid in is lost to them, that they cannot continue to be members of this society?

Mr. MOORE—You have our rules there and you can contradict that by reading them. There is a special rule providing that any employee having left the company's service may continue his subscription to the life insurance fund. You must distinguish that from the provident fund. We protect invested interest. We do not consider the 40 cents a month as an investment; it simply covers the risk run for that month just like an ordinary accident insurance.

Mr. INGRAM—Speaking of this contract your reply to that point was that it was the case and is not. That is the answer you made.

Mr. MOORE—The rule actually remains in the book, but it is not enforced and it is the intention to have that rule at a future general meeting rescinded altogether. We simply retain it for the present because we were doubtful how far legislation might be obtained which might make the company pay double penalty.

Mr. INGRAM—Do the employees have an equal say with the officials in framing these rules.

Mr. MOORE—Yes, sir.

Mr. INGRAM—Now, you were speaking of the \$13,000 annually that the company pay towards the provident insurance society. It is said by some of the employees of the Grand Trunk that if there were no provident insurance societies the company would have to pay at least that much to their doctors at the different points where it is necessary to have them in case of accidents on the railway.

Mr. MOORE—Oh, no. The Grand Trunk Company do not employ any doctors, they employ the nearest doctor that is called in, and it does not cost them half or nearly that amount.

Mr. INGRAM—They are only the company's doctors for the time being?

Mr. MOORE—Practically there are no company's doctors at all, except in this way: in return for the pass privileges which a company gives these doctors at any point on the line to the nearest large centre, for instance on the Midland, they give them passes

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to Toronto, they agree to attend all such persons or passengers as the company may require within a certain limited tariff which is very little more than the ordinary accident tariff in use everywhere to prevent disputes.

Mr. INGRAM—They are paid separately by the company apart from this society?

Mr. MOORE—They are paid separately by us—the secretary pays a per capita rate for the special work on the society, but outside of that they are paid for no work that they do for the company.

Mr. INGRAM—Then this \$13,000 is simply paid into the provident society and does not affect the company's payment of these doctors for any services they have rendered in the interests of the company.

Mr. MOORE—It has no connection with it whatever?

Mr. INGRAM—In case of accident?

Mr. MOORE—No connection whatever. We do not recognize any bills against the company at all. This society in law is a separate corporation from the Grand Trunk Railway Company and it has been so decided in court.

Mr. INGRAM—So then there is nothing in the statement that the company would have to pay this anyway?

Mr. MOORE—No, the company would not have to pay this, decidedly not.

Mr. INGRAM—I suppose you remember some years ago that the Grand Trunk were excluded from the provisions of the Compensation for Injuries Act passed by the Ontario Legislature and that there were a number of questions sent out amongst the employees. Do you remember what proportion of the answers were opposed to being excluded from the provisions of the bill?

Mr. MOORE—I think only about one half of the papers that were sent out were taken any notice of at all and about one half voted one way and half the other. That is speaking from memory. In my evidence before that committee I stated that I thought probably 50 per cent of the employees would vote to have the society done away with. My answers were based upon the innumerable letters I got from the employees complaining of the hardship of belonging to this society, but if I were to be put on my oath I could swear that for the past six years I did not get such a letter, and now I would say that 90 per cent of the employees who were in this society at the present moment would vote to have it continued.

Mr. CASEY—Let me understand you on that point, of voting to have the society continued. Do you mean that merely they do not wish to lose what they have put in, or would prefer this plan to another plan?

Mr. MOORE—I think they would be influenced a great deal by the money they have put in, in giving such a vote. Railway employees, if left to themselves, no more than the public, would insure to more than 10 or 15 per cent.

Mr. INGRAM—Were you secretary at the time of the passing of the resolution in the Ontario Government, applying to the Grand Trunk system the Compensation for Injuries Act?

Mr. MOORE—Yes.

Mr. INGRAM—Since then you have never heard of an unpopular feeling against the society? There was some little agitation at that time, but none since.

Mr. MOORE—Well, there has been a little since, till the employees gradually came to understand the society. At first they had no confidence in it. They thought they were going to be entirely ruled by the company, they did not know what would happen and what it would cost. So complaints did continue. The fact of the Grand Trunk being included in that bill did not cause the members to stop complaining. Complaints stopped gradually on account, as I have said, of the members becoming better qualified to understand its provisions. As claims began to be paid promptly over the line, they began to see the advantages of it.

Mr. CASEY—Briefly, you say that this society was once unpopular, but that it is now popular?

Mr. MOORE—Yes.

Mr. CASEY—And popular because of better management?

Mr. MOORE—I did not say that, but because it is better understood. There is not such a difference in the management as that.

Mr. CASEY—What is your position in the Grand Trunk Company?

Mr. MOORE—I have no position.

Mr. CASEY—Are you on the books?

Mr. MOORE—No, I am an officer of the society?

Mr. CASEY—Are you a member of the society?

Mr. MOORE—Yes. I was in the Grand Trunk employment once, or I would not have been chosen as secretary of the society.

Mr. WAINWRIGHT—As we have here an elective member of the society from Toronto, he will be able to give the feeling of the men if you give him time to address you.

Mr. GEORGE PEPALL, of Toronto, was called.

Mr. CASEY—What is your position in the company?

Mr. PEPALL—I am chief clerk in the freight department at Toronto?

Mr. CASEY—Have you ever been in the working employ of the company?

Mr. PEPALL—Yes, sir; I was a clerk.

Mr. CASEY—No; I mean were you ever a train hand?

Mr. PEPALL—No.

Mr. CASEY—You have always been in the clerical department?

Mr. PEPALL—Yes.

Mr. CASEY—What is your position in this society?

Mr. PEPALL—I am elected by the third district as representative on the local executive, and I am elected by them to the board of management at Montreal.

Mr. CASEY—You are chairman?

Mr. PEPALL—No, I am not chairman.

Mr. CASEY—Are you chairman of the board at Toronto?

Mr. MOORE—No. District No. 3 takes in from Toronto to the tunnel and also the lines north of the main line west of Toronto.

Mr. CASEY—And you are a member of the board?

Mr. PEPALL—Yes, meeting at Stratford, and a member of the board of management, meeting at Montreal.

Mr. CASEY—Now, having stated who you are, make your remarks?

Mr. PEPALL—What I wish to speak about is what is called the compulsory clause. It has been quite talked about at Toronto and I have also spoken to several of the men about it and those not compelled to join this insurance fund.

Mr. CASEY—That is a separate fund from this?

Mr. PEPALL—Yes. All thought this society a good one. I was one of those who joined it at the first, and I also entered class "A" for \$2,000 and believe the compulsory clause one of the best they have. For instance, you know some have opposed mutual societies because when men are in twenty or thirty years and the assessments go up and the men get old, they cannot get young men to join. But on the Grand Trunk the influx of the number of 1,200 members, mostly young men, is a great source of strength to the society, and therefore I consider the compulsory clause as one of the best clauses we have. I agree thoroughly with Mr. Moore, that fully ninety per cent of the employees are most favourable to this society and consider the benefits we get from it of the best description.

Mr. CASEY—Are you in a position to know whether the men of your division think as well of this society?

Mr. PEPALL—Yes, sir, because I am an elective member, and I have always taken an interest in the elections and in the working of this society. I have spoken to from 200 to 300 times to men in the shops, and therefore I know the men in that particular. Of course, I mix among the men more than Mr. Moore, at Toronto and Stratford. I go to Stratford every three months to a meeting of the executive.

Mr. CASEY—You consider this society furnishes cheap insurance?

Mr. PEPALL—Yes, and on a good basis.

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Mr. POWELL—In taking this insurance, can you dis sever the benefit insurance from the life ?

Mr. PEPALL—Yes. You can do that now ; but not when I joined. I had to take both. Now the men can take insurance but not the provident benefit.

Mr. CASEY—I made a mistake a while ago in saying that the sum of \$15,868 was received from the Grand Trunk Company. I see that it is \$150,868. I will ask Mr. Moore if I am right in supposing that is the men's contributions paid by the Grand Trunk out of their wages ?

Mr. MOORE—That \$150,000 shows the total contribution of the company since the inception of the society. If you look at the top you will find an amount of \$12,500, which is the sum, and then in addition to that, they give us all unclaimed wages, that used to go back into the treasury of the company. That is now handed to the society and runs all the way from \$500 to \$2,000 a year. The average is between \$800 and \$1,200 a year, and this brings up their contribution to \$15,000.

Mr. CASEY—The balance sheet for 1896 shows the total receipts as \$87,864. In other words, the Grand Trunk Company contributed, approximately, one-seventh of the receipts of the society.

Mr. POWELL—In the strictly life insurance companies what is the premium on \$250 ? It varies according to age, but take the lowest.

Mr. PEPALL—The average is about \$1.10 per hundred. It is decided upon so much per hundred.

Mr. POWELL—Does it not vary according to age ?

Mr. PEPALL—No, but you cannot join in the highest class after you are 40 years of age, but after 45 you may join a lower class. I am insured in the \$2,000 class and it costs on an average about \$22 a year. It is cheap insurance.

Mr. POWELL—Yes it is cheap insurance. It is very favourable to the men below 40 years.

Mr. PEPALL—I may say that several employees over 50 years of age thought that an attack was being made upon the society and they were afraid it was going to injure them in some way. You can understand that a man who has belonged to the society for a life time and who is over 50 years of age would regard this as a serious matter.

Mr. CASEY—This Bill has no connection with the operation of this society. If the Grand Trunk Railway Company should say "if this bill passes we will withdraw our subscription" that is another matter altogether. But the bill does not effect the operation of your society in any way whatever.

Mr. STUBBS—Would that not interfere seriously with the society ?

Mr. CASEY—If the Grand Trunk Company should withdraw their contribution in consequence of the passing of this act that withdrawal would effect the funds of the society to the amount of about \$12,000 a year.

Mr. POWELL—It would lessen their revenue by about 15 per cent.

Mr. CASEY—But the act does not interfere with the society.

Mr. PEPALL—I think from what I know of the feeling of the conductors that the substance of Mr. Jones' evidence would be the views of the conductors and drivers who have an insurance of their own. Some persons have more insurance than they wish to carry and they do not wish to join the Grand Trunk and get still more insurance.

Mr. INGRAM—You have stated that you consider the compulsory clause one of the best you have ?

Mr. PEPALL—Yes.

Mr. INGRAM—Suppose a man was sufficiently insured before he is employed by the company, would you consider it a hardship to compel him to belong to this society ?

Mr. PEPALL—I do not think those are the men who find fault. It is the men who do not wish to insure at all.

Mr. INGRAM—I want your answer to the question. Would you consider it a hardship ?

Mr. PEPALL—No, I would not, because they can go into the lowest class, \$250.

Mr. INGRAM—Take an oiler or car inspector for instance. He draws very low pay and is already insured to the full limit of his income. It would be a hardship in his case, would it not ?

Mr. PEPALL—I think there are rare exceptions, but I believe the men who find fault are those who draw high pay such as conductors and drivers. I do not think that there is any of that feeling among the men that there used to be. I think the society is far more in favour with the road men than it was 10 years ago. There is quite a difference in the feeling in Toronto and the west. They have come to see that the society is for the general good of the Grand Trunk Railway Company. Before this society started and any of the labour class was injured or sick we had to contribute to subscriptions. I think it is better for these men and their families that they have this indemnity.

Mr. POWELL—You are brought into close connection with the men, Mr. Pepall.

Mr. PEPALL—Yes, sir.

Mr. POWELL—Have you heard any agitation among them to change the basis of the insurance in the direction of this provision for the payment of \$3,000?

Mr. PEPALL—No, I have not.

Mr. CASEY—We have petitions from the organizations asking for it.

Mr. PEPALL—I suppose an agitation like that will be among the road men?

Mr. CASEY—Amongst all the working classes.

Mr. PEPALL—Of course I would not notice that.

Mr. R. P. LESLIE of Toronto was called.

Mr. CASEY—What is your connection with the company?

Mr. LESLIE—I am assistant to the general baggage agent.

Mr. CASEY—Have you ever worked on a train?

Mr. LESLIE—No, I was in the shops, in the company's rolling mill for years and in the engineer's department during the construction of the loop line.

Mr. CASEY—Always in a clerical capacity?

Mr. LESLIE—Yes, but in contact with the men all the time.

Mr. CASEY—What is your position in regard to the society?

Mr. LESLIE—I am secretary of section number 4. I can add nothing to what has been already said by Mr. Moore and Mr. Pepall. I think the ground has been all covered, except to say that it would be a great hardship to men advanced in years if the company should withdraw their grant to the society, because a large number of men could not get insured in the stock companies because of age and not being physically qualified. That is the only thing I see now that can be spoken of and I think that would be hard. Take my own case. The only insurance I have is in the Provident Society, and take my age and salary, I could not afford to pay for insurance outside if this society was given up. In this for \$25 a year my family will get \$2,000 in case of death, and if I take the commuted insurance I would get \$1,000 and have the privilege of receiving \$3 a week when sick and my doctor's bills paid. I think it is quite a boom in case of anything happening to me. That is all the insurance I have, and in case of this bill passing and this society goes to pieces I have no insurance and my family is not provided for. I think that would be a great hardship both to me and to my family. That is all I have to say.

Mr. DONALD ROBERTSON of Montreal was called.

Mr. CASEY—What is your position on the Grand Trunk?

Mr. ROBERTSON—I am chief clerk to the master mechanic in the shops at Montreal.

Mr. CASEY—Have you ever been in the mechanical department or been a labourer?

Mr. ROBERTSON—Yes, sir; I am a mechanic.

Mr. CASEY—And so employed on the Grand Trunk?

Mr. ROBERTSON—Yes, I worked in the mechanical department in Montreal for a period of 8 or 9 years. I forget which.

Mr. CASEY—And now you have been how long in the clerical department?

Mr. ROBERTSON—I have been in the clerical department for about 16 years.

Mr. CASEY—And what is your position in the society?

Mr. ROBERTSON—I am secretary of District No. 1, which takes in the main line from Kingston to Portland with all branch lines.

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Mr. CASEY—What remarks have you to make to the committee in regard to the working of your society?

Mr. ROBERTSON—Nothing except to say that I fully coincide with everything which has been said. One thing I would like to say in corroboration of Mr. Moore who spoke of the attendance at the executive meetings of the officials of the company. I might say that for the last 8 or 10 years although the meetings are held monthly, we never have the officers. The majority present is always the elective members.

Mr. INGRAM—So, then, only the elective members attend the meetings?

Mr. ROBERTSON—None but the elective with me.

Mr. LESLIE—It is the same thing with me.

Mr. ROBERTSON—And as to what has been said about the popularity of the society, I might tell the committee that Mr. F. W. Wanklyn, who was formerly our works manager and is now superintendent of the Toronto Street Railway, who was a member of our society still belongs to it and pays his levies monthly. I have never heard our men in the shops—and I am constantly among them, more than Mr. Moore would be—say anything against this society. At first when the thing was started there was a little kicking: but there was never anything said since. Our men since that time—when I was working in the shops myself we had started something of the kind; for a time we had three or four applications monthly for which we had to pay and we were dunned to the amount of \$1 or so a month—have learned to appreciate its value.

Mr. INGRAM—Do you find that exists now?

Mr. ROBERTSON—Not at all.

Mr. INGRAM—And that is largely owing to the Provident Society?

Mr. ROBERTSON—Yes.

Mr. INGRAM—Entirely?

Mr. ROBERTSON—It is entirely owing to the Provident Society.

Mr. CASEY—I would like to ask a question of Mr. Moore. There is here a list of the committee of management and I want to ask Mr. Moore in regard to a few of them to point out to me which are ex-officio. The president, Mr. Hays, is, of course, ex-officio?

Mr. MOORE—He is.

Mr. CASEY—Then there is Mr. Wainwright?

Mr. MOORE—He is also ex-officio.

Mr. CASEY—And Mr. Reeve?

Mr. MOORE—Is an ex-officio member.

Mr. CASEY—Mr. Stevenson?

Mr. MOORE—Ex-officio.

Mr. CASEY—Mr. McGuigan?

Mr. MOORE—Yes.

Mr. CASEY—Mr. Hobson?

Mr. MOORE—Ex-officio.

Mr. CASEY—Mr. Morse?

Mr. MOORE—Ex-officio.

Mr. CASEY—Mr. McWood?

Mr. MOORE—Ex-officio.

Mr. CASEY—Mr. Percy?

Mr. MOORE—Ex-officio.

Mr. CASEY—Mr. Walker?

Mr. MOORE—He is ex-officio.

Mr. CASEY—And Mr. Loud?

Mr. MOORE—He is also ex-officio.

Mr. CASEY—Mr. Davis?

Mr. MOORE—Ex-officio.

Mr. CASEY—Mr. Butze?

Mr. MOORE—Ex-officio.

Mr. CASEY—Then we have Mr. Domville?

Mr. MOORE—He is ex-officio and all the others after that are elective.

Mr. PEPALL—Allow me to say in addition to what I have stated to the committee that at all my meetings of the board of management the elective members were always in the majority.

Mr. CASEY—Are the executive committees entirely elective?

Mr. PEPALL—Yes. At the Board of Management meetings held in Montreal it is always the elective members who are in the majority. Very few of the ex-officio members can get to the meetings.

Mr. CASEY—I would ask Mr. Wainwright to remain and listen to what I have to say. The point was raised by Judge Clark and others that the compensation clause of this Act goes very far—goes beyond British precedent and certainly beyond Canadian precedent. Now, I want to call the attention of the committee to the fact and to put it in as evidence that the present Imperial Government has introduced a bill to compensate employees at the expense of employers which goes a great deal further than this Bill of mine now proposes to do. This Bill was introduced on May 3rd by Sir Matthew White Ridley, who, I think, is the Home Secretary, at all events a member of the government, and it goes so far as to provide compensation whether there has been contributory negligence on the part of employees or not. My Bill only asks compensation where there is no contributory negligence. It does ask compensation where there is no contributory negligence on the part of the company, where there is no risk, where it is pure accident; but this Bill goes further and goes past where we are in our clause. I call attention to Sir Matthew Ridley's remarks. I may add that there is a way of escape from this Bill, namely, by the company showing to the satisfaction of the registrar of friendly societies that they have provided a system of insurance that is on the whole not less favourable to the men than the provisions of the Ridley Act. Now, the provisions of the Ridley Act briefly are:

“If in any employment to which this Act applies, personal injury by accident, arising out of or in the course of employment is caused to a workman, his employer shall be liable to pay compensation in accordance with the first schedule of this Act. The first schedule provides that when death results from the injury, if the workman leaves dependents, the amount of compensation shall be a sum equal to his earnings during the previous three years, or a sum of £150, whichever of those sums is the larger, but not exceeding in any case £300”, which is half the amount fixed in my Bill, “provided that any weekly payments made under the Act shall be deducted from such sum. And in case of incapacity for work a weekly payment during incapacity, after the second week, not exceeding 50 per cent of his weekly earnings at the time of the accident, such weekly payment not to exceed £1.”

Sir Charles Dilke asked, “What happens in the case of permanent incapacity?” and the Attorney General answered, “The words are ‘during incapacity.’” I infer from that that even in cases of incapacity this bill allows them a payment of £1 a week or £52 a year, and allows it as long as a man lives and is incapable. In introducing the bill Sir M. W. Ridley laid down a principle which I hope this committee will adopt. The report says:—

“The bill we propose does not explicitly or directly deal at all with the Employers' Liability Act of 1880. It leaves that Act entirely untouched. It proceeds on the principle which I will venture to quote from the words used by my right hon. friend in 1893 [that is, Mr. H. H. Asquith] “that when a person, on his own responsibility, and for his own profit, sets in motion agencies which create risks for others, he ought to be civilly responsible for the consequences of what he does.” That is, that the employer, if he creates risks for others on his own responsibility, ought to be similarly responsible for the risks incurred. That is the principle laid down by Her Majesty's Government. It seems to have met with favour.

Mr. WAINWRIGHT—That is rather poor logic, I think.

Mr. CASEY—It seems to have met with approval.

Mr. WAINWRIGHT—That is the Workman's Protective Bill.

Mr. CASEY—Yes.

Mr. WAINWRIGHT—Yes. I know that has been introduced. It is not merely applicable to railways.

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Mr. CASEY—It is not merely applicable to railways, but it applies to railways.

Mr. WAINWRIGHT—Applicable to all.

Mr. CASEY—No, it excepts a number of employments. Sir M. W. Ridley says:—

“We propose that the bill shall apply to what I may call the more dangerous industries of the country, or, speaking roughly, to those industries for which Parliament has provided special protection. The words of the bill are: ‘This Act shall apply only to employment on, in or about a railway, factory, mine, quarry or engineering work.’ The definition of railway follows the known definition of the Railway Act of 1871, and the definition of factory follows the Factory and Workshops Acts of 1878 to 1891, and it also includes ‘any dock, wharf, quay or warehouse to which any provision of the Factory Acts is applied by the Factory and Workshops Acts of 1895.’

“Mr. Asquith—Does it include workshops?

“Sir M. W. Ridley—No, it does not include workshops. Mines, of course, are defined by the Coal Mines Regulation Act of 1887. Engineering work means ‘any work of construction on a railroad, harbour, dock, canal or sewer, and includes any building or other work on which machinery driven by steam, water or other mechanical power is used for the purpose of the construction thereof.’”

He goes on to except domestic service, agricultural employments and other cases of that kind for which it is impracticable to impose these penalties, but it applies to risky employments, including railways. Of course in Canada this Parliament can only apply a measure of this kind to railways, since the regulation of other employments comes under the control of the provincial government. As a matter of property and civil rights the provinces have that authority. We can only apply it to railways, as being the only risky employment under the control of this Parliament. I quote these statements as precedents of a high value.

Mr. POWELL—Where does it cover the case of contributory negligence?

Mr. CASEY—I will have to read a little fuller extract.

Mr. INGRAM—From what paper is that taken?

Mr. CASEY—It is taken from the *London Times*, Tuesday, May 4th, 1897. The wording of the bill is: “If in any employment to which this Act applies, personal injury by accident arising out of or in the course of employment is caused to a workman, his employer shall be liable to pay compensation in accordance with the first schedule of this Act.” Speaking of the provisions of the bill, Sir M. W. Ridley says:—

“In 1893 my predecessor introduced a bill whose object was, by making employers responsible for accidents which were due to their own negligence, or to the negligence of those employed by them, to give a strong incentive to the taking of proper precautions for securing safety in dangerous industries. I think that this is not an unfair definition of the object which the right honourable gentleman had in view. The effect of that bill would, I think, have been to put the workman in the same position as the stranger. It would have restored the workman to the same rights under the common law which a stranger to the employer possesses, and which he enjoyed, previous to the decision of the law courts, that established the doctrine of the common employment: that is to say, it would have given every workman in this country—and the definition of ‘workman’ was wide and all-embracing—the same right of action which every stranger had. That right of action would have been for unlimited compensation. Against those proposals it was argued that it was unfair to make employers legally responsible when they were not morally responsible, and it was said that they could not be morally responsible for these accidents when they have no power over the persons who had caused the accidents and who were not under their control. It was said, further, that those proposals did not remove the difficulty of proving negligence, and those who are familiar with the character of these accidents will, I think, be prepared to admit that one of the great difficulties which have attended this subject in its practical operation is the difficulty of proving negligence. Therefore it is argued that the bill of the right hon. gentleman, instead of doing anything in the direction of diminishing the chances of litigation, would work in the opposite direction, and that the result of putting such a large and onerous liability upon the employers of this country, would be that they would inevitably use

every endeavour to litigate themselves out of such liability. Further, there was the difficulty of contributory negligence, and a subject that is more likely to lead to litigation and to excite the activity of lawyers, can hardly be imagined. Another argument that was used with great force against the proposals of my right hon. friend was that they would not extend to the vast majority of accidents which, unfortunately, occur in this country. (Hear, hear.) It is felt that, although the workmen and those who represent them say that they do not so much desire compensation or payment for loss of life or limb as they desire protection, it is reasonable that there should be some attempt on the part of the legislature of this country to meet these accidents by some compensation. (Hear, hear.) I shall not endeavour to fix the number of the accidents which were altogether omitted from the operation of my right hon. friend's proposals."

These are the accidents which would be excluded as not being caused by the negligence of the employer. He continues :

"They have been variously estimated, but never at less than 40 or 50 per cent, and my right hon. friend the member for Liverpool, who is responsible for a bill based on the principle of general compensation, put the number at 80 per cent. But, whatever the number may be, surely the subject ought to be taken into consideration by the House. (Hear, hear.) The principle of the bill of the right hon. gentleman opposite was accepted in this House by both sides and also by the House of Lords, and if the measure was ultimately right after laborious progress through the grand committee, it was lost because the right honourable gentleman and his friends refused to agree to the amendment, which was inserted in another place. (the House of Lords) and which gave the power of contracting out, or, as I would prefer to put it, gave the power to employers and employed to contract themselves under proper safeguards into a better position. (Hear, hear.) When that bill was before the House a very important amendment was moved by my right honourable friend the present Secretary of State for the Colonies, who proposed that it would be advantageous to provide for all accidents by making compensation a trade expense; but, if I remember rightly, that amendment was not carried to a division. It was argued that the workmen should not only be put into the same position as the stranger, but, if anything, into a better position. It was argued that the serious results of accidents could not be held to be adequately met by merely giving the workmen a right of action in respect of the negligence of an employer or of any person for whom he was responsible, and it was felt that the workman or his representatives ought to have a right to compensation at the expense, not of the rates or of public charity but of the industry in which he was engaged. When it was said that by imposing such a burden upon the industries of this country you would render competition with foreign trade still more difficult than it is at the present time, it was shown that such a law of industrial compensation is well nigh common to the whole of the continent, and is in force in most of those countries with which we enter into severe competition. It was pointed out also that such a scheme, providing for general compensation, if it accurately defined the liabilities of one side and the other, and if it provided a simple and inexpensive remedy, would prevent litigation. It would prevent uncertainty, and the parties and their representatives would know what their rights were. Some words used by my right honourable friend opposite seem to indicate that he at any rate would be prepared to approve such a solution of this difficulty, but it was said by others, and the labour representatives principally, that such a law would lead to general insurance, and that insurance, if general, lead to diminished responsibility on the part of the owners, and must do away with those incentives to supplying adequate protection which the right honourable gentleman opposite had in view when he introduced his bill in 1893. I am prepared to agree to the fullest extent with those who argue that the legislature can properly interfere to secure the safety of those engaged in dangerous industries, but, I ask, how far is the argument sound which says that if you have insurance you undermine safety ?

"If you passed an Act of Parliament to-morrow prohibiting persons from ensuring against risks, it would be impossible to carry the measure into practical operation. Under the Bill of my right hon. friend opposite the liability is unlimited, and the difficulties of insurance would therefore have been much greater and the premiums much

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higher than they would be under the scheme of limited liability. But the absolute certainty is that under any scheme of compensation there will and must be insurance. What is the effect of insurance? With regard to inevitable accidents it, of course, can make no difference, but how far does insurance affect preventable accidents? When an employer is his own insurer, surely his own interest demands that he should endeavour to diminish risk and to prevent accidents, and if the result of a scheme of insurance is to throw more business upon insurance societies, they, too, will have great reason to see that proper precautions are taken for safety, and if proper precautions are not taken the premiums will rise. Insurance companies will not deal on the same reasonable terms with employers who do not adopt proper precautions as they will with those who do their best to protect life in the industries in which they are engaged. It is, therefore, hardly conceivable that under a system of universal liability and insurance employers will not take every care to protect their workmen. But, after all, the true means of protection against the improper conduct of dangerous trades does not lie in civil liability, but in maintaining a proper criminal liability under the Acts which exist; and if those Acts are not sufficient and adequate for the purpose they should be strengthened. At all events, we have in this country many acts which are expressly provided for the purpose of securing that, apart from any civil liabilities, the state should see—and it does see—through its inspectors that proper precautions are taken for the protection of life and limb by everybody who employs men in dangerous industries. Now, sir, one word as to German experience. I dare say it will be said that there has been an increase of accidents under the German system, which is almost universal, and applies to almost all industries now; but I think it requires a somewhat close examination of the official figures to see what the effect really has been. So far as I am able to understand them, if there has been any increase of accidents under the system of general insurance, it appears to have been because there has been a much more accurate notification of accidents and a much closer record of what has happened in the various industries; and secondly, there has been, in the case of various accidents, particularly those causing death, instead of an increase, a decided decrease. That was, in short, the state of affairs on the one side or the other when the Government came to consider this problem. It seemed to us that we had two alternatives before us—one the alternative of adopting something like the provision of my right hon. friend opposite, adding to it, as we were pledged to do, the power of contracting out.”

Mr. WAINWRIGHT—Excuse me for a moment. Do you understand that, Mr. Chairman, as overriding any action that might be taken by a workman injured, or is that in addition?

Mr. CASEY—This is in addition. It says expressly here that the Bill leaves the Employers' Liability Act untouched. It gives this in addition and justifies it on the ground that,

“The other alternative we had was to propose a scheme of general compensation, under proper safe guards and necessary limitations, and apply it to industries to which it would appear, in the first instance, it could properly be applied. Therefore, we had to make our choice between the general application, as my right hon. friend applied it and the limited principle. It will be found from what I have said to the House, that in the proposal we are about to submit to Parliament, we have chosen the latter course.”

And then follows the quotation I have already made.

Mr. POWELL—Do they allow men to contract out?

Mr. CASEY—As to contracting out, I will give you his own words. Sir Matthew Ridley says:

“Of course we cannot but be aware that in the principal enacting clause of this Bill we adopt the general principles of compensation, limited it is true; but, when we have provided that, there are possibly not the same inducements to guard against accidents that there were under the Bill of my right hon. friend. The adoption of that principle may involve some reconstruction of the existing societies, but we desire to give them room to provide further advantages of any kind that may be in their

power to provide, and we propose a clause to the effect that, if the Registrar of Friendly Societies certifies that any scheme of compensation or insurance for workmen is, on the whole, not less favourable to the workmen than the provisions of this Bill, the employer may, until the certificate is revoked, contract with any workmen that the provisions of the scheme shall be substituted for the provisions of the Bill, and that the employer shall be liable only under the scheme. That clause is intended to provide that by an independent public authority there should be a certificate that, if any schemes of this kind are entered into or continued, they shall offer the same advantages to the workman as are offered by the Bill."

That is the way in which they can contract out. The provisions of their scheme must be as favourable as the conditions of the Bill; that is they must pay to the men an amount—the maximum being £300—for compensation for death, or £52 a year or £1 a week for injury or total incapacity.

Mr. POWELL—It is not very clear about contributory negligence. It may include purely accidental causes. It depends upon what is in the schedule.

Mr. CASEY—I read the provisions of the Bill as introduced to avoid questions; but I will read it again. It is as follows:

"If in any employment to which this Act applies, personal injury by accident, arising out of or in the course of employment is caused to a workman, his employer shall be liable to pay compensation in accordance with the first schedule of this Act. The first schedule provides that when death results from the injury, if the workman leaves dependents, the amount of compensation shall be a sum equal to his earnings during the previous three years, or a sum of £150, whichever of those sums is the larger, but not exceeding in any case £300, provided that any weekly payments made under the Act shall be deducted from such sum. And in case of incapacity for work a weekly payment during incapacity, after the second week, not exceeding 50 per cent of his weekly earnings at the time of the accident, such weekly payment not to exceed £1."

And he gives the reasons I have already quoted. I might refer also to the "Spectator" of May 8th, which gives its view much more clearly than I could express it. In regard to this proposed scheme on the part of employers, he gives further particulars. He was asked the question, and said among other things:

"We believe that as to a large number of the industries of this country employers are, and will be, their own insurers. We believe that insurance has been a growing question, and we believe that the obligation which will be thrown upon employers by this bill will be adequately and efficiently met by insurance societies. The cost of management in Germany is one-fifth of the total compensation paid in respect of the total industries of the country and one-tenth of the total compensation paid in respect of mines. That is a cost which we in this country could not face with equanimity. It is most difficult to compute what will be the cost either of insurance or the amount of liability upon the owners, and I shall no doubt be told that the burden which will be imposed upon the industries to which the bill applies will be prohibitive. I do not think so. I think that those countries with which we compete are equally burdened, and, after the closest observation of such data as we have, I am perfectly satisfied that the cost of such insurance would be very much less than we have been led to expect."

Then he goes on to discuss the insurance system in Germany, which is as you are aware a general government system, Mr. Samuel asked him.

"Is it proposed to ask the workman to contribute towards this fund?"

"SIR M. W. RIDLEY—No, sir; I have said that the cost is thrown entirely upon the trade. I hope and believe that it will be found that the charge will not be a heavy one, or one which can be described as an unreasonable burden upon the industry. Having had the advantage of seeing some figures representing the operations of many of the liberal firms in this country who pay compensation very much upon the scale proposed by this bill, I may say that the cost works out in the most startling way very approximately to the figures I have with regard to mining and manufacturing industries. We admit that the bill embodies a new principle. It is a new departure and I can quite imagine that there will be some criticism not only upon the principle, but upon the details. The House has first got to settle the question—Is this principle sound, or is

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it not? I venture to think if you look at what is going on elsewhere not less than at the growth of public opinion in this country and what has passed in parliament itself, you will see that there is a growing feeling that it is proper, in the sense of the words of the right hon. gentleman opposite, to make trades responsible for the risks which they create."

It is clear that this scheme of compensation which enables the employer to contract himself out of his liability to the employee is a scheme by which he pays all the contributions himself and does not ask the employee to contribute anything. I do not pretend to be a legal man like my friend Judge Clark, but I submit the statements made by Sir M. W. Ridley and his arguments is my answer to the argument of Judge Clark in regard to this question of compensation. I may add that Mr. Asquith, the late home secretary, and various other leading members of the House expressed their general approval of the bill and I believe that it has since passed the Commons. I notice that its passage was celebrated by a cartoon in Punch which is generally a good authority on such questions.

Mr. POWELL—That may be so as far as the principle is concerned, but you cannot say as to what may be determined in regard to the details.

Mr. CASEY—The schedule is given here. The first schedule provides that when death results from injury, if the workman leaves dependents the amount of compensation shall be a sum equal to his earnings during the previous three years, or a sum of £150, whichever of these sums is the larger, but not exceeding in any case £300, provided that any weekly payments made under this act shall be deducted from this sum. And in case of incapacity for work, a weekly payment during incapacity after the second week, not exceeding fifty per cent. of his weekly earnings at the time of the accident, such weekly payment not to exceed £1. This is the whole schedule.

Mr. POWELL—It is a curious provision, because a young man with a family may live a long time. It is a compensation of the living and not of the dead. Take an old man who has spent his whole life in employment, and may have a year or two to live, you are giving the hard case the same as the easy case.

Mr. CASEY—Before you leave, Mr. Wainwright, is there anything you would like to say to the committee?

Mr. WAINWRIGHT—I consider, of course, that any action of that kind which you propose in your bill, would at once put an end to such a provident society as ours. That bill provides, if I understand it, that the employer shall make these payments and provide a fund without contribution on the part of their staff which is entirely opposed to our society. Then, you must remember that there are provisions in our society far-reaching which this does not touch at all; such as doctor's attendance, and that sort of thing.

Mr. CASEY—Of course there is an accident benefit in this?

Mr. WAINWRIGHT—And to that extent it simply means that a company like the Grand Trunk which contributes so much per annum to an employees' insurance society, would withdraw that contribution, and with such a bill law we would need to use that amount as an insurance fund to protect themselves, just as we do at present with rolling stock and other property.

Mr. CASEY—Instead of giving this amount to the society, it would be laid aside?

Mr. POWELL—As a special account?

Mr. WAINWRIGHT—Yes.

Mr. CASEY—For the men's benefit?

Mr. WAINWRIGHT—Yes; but it would not cover the advantages they get to-day under the provisions of the Provident Society.

Mr. ELLIS—How much do you give to the society?

Mr. WAINWRIGHT—\$12,000 in addition to other concessions, such as allowing our agents to work for the society.

Mr. CASEY—The contribution of the company to the society is about one-seventh.

Mr. POWELL—Have you any idea of the number of fatal accidents per annum on your system?

Mr. WAINWRIGHT—It varies.

Mr. POWELL—But can you state approximately?

Mr. WAINWRIGHT—There were very little the last two or three years. The principal accidents are those at crossings where people get run over.

Mr. CASEY—The total number last year was 780.

Mr. POWELL—How many were fatal?

Mr. CASEY—According to the statement which the clerk has prepared, there were 49 employees killed and 488 injured, making a total of nearly 550.

Mr. WAINWRIGHT—I want to say that if we kill or injure an employee we are responsible, and pay for these all the time through the courts. We paid a claim of \$5,000 the other day.

### WORKMEN (COMPENSATION FOR ACCIDENTS) BILL.

*Introduced in British House of Commons by Sir M. W. Ridley, Home Secretary,  
May 3rd 1897.*

The following is the full text of the Bill introduced in the House of Commons on the 3rd instant, to “amend the law with respect to compensation to workmen for accidental injuries suffered in the course of their employment.”

**1.** (1.) If in any employment to which this Act applies personal injury by accident arising out of and in the course of the employment is caused to a workman, his employer shall, subject as hereinafter mentioned, be liable to pay compensation in accordance with the first schedule to this Act :

(2.) Provided that :

(a.) The employer shall not be liable under this Act in respect of any injury which does not disable the workman for a period of at least two weeks from earning full wages at the work at which he was employed.

(b.) When it is decided as hereafter provided, that the injury was caused by the wilful and wrongful act or default of the employer or some person for whose act or default the employer is responsible, nothing in this Act shall affect any liability, civil or criminal, of the employer or persons for whom he is responsible; but the employer shall not be liable to pay compensation both independently of and also under this Act, and shall not be liable to pay compensation independently of this Act except in case of such wilful and wrongful act or default.

(3.) If any question arises as to whether the employment is one to which this Act applies, or whether the injury was caused by the wilful or wrongful act or default of the employer, or of any person for whose act or default the employer is responsible, or whether the injury was caused by accident arising out of and in the course of the employment of the workman injured or as to the amount or duration of compensation under this Act or otherwise as to the liability for compensation under this Act, the question, if not settled by agreement, shall, subject to the provisions of the first schedule to the Act, be settled by arbitration, in accordance with the second schedule to this Act.

(4.) If the Registrar of Friendly Societies certifies that any scheme or compensation or insurance for the workmen in any employment is on the whole not less favourable to the workmen than the provisions of this Act, the employer may, until the certificate is revoked, contract with any of those workmen that the provisions of the scheme shall be substituted for the provisions of this Act, and thereupon the employer shall be liable only in accordance with the scheme, but, save as aforesaid, this Act shall apply, notwithstanding any contract to the contrary, made after the commencement of this Act.

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**2.** (1.) This Act shall apply only to employment on, in or about a railway, factory, mine, quarry, or engineering work.

(2.) In this Act:—

“Railway” means the railway of any railway company to which the Regulation of Railways Act, 1871, applies, and “railway” and “railway company” have the same meaning as in that Act.

“Factory” has the same meaning as in the Factory and Workshop Acts, 1878 to 1891, and also includes any dock, wharf, quay or warehouse to which any provision of the Factory Acts is applied by the Factory and Workshop Acts, 1895.

“Mine” means a mine to which the Coal Mines Regulation Act, 1887, or the Metalliferous Mines Regulation Act, 1872, applies.

“Quarry” means a quarry under the Quarries Act, 1894.

“Engineering work” means any work of construction of a railroad, harbour, dock, canal or sewer, and includes any building or other work on which machinery driven by steam, water or other mechanical power is used for the purpose of construction thereof.

“Employer” includes any body of persons, corporate or unincorporate.

“Workman” includes every person who is engaged in an employment to which this Act applies, whether by way of manual labour or otherwise, and whether his agreement is one of service or apprenticeship or otherwise, and is expressed or implied, is oral or in writing.

**3.** (1.) This Act shall not apply to persons in the naval or military service of the Crown, but otherwise shall apply to any employment by or under the Crown to which this Act would apply if the employer were a private person.

(2.) The Treasury may, by warrant laid before Parliament, modify, for the purpose of this Act, their warrant made under section 1 of the Superannuation Act, 1887.

**4.** Any contract existing at the commencement of this Act whereby a workman relinquishes any right to compensation from the employer for personal injury arising out of and in the course of his employment shall not for the purposes of this Act be deemed to continue after the time at which the workman's contract of service would determine, if notice of the determination thereof were given at the commencement of this Act.

**5.** (1.) This Act shall come into operation on the first day of **January**, 1898.

(2.) This Act may be cited as the Workman's Compensation Act, 1897.

## SCHEDULES.

*First Schedule—Scale and Conditions of Compensation.*

## SCALE.

- (1.) The amount of compensation under this Act shall be :—
- (a.) Where death results from the injury—
- (i.) If the workman leaves dependents, a sum equal to his earnings during the three years next preceding the injury or the sum of £150, whichever of those sums is larger, but not exceeding in any case £300, provided that the amount of any weekly payments made under this Act shall be deducted from such sum ; and
- (ii.) If he leaves no dependents, the reasonable expenses of his medical attendance and burial, not exceeding £10.
- (b.) In case of incapacity for work, a weekly payment after the second week during the incapacity not exceeding 50 per cent of his weekly earnings at the time of the accident, such weekly payment not to exceed £1.
- (2.) The payment shall in case of death be made to the legal personal representative of the workman, or if he has no legal personal representative to his dependents, or if he leaves no dependents to the person to whom the expenses are due.
- (3.) The expression “dependents” in this schedule means such members of the workman’s family as are entitled to damages in cases under the Fatal Accidents Act, 1846 ; and any question as to who is a dependent, or as to the amount payable to a dependent shall, in default of agreement, be settled by arbitration under this Act.
- (4.) If any of the dependents is an infant, his share of compensation may be invested for his benefit as directed by the arbitrator.
- (5.) Any weekly payment may be reviewed at intervals of not less than three months at the request either of the employer or of the workman, and on such review may be ended, diminished or increased, subject to the maximum above provided, and the amount of payment shall, in default of agreement, be settled by arbitration under this Act.
- (6.) A weekly payment shall not be capable of being assigned or charged, and shall not pass to any other person by operation of the law.

*Second Schedule.—Arbitration.*

The following provisions shall apply for settling any matter which, under this Act, is to be settled by arbitration :—

(1.) If any committee, representative of an employer and his workmen, exists, with power to settle matters under this Act in the case of the employer and workman, the matter shall, unless either party objects, be settled by that committee.

(2.) If either party so objects, or there is no such committee, the matter shall be settled by a single arbitrator agreed on by the parties or, in the absence of agreement, by the County Court Judge, or if the Lord Chancellor certifies that under the circumstances of the particular district it is not convenient that the County Court Judge should be called upon to act as arbitrator, by a single arbitrator appointed by such County Court Judge.

(3.) Any arbitrator other than the County Court Judge shall be paid out of the moneys to be provided by Parliament in accordance with regulations to be made by the Treasury.

(4.) The Arbitration Act, 1889, shall not apply to any arbitration under this Act ; but an arbitrator may, if he thinks fit, submit any question of law for the decision of

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the County Court Judge, and the decision of the judge on any question of law, either on such submission, or in any case where he himself acts as arbitrator under this Act, shall be final: and any award made under this Act shall be enforced in the same manner as an order of a county court.

(5.) The costs of the arbitration shall be in the discretion of the arbitrator.

(6.) The duty of a County Court Judge shall, under this Act, subject to rules of court, be part of the duties of the county court, and the officers of the court shall act accordingly.

(7.) Any sum awarded as compensation shall be paid on the receipt of the person entitled, and his solicitor or agent shall not be entitled to recover from him or claim a lien on the amount recovered for any costs except such as have been awarded by the arbitrator.

(8.) Any committee, judge or other arbitrator, may appoint a legally qualified medical practitioner to report on any matter which seems material to any person arising in the arbitration, and the expenses of any such medical practitioner not exceeding two guineas shall be paid by the employer.

(9.) In the application of this schedule to Scotland "sheriff" shall be substituted for "county court judge."

[NOTE BY CHAIRMAN OF COMMITTEE.—This bill had passed the Committee of the Whole, British House of Commons, at the date of this committee's report.]

### LIST OF PETITIONS *received favourable to the adoption of Bills 2 and 3, respecting the safety of railway employees and passengers.*

- |  |    |    |
|--|----|----|
| 1. Orangeville Branch, No. 47, of the United Brotherhood of Railway Trackmen.          |    |    |
| 2. Streetsville Branch, No. 49   | do | do |
| 3. Missanabie Branch, No. 15   | do | do |
| 4. Rivière du Loup Branch, No. 55  | do | do |
| 5. Thousand Islands Branch, No. 17   | do | do |
| 6. Truro Branch, No. 62  | do | do |
| 7. A. E. Brown Lodge, No. 539  | do | do |
| 8. Lake Simcoe Lodge, No. 377  | do | do |
| 9. Belle Isle Lodge, No. 316   | do | do |
| 10. West Toronto Lodge, No. 255  | do | do |
| 11. Algoma Branch, No. 7   | do | do |
| 12. Richmond Branch  | do | do |
| 13. Kemptville Branch, No. 37  | do | do |
| 14. Smith's Falls Branch, No. 3  | do | do |
| 15. Webwood Branch, No. 13   | do | do |
| 16. Peterborough Branch, No. 44  | do | do |
| 17. Kokabeka Division, No. 286, Order of Railway Conductors.                           |    |    |
| 18. Niagara Falls Division, No. 350  | do | do |
| 19. Nipissing Division, No. 242  | do | do |
| 20. Leeds Division, No. 366  | do | do |
| 21. North Bay Lodge, No. 234, Brotherhood of Locomotive Engineers.                     |    |    |
| 22. City of Windsor Division, No. 390  | do | do |
| 23. Toronto Division, No. 70   | do | do |
| 24. Brockville Division, No. 118   | do | do |
| 25. Belleville Division, No. 189   | do | do |
| 26. Central Division, No. 123, Order of Railroad Telegraph Operators of North America. |    |    |

27. Colonial Lodge, No. 119, Brotherhood of Locomotive Firemen.  
 28. Pembroke Branch, No. 4, of United Brotherhood of Railway Trackmen.  
 29. Renfrew Branch, No. 2 do do  
 30. Iroquois Branch, No. 21 do do  
 31. Echo Bay Branch, No. 10 do do  
 32. Thousand Island Lodge, No. 208 do do  
 33. Cornwall Branch, No. 33 do do  
 34. East Toronto Lodge, No. 108 do do  
 35. Unity Lodge, No. 47 do do  
 36. Vaudreuil Branch, No. 75 do do  
 37. Aubrey Branch, Quebec, No. 49 do do  
 38. Winnipeg Branch, No. 23 do do  
 39. J. M. Egan Lodge, Winnipeg, No. 223 do do  
 40. Canilever Lodge, St. John, N.B., No. 407 do do  
 41. Kamloops Branch, B.C., No. 34 do do  
 42. Rarity Lodge, Medicine Hat, N.W.T., No. 304, Brotherhood of Railway Trackmen.
43. Snowdrift Division, No. 138, Brotherhood of Locomotive Engineers.  
 44. Hamilton Division, No. 133 do do  
 45. St. Francis Division, No. 142 do do  
 46. Dominion Division, No. 469 do do  
 47. Point Edward Division, No. 240 do do  
 48. London, Ont., Division, No. 68 do do  
 49. Beaver Lodge, London, Ont., No. 117 do do  
 50. Hope Division, No. 174 do do  
 51. East Toronto Division, Toronto, Ont., No. 520, Brotherhood of Locomotive Engineers.
52. Point St. Charles Division, Montreal, No. 89 do do  
 53. Moncton, N.B., Division, No. 162 do do  
 54. Toronto Junction, Ont., Division, No. 13, Order of Railway Conductors.  
 55. Frontier Division, Point Edward, Ont., No. 189 do do  
 56. Allandale, Division, Ont., No. 355 do do  
 57. Union Division, Winnipeg, Man., No. 13 do do  
 58. Pacific Division, Kamloops, B.C., No. 267 do do  
 59. International Lodge, Bridgeburg, Ont., Brotherhood of Locomotive Firemen.  
 60. Island City Lodge, Brockville, Ont., No. 69 do do  
 61. Windsor, Ont., Lodge, No. 421 do do  
 62. Pacific Division of Order of Railway Telegraphers.  
 63. St. Adolphus Lodge, Hochelaga, Que., No. 335, Brotherhood of Locomotive Firemen.
64. Spring Hill Junction, N.S., Branch, No. 63, Brotherhood of Railway Trackmen.  
 65. Glacier Lodge, Donald, B.C., No. 51 do do  
 66. Air Line Branch, St. Thomas, Elgin County, Ont., No. 529, Brotherhood of Locomotive Engineers.  
 67. Stratford, Ont., Division, No. 15, Order of Railway Conductors.  
 68. Jubilee Lodge, Ottawa, Ont., No. 1, Brotherhood of Railway Trackmen.

# Safety on Railways.

LIST OF LETTERS and other documents filed as evidence before the Select Committee to whom were referred the Bills Nos. 2 and, 3 respecting the safety of railway employees and passengers.

“SPRING HILL COLLIERIES.”  
CUMBERLAND RAILWAY AND COAL COMPANY,  
CUMBERLAND COUNTY, N. S.

MONTREAL, 6th May, 1897.

G. F. OWEN, Esq.,  
Clerk of Committee.

SIR,—In regard to Bill No. 3, An Act to Promote the Safety of Railway Employees.

Our line, from Springhill Junction on the I. C. Ry., to Parrsboro', N.S., is engaged mainly in coal traffic from Springhill Mines to the two points above mentioned, and also does some general business in freight and passengers. Length of line, 32 miles.

## (1.) *Air Brakes on Trains.*

So far as this company is concerned, it will be almost impossible to carry it out, as our trains are all mixed trains, coal, lumber, freight and passenger cars.

## *Automatic Couplers.*

The passenger cars on regular trains are fitted with automatic couplers, all other cars have standard drawbars. We have had no accidents coupling cars.

## *Section (2.) Qualifications of Engine Drivers and Conductors.*

This is practicable, though the length of service, five years, is, in our opinion, excessive.

## BILL No. 2.

Sections 1 and 2.—As we have but one box car in use, this does not very much affect us.

Section 7 and Subsections.—This section we consider decidedly against the interests of all railway companies. In the case of an accident it would seem impossible for any railway company to go free. The compensation is so large as to make it possible at least that an employee might get hurt in order to get the compensation provided for in the Act.

It is unjust to put the onus of proof that accident was not accidental on the railway company, and would seem to be entirely against the common law.

Subsection 4 we consider decidedly objectionable, and an unjust interference between employer and employee.

Section 8.—This, no doubt, is the duty and aim of every railway company to have sufficient men to transport traffic safely and keep its line in good condition. As to these points, we consider the railway companies must be allowed to judge for themselves. The circumstances on a small local line like ours are entirely different from those of a large through line, and to insist on applying such provisions indiscriminately to all railways would, we submit, be unfair and unjust. In our case we have a relief

fund, contributed to by our men, by the local government and by the company, which meets our needs, and which we consider makes section 7 unnecessary in our case.

We trust that our protest against these bills may reach your honourable committee before it is too late. The delay in our replying has been on account of its being necessary to send the bills to our general manager in Nova Scotia.

I remain, yours respectfully,

H. R. DRUMMOND,  
Secretary.

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UNITED BROTHERHOOD OF RAILROAD TRACKMEN,  
OFFICE OF GRAND SECRETARY, HINTONBURG, ONT.,  
OTTAWA, ONT., 18th February, 1897.

W. F. MACLEAN, Esq., M.P.

DEAR SIR,—At a meeting of the Dominion Executive of the Dominion Legislative Board of Railway Employees recently held in Ottawa, the enclosed amendments were made in your Bill and in another known as the Casey Bill.

The following or, I should say, accompanying legislation was also recommended by the Board.

We hope you will accept the amendments to your own Bill for which the Board heartily thank you and that you will also give your valued and valuable aid towards introducing or supporting any of the desired legislation.

You will readily understand the importance of clause (c) in section 2. When I say that at present railway managers refuse to give such certificates, even the I. C. Ry. will not grant them.

I presume the reason of putting them in your Bill was that at present an engineer or fireman dismissed off a road or leaving of his own accord could not get from the company's officers anything to show that he has ever even seen a locomotive, much less ran or fired one.

You will readily understand the hardship and I guarantee you any of your railway supporters will assure you my information is correct.

I had the honour of being elected secretary of the Board in our meeting in Ottawa on September 8th to 10th last.

Copies of your Bill, Casey's and the enclosed suggestions have been sent to all Canadian Railway Organizations and they have been asked to correspond with their M.P.'s asking them to support them.

Hoping to see you strong and well and pressing and passing your Bill.

I am, yours respectfully,

A. B. LOWE,  
Sec. D.L.B. of R.E.

# Safety on Railways.

BROTHERHOOD OF LOCOMOTIVE ENGINEERS,  
EAST TORONTO DIVISION, No. 520,

EAST TORONTO, 13th March, 1897.

W. F. MACLEAN, Esq., M.P.

DEAR SIR,—At a meeting of our Lodge held in the Lodge Room, 2nd March, 1897, the following resolution was adopted :

That we petition you, as our representative in the Dominion Parliament, to give the strongest possible support to the following Bills which will be presented this session as amended by the Dominion Legislative Board of Railway Employees, copies of which we enclose, known in previous session as the Maclean Bill, the Casey Bill, the Gibson Bill and Alien Contract Labour Law, and any other legislation on the accompanying subjects which will be brought forward in the interests of railway men.

And your petitioners will ever pray.

Yours truly,

T. J. LOONEY, F.A.E.,

*East Toronto Post Office.*

—  
TORONTO, 11th March, 1897.

Mr. W. F. MACLEAN, M.P.

DEAR SIR,—At the union meeting held at York on the 8th inst., by members of the Brotherhood of Locomotive Engineers, Order of Railway Conductors, Brotherhood of Railroad Trainmen, Brotherhood of Locomotive Firemen and Order of Railroad Telegraphers, the Secretary was instructed to write you, saying it was unanimously resolved that we, as individual members of the said orders, are in favour of the Bills before the Dominion Parliament, known as the Maclean Bill, Alien Labour Law, Casey and Gibson Bills, respectfully request your vote and influence in support of the same.

Yours respectfully,

W. M. WISWELL,

Secretary.

48 McGee Street.

—  
ORDER OF RAILWAY CONDUCTORS,  
EAST TORONTO DIVISION, No. 344.  
OFFICE OF THE SECRETARY AND TREASURER,

COLEMAN, ONT., 2nd March, 1897.

W. F. MACLEAN, Esq., M.P.

DEAR SIR,—At a meeting of our Lodge, No. 344, O. R. C., held in Society Hall, Little York, on the 1st day of March, 1897, the following resolution was passed : That we petition you, as our representative in the Dominion Parliament, to give the strongest possible support to the following bills which will be presented this session as amended by the Dominion Legislative Board of Railway Employees, copies of which we enclose, known in previous sessions as the Casey Bill, the Maclean Bill, the Gibson Bill and an Alien Contract Labour Law and any other legislation on the accompanying subjects which will be brought forward in the interests of railway men.

And your petitioners will ever pray.

I remain yours truly,

W. H. HUTCHINSON,

Secy. Treasurer, Division 344.

COLEMAN, P. O.

TORONTO, 9th March, 1897.

MR. W. F. MACLEAN, M.P.,  
East York.

DEAR SIR,—At a meeting of Toronto Division, No. 17, Order of Railway Conductors, the following resolution was adopted :—

*Resolved.*—That we petition you, as a friendly representative in the Dominion Parliament, to give the strongest possible support to the following bills, which will be presented this session as amended by the Dominion Legislative Board of Railway Employees, known in previous sessions as the Casey Bill, the Maclean Bill, the Gibson Bill and an Alien Contract Labour Law, and such other legislation as may be brought forward in the interest of railway men.

The bills mentioned are of great importance to us as railway men, they have been amended with great care by their Legislative Board, and endorsed by the railway men of the Dominion from the Atlantic to the Pacific, and we frankly petition you for your valuable influence and support in their behalf.

And your petitioners will ever pray.

CHAS. MITCHELL,  
Secy. Treasurer.

R. A. PURDON,  
Chief Conductor.

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BROTHERHOOD OF RAILROAD TRAINMEN.

EAST TORONTO LODGE, No. 108,

LITTLE YORK, 1st March, 1897.

W. F. MACLEAN, Esq., M.P.,  
East York.

DEAR SIR,—At a meeting of our lodge held in the I. O. O. F. hall, on the 22nd February, 1897, the following resolution was adopted :—

That we petition you, as our representative in the Dominion Parliament, to give the strongest possible support to the following bills, which will be presented this session as amended by the Dominion Legislative Board of Railway Employees, copies of which we enclose, known in previous sessions as the Casey Bill, the Maclean Bill, the Gibson Bill and an Alien Contract Labour Law, and any other legislation, on the accompanying subject, which will be brought forward in the interests of railway men.

And your petitioners will ever pray.

THOS. ROGERS,  
Secretary.

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NELSON AND FORT SHEPPARD RAILWAY COMPANY.

CONSTRUCTION DEPARTMENT,

SPOKANE, WASHINGTON, 5th May, 1897.

GEO. F. OWEN, Esq.,  
Clerk of the Select Committee,  
House of Commons, Ottawa, Canada,

SIR,—I have your letter of the 24th ultimo, enclosing Bill No. 2, entitled " An Act to further secure the safety of railway employees and passengers " and Bill No. 3, entitled : " An Act to promote the safety of railway employees," and in compliance with your request to have our views on the provisions of said bills, I desire to say :

As to sections one, two and three of the first bill : All locomotives and cars, including freight equipment, used on the Nelson and Fort Sheppard Railway and its connections, are provided with the latest improved air brake attachments, as all locomotives and rolling stock should be on all roads, especially on roads having considerable grades.

## Safety on Railways.

As to sections seven and eight of the bill, I see no objection to them.

With respect to the second bill: I see nothing especially objectionable in it. I presume every engineer on this line has served at least five years as fireman on a locomotive, and every conductor five years as brakeman. Of course there is a difference in men. A fireman who is a thorough machinist might be more fit to put in charge of a locomotive, after four years' service, than another who had been in the service ten years, and the same argument would apply with respect to conductors; however, I assume that this question would never arise, as railway companies generally are very careful about their engine drivers, and the conductors whom they put in charge of trains.

Respectfully,

D. C. CORBIN,  
President.

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HILLSBOROUGH, N. B., 1st May, 1897.

GENTLEMEN,—Bill No. 3, An Act to promote the safety of railway employees.—The principle of the Bill is a good one as far as the large trunk lines are concerned, but for small branch lines, it is utterly impossible to be carried out, unless at a *very, very great* expense, which would mean the closing down of most branch lines, as they can only (and part of the time cannot) pay their running expenses, let alone any improvements to their road bed or equipment.

They might possibly have the air brake equipment put on the locomotive, but a good many of them are not worth the extra expense to do that while they can manage to get along fairly well without.

As far as our road is concerned, I would like for any one to point out a single case where any one has been injured or killed by not having the air brake on locomotive.

The speed to be obtained on branch roads is only an average of 15 miles per hour, and it is no trouble to keep the train under control, so as to stop in a very short space of distance. For these reasons and many others that can be advanced, I do not think it necessary to compel branch roads to equip their locomotives with air brakes.

With reference to Bill No. 2.—I advance the same argument as to Bill No. 3. It is utterly impossible for branch roads to adopt, only at a very great expense, which would have a disastrous effect, and where shippers of lumber, &c., have been in the habit for a number of years, of hauling lumber, &c., along line of railway at most any point, whether siding or not; the result is that cars have very often to be left on main line and run ahead of locomotive for one or two miles, as the case demands. What could be done with air brakes in cases of this kind?

As to building new box cars up to a certain standard, it is certainly all right and I think should be done, as no great objection could be raised to that. The penalty should not apply to branch roads, however.

As to clause 7 and up to clause 8, don't think it necessary at all, especially paragraphs 2, 3 and 4.

I trust for the interests of branch railways and the people along said railways, this bill will not pass, as if it does, it will be very detrimental to such lines, and meaning the closing up of some of them at least, which now are a very great convenience to the public generally.

Respectfully yours,

H. SHERWOOD,  
Manager S. & H. Ry.

ADDITIONAL STATEMENT OF HON. L. S. COFFIN, BEFORE A CONGRESSIONAL COMMITTEE AT WASHINGTON, 1892.

Mr. COFFIN—Mr. Chairman and members of the committee, you will recollect that at the hearing before you on March 2, I gave way to Mr. Stahlman before I had concluded what I wished to say. At the suggestion of your chairman, Senator Cullom, I submit the balance of my remarks in writing.

Allow me to say that my earnest plea for that form of a law which recognizes the very important work already done by the railroads through their ablest corps of mechanics in developing a uniform system for the *safe coupling of cars* arises from my intimate knowledge of the wonderful progress made in this direction and of the substantial and practical unanimity at which the large majority of the railroad carrier corporations have at this time arrived. The great demand, you must conclude from all that has been said before you on this subject, is for uniformity.

Practically we have that now by the voluntary action of a large majority of the railroads. Hence I am earnest in my desire to show you that all that is now needed is some simple law requiring a compliance with the will and practice of the majority.

This is a nation where the majority rule is recognized. Legislation now for the 275,000 men in this nation engaged in the operating department of railroad service need not be groping in the dark.

If the committee feel any hesitancy about the matter and would like fuller information I will leave with them some copies of the reports of the transactions of the National Master Car Builders' annual conventions and mark for convenient reference the parts more directly to the point under discussion. On page 28, of report for 1885, commences a discussion of the coupler question.

On bottom of page 33, see motion made by Mr. Wall, superintendent of shops of the Pittsburg, Cincinnati and St. Louis Railroad, controlling their 10,822 cars.

Page 39 shows resolutions adopted.

Page 128 shows committee appointed to test and collect information of couplers.

In report of 1886, on page 74, commences report of the above committee on the tests made at Buffalo, N. Y., which you will find very interesting, and commencing on page 81 and on will be found cuts of the couplers tested, which please see.

I would now call your special attention to the report of 1887, in which is record of the final report of the committee on safety couplers, and the action of the convention thereon, and especially to the remarks of its chairman, Mr. Wall, on pages 194 and 195, now representing 11,474 cars, at that date, 1887. On pages 247, 248, 249, 250, 251 and 252 is the tabulated statement of the management of the roads giving the latter ballot on the action of the Master Car Builders establishing a standard coupler, showing over two-thirds for it, as well as the number of cars voted.

In report for 1890, on page 99, is found the action of the association instructing its executive committee to see to it that the standards adopted by them as to couplers were maintained.

In report for 1891—commencing on page 114—is found report of this committee on the maintaining of standard contour lines of the standard coupler. This is expressly interesting and instructive in view of the testimony of Mr. Downey that the standard couplers of different make would not couple. In this connection the circular marked O, by Mr. Cloud, secretary of the association, and of the executive committee, is expressly important, as it shows the careful work of these expert mechanics in maintaining the exact lines of the standard coupler, and that from now on every coupler of whosoever make will and must be exactly alike, and couplers made by A and B will as surely couple as and interchange as two couplers made by A, or two made by B.

## Safety on Railways.

Before leaving these reports, allow me once more to call your attention to the number of cars represented in these annual meetings of this association. This you will find in each report, on the page before the index page; and in that of 1891 you will find 991,564 cars represented, which were at that time practically all the cars of the nation. This shows how unanimously the railroads themselves have agreed upon this matter of a uniform type of standard coupler. Hence it would be a fearful mistake to enact any law that would in any way disturb this harmonious progress. Legislation should be in line of this work. This is all I have now to say on the coupler question.

I will incorporate in my remarks at this point extracts from a letter from Mr. C. J. Ives, president and general superintendent of the Burlington, Cedar Rapids and Northern system of railroads. This system spreads out through Iowa, Minnesota, and Dakota.

OFFICE OF PRESIDENT,

CEDAR RAPIDS, Iowa, 27th February, 1892.

MY DEAR SIR,—I have yours of the 24th instant, in regard to the placing of automatic couplers on freight cars, and in reply would say that since the Iowa law went into operation we have placed no others on cars undergoing repairs, and expect to continue this until all our cars are equipped. We are also endeavouring to fill the demands of the law in respect to *air brakes on cars and engines*. . . . . The transitory period, as you say, is a dangerous one, but the casualties on that account have not been so serious as I expected. The movement you mention of switchmen to do away with all automatic couplers and go back to the link and pin will, I trust, amount to nothing, as the hundreds of thousands of dollars already expended by railway companies for the present automatic couplers would be simply lost and no advance made in regard to improvement in this direction. I cannot think it possible that any committee of Congress would recommend anything of that kind. As so much has already been done in regard to this work, I trust you may be successful in making it interstate, that all the benefit possible may be derived from the heavy expense to which the railroads have been subjected.

Yours truly,

C. J. IVES,  
*President.*

L. S. COFFIN,  
Washington, D.C.

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Also a letter from Mr. J. M. Whitman, the general manager of the Chicago and Northwestern system, of which road the chairman of this committee has perfect knowledge. This system controls between 4,000 and 5,000 miles of road.

Mr. Whitman, under date of March 14th, says :

Dear Sir,—In reply to the inquiry contained in your favour of March 12th, in reference to the question of automatic couplers for freight equipment and the measures reproduced before the National Legislature referring to the same question, I have to say that the Northwestern company has adopted what is known as the M. C. B. standard vertical plane coupler. It has been applying this coupler to its equipment for the last three years. The progress, however, during the first year, was slow, as the device had to be perfected in several details of construction and in strength of material. We have, however, at present writing, about 5,000 cars equipped with automatic couplers and air brakes. We are also applying automatic couplers and air brakes to some 5,000 freight cars purchased for this year's delivery, and in addition are applying automatic couplers and air brakes to our old equipment as rapidly as possible.

The close of this year will show probably 12,000 cars in the equipment of the Northwestern Company provided with automatic couplers and air brakes—a very rapid

introduction of these two devices. I can say that we are thoroughly satisfied that the M. C. B. standard vertical plane coupler is a success, and we are fully satisfied with the device we are using. I have no authentic statistics as to the number of cars equipped with automatic couplers in the United States, but I am of the impression that the number will approximate about fifteen per cent of the entire freight equipment. It can therefore be seen that a very considerable progress has been made in this direction in view of the fact that it covers only about three years' application.

I know from present knowledge that almost all of the large railroad companies of this country are applying automatic couplers to all new equipment, and any legislation that would disturb the existing condition of things in respect to the M. C. B. standard coupler would to my mind be exceedingly disastrous to the object to be attained, as it would render questionable and uncertain the work that is now being done, and in addition thereto would undo practically the work of the best mechanical minds of the country covering the period of the past five years.

This is in brief our position in the matter, and I trust that it will furnish you the information that you desire.

Yours truly,

J. M. WHITMAN,  
*General Manager.*

MR. L. S. COFFIN,  
Washington, D. C.

Permit me now to trespass for a little on your patience to discuss, very briefly, this brake question.

Many contend that a bill requiring "power" or "train" brakes—for they mean one and the same thing—is more necessary and important than one requiring automatic couplers. As a matter of fact there are nearly twice as many men killed yearly from being required to use hand brakes on freight than are killed from handling couplers, but there are not so many injured. The casualties are more fatal.

Statistics from the Interstate Commerce Commission reports show that 557 were killed from falling from trains, and 2,348 injured in the year ending June 30, 1890. These men receive their death and injuries from being obliged to be on top of freight trains to use hand brakes. When is added to this the great number of accidents resulting from collisions, and running into open switches, and obstructions which could have been avoided had cars been equipped with power brakes under the immediate control of the engineer, the number would at least be swelled 50 per cent. The mere statement of this terrible fact, which no intelligent man will question, is all the argument that need be offered in favour of a law requiring that all interstate freight trains shall have enough cars in such trains equipped with power brakes so that the engineer can at all times control his train without requiring human beings to be at the cruel and inhuman exposure incident to the work of controlling trains by hand brakes.

This too, when it is now admitted that if 20 to 30 per cent of the cars in a train are furnished with such power brakes that that train can be controlled easily and safely by the engineer, and at his instant wish.

I would call special attention to section 5 of the Henderson Bill (H. R. 117; which is also in the printed report of my remarks of the hearing on 2nd March), which applies specially to this point. This provision should be incorporated in whatever bill the committee may see best to report, as it gives the railroad companies all the time they may need to fit up all their cars with power brakes, and still give the employees immunity from exposure and danger, at a very early date. There are at the present time nearly, if not quite, 20 per cent of the freight cars already equipped with power brakes, and a law requiring all trains run in interstate traffic to have in each train enough of these power-brake cars so as to give the control of the train into the power of the engineer, say two years from date, or say the first day of January, 1894, would be the saving of at least 600 lives a year from that date, and an amount of human suffering and grief simply beyond words to express.

## Safety on Railways.

This will not impose any unreasonable burden upon the roads. All admit, I mean the railroad officials—that it is only a question of time when every car will have a power brake. A law as stated will compel the roads to see to it that the cars now equipped shall be so distributed and switched up to the head end of the train as to be utilized.

When the fact is patent beyond all question of doubt that with trains so managed these lives can be saved and this awful suffering prevented, can you, gentlemen, have any doubt about using your unquestioned prerogative in the behalf of these men?

In closing this discussion allow me to impress upon the committee that I do not stand here before you as merely one individual man endeavouring to give you my own views and wishes, and leaving you to think that possibly I may have some mercenary ends of my own to accomplish. I stand here authorized to speak for not less than 90,000, mark the great hosts—90,000 men who are every day in the practical work of handling the cars that must be moved in the commerce of this great nation. These 90,000 men are in organized orders, so that their voice can come to you in no uncertain sound.

I lay before you the letter from the grand officers of the great and powerful order of the Brotherhood of Locomotive Engineers, some 30,000 in number, as shown in the report of the House Committee on Railroads and Canals, on this same matter, at the last Congress, which report I herewith submit and call attention, not only to this letter of the grand officers of the Brotherhood of Locomotive Engineers, but to the petition of Slatterly, Barnard, Lyons and Hardie and 9,678 others to the Interstate Commerce Commission on this matter. The resolution of the conference of State railroad commissions with the national commission; to the letter from the grand lodge officers of the Brotherhood of Railroad Trainmen; to the letter of Hon. Eugene V. Dete, grand secretary and treasurer of the Brotherhood of Locomotive Firemen; to the resolutions passed by Grand Division of the Order of Railroad Conductors at their annual meeting at Rochester; to the resolution passed by the National Association of Railway Surgeons; to the petition of over 10,000 practical railway brakemen in actual service, to the last Congress, all found on pages 2, 3 and 4 of this report.

Please bear in mind that while this great number of every day railroad men are making or attempting to make their voices heard by Congress, asking for laws giving them a reasonable degree of safety in their employment—the benefit of which you and the whole public reap; I repeat, please remember there is still an equal if not larger number engaged in this same dangerous work who do not belong to these organizations, and who find it difficult to be represented here in any official and effective way because of this fact, a fact which exists in many cases and on many systems of roads, because of the expressed demand of officials to withdraw at once from these orders if any have joined them, on pain of summary dismissal from the service if they do not. I say, besides those thus organized, there are at least 100,000 more of these trainmen who are looking to you for a law that will give them a chance to live.

While all these practical men, numbering in these orders and out of them in the aggregate some 200,000 men, may not all agree on all the specific provisions of legislation asked, there is an absolute unanimity of sentiment and prayer for “uniformity” in these matters of couplers and brakes. They are willing to leave to your superior wisdom how that uniformity shall be brought about.

The views expressed by me before you in these hearings on the wisdom of a law running in harmony with the line already so clearly defined and so successfully being followed by the majority of the roads, and my opposition to any legislation that looks to creating a commission to select any specific coupler to be legalized by Congress, are my own individual views, my own best judgment, based on a very extended and exhaustive investigation of this whole matter during eight years past, leads me to say to the committee that the provisions of the Henderson bill (H. R. No. 117), are better calculated to bring the relief to the railroad employee asked for by them quicker and more effectually than can be secured by any of the other bills now before Congress.

Still I am not at all strenuous for this particular bill. If the wisdom of the committee will evolve a better and a wiser one, none will be more ready to accept it than myself.

But I cannot close this already, to you, too tedious hearing without urging upon you haste in this matter, whatever legislation you may see proper to report to the Senate. This awful work of death and suffering must be more or less extended, at the best, for a few years. Time will be required to make the necessary changes. What I plead for is that the beginning of the ending of this sacrifice of human life shall commence with as little delay as possible.

Bear this in mind, Senators, that the absolute and stern facts are, that from unquestioned data we know that an average of three of our fellows in the very prime of life must daily yield up life, and not less than thirty more must be made to suffer untold pain and loss of limb every day, while you are deliberating upon what is the proper way to stop it—for stop it you can by proper legislation. The responsibility is now with you. The prayer and supplications of tens of thousands of wives and mothers, whose husbands and sons are earning them their daily bread in this necessary and honourable but dangerous work, go up to God that you may act wisely and quickly.

Beyond all question, the lives and safety from maiming and crippling yearly of not less than 12,000 of these faithful and brave men are in your hands. There is no way to stop this fearful work save by an act of Congress.

Aside from the death and suffering that can be prevented, is it not in place to ask of statesmen like yourselves: What of the economic question of turning out great armies of crippled men every year with such physical disabilities as to prohibit the possibility of being producers?

#### TO STOP RAILWAY ACCIDENTS.

*From the "Railroad Trainmen's Journal" of February, 1896.*

It is not generally the rule for writers who make a specialty of writing about railroads to point with the finger of criticism at their imperfections and call particular attention to the defects of the appliances as in use on the railroads of America. There are many reasons to account for this, but the strongest, perhaps, is found in the fact that such persons as are in a position to write understandingly of those matters do not dare to take the matter up from a standpoint of adverse criticism because of danger to self interest. The others who write from a purely theoretical point of view are seldom fortunate enough to maintain the position taken because of the knowledge of their opponents, who, as practical men, tear the arguments of the theorists to pieces. We are always under the impression that we have the best of everything in the way of railway appliances and we have good reason for our belief, but that there is room for improvement in many particulars there can be no doubt. In the direction of safety appliances there is great opportunity for improvement. No sane person would trust himself on a passenger train not equipped with air, automatic coupler and all the other devices calculated to reduce danger from accident to the minimum. The companies know and appreciate the sentiment of the travelling public, and the best of everything in the way of safety appliances is placed in use as fast as the market can produce them. In fact every demand from the passenger is cheerfully met with ready compliance, but the demand from employees for safety appliances for their protection in handling trains is overlooked. Julian A. Hall, a member of the society of civil engineers, lately contributed an article to the *New York World* in which he pointed out some of the dangers attending railway employment and travel and in which he said:

During the year which ended June 30, 1893, 47,750 people were killed or injured in railroad accidents in the United States. Of these 34,450 were employees, of whom 2,700 were killed and 31,750 were injured. Of passengers and others 4,600 were killed and 8,700 were injured. The average speed of passenger trains was not far from

## Safety on Railways.

twenty-eight miles an hour, and the average dead weight carried for each passenger was between three and four tons.

The foregoing staggering figures show only too clearly that the time has come for railroads to have in view something else besides the paying of dividends at stated intervals. We want the railroads to pay these dividends, if, in so doing, they do not neglect the lives and safety of the people they transport. Life is too short to take any chances, and the railroads should first do their duty by their passengers and employees. The railroads have it in their power to protect the lives of the people they transport, and they should do it.

Railroad accidents in this country, while they destroy many lives, cost a great deal of money; that this cost can be reduced is beyond doubt, and if the railroads will not do it voluntarily, a way should be found to induce them to do it.

The man who makes an effort to reform railroad construction and suggest methods by which accidents on railroads can be made less frequent, places himself in a position where he may be severely criticised by civil engineers, unless they understand beforehand what is meant. At first sight these gentlemen will say that they are now doing all that can be done to make railroad transportation safer and more comfortable, and believe they speak the truth. The owners of the railroads are the ones who are remiss, and why? Because the money the railroads make must be saved for dividends, and therefore cannot be used for betterments.

I have known a chief engineer to recommend the renewal of perhaps a dozen main-line bridges, giving estimate of cost of each renewal. His report, on being forwarded to headquarters, was overhauled and pulled to pieces. Should railroad owners conclude they can spend only a certain amount for a given improvement, the engineer's estimate is made to fit their appropriation, and the work is done apparently without regard to which bridges are most in need of renewal. A serious accident may happen before another appropriation is made on this account. The passenger, who has paid his money for safety as well as transportation, is of course blissfully ignorant of his danger.

It is not probable that owners of railroads will prove willing listeners on this subject, and they will promptly offer a multitude of reasons showing why the suggestions for improvements are unreasonable and impracticable. But it should be remembered that not one railroad owner in ten is a practical railroad man, and that his views of these innovations are from the capitalist's standpoint, and should not, therefore, cut any figure with the paying passenger.

As a practical railroad man, I maintain that it can serve only a good purpose to review the conditions which make possible the terrible accidents of which we so often read, and if any improvements in construction and maintenance can be thereby gained I shall feel well repaid.

First of all, it is beyond question that the American roadbed is unstable and weak. Our embankments are too narrow on top. When a run-off occurs the train tumbles down their sides with scarcely less speed than off a bridge. The embankments should be made broader at top and bottom, and heavy masonry culverts built under them where there is a possibility of high water.

Many times trains are delayed several hours by washouts which should never have been allowed to happen, and would not have happened had the embankment been properly built and protected. People put up with this sort of thing years ago, but now the case is far different. Delays are inconvenient to all passengers and expensive to many, and in addition the excuses made by the railroad people are not consoling when it is remembered that such accidents could have been avoided.

Excavations should be wider and their sides very flat in order to avoid the possibility of slides. All trees, stumps and boulders near their edges should be removed to prevent their falling on and obstructing the track.

Crossings of the track should be above and below grade, and the chance of collision with other trains, vehicles and foot passengers thereby avoided.

Sidings should be so located as to allow plenty of space between them when trains are moving each way at the same time. A few trials of railroad people for manslaughter would reduce the number of accidents resulting from tracks being too close together.

But worse than all is it for tracks to be located on a grade so that cars can be blown or run by gravity from them on the main line. Horrible accidents have been caused by these so called wild cars on the main lines.

All of the foregoing are physical defects, and need never exist, if a little judgment is displayed in the location and construction of the railroad.

Most people deem a railroad a public highway. This idea should be rooted out of the public mind by fencing each side of the tracks from beginning to end, and by careful policing to keep off strangers and cattle. These fences and the policing would cost money, but so do the lives of the people and the cattle killed, not to mention the probability of serious accident in a collision with an obstruction.

The present style of cattle guard comes nearer being a cattle trap than a cattle guard, and sometimes an animal gets hung on one and stays there until a train comes along and grinds it to death. Every engine driver knows the danger of derailment from such a cause, and breathes more freely when he has passed over the obstruction.

If the Cruelty to Animals Society would analyze the cattle guard question and cause a good guard to be used it would increase its already valuable services.

Our bridges are many of them weak and of such construction that they could be easily destroyed by fire, flood or derailment, or by a collision on them. In Europe the bridges are many times stronger than ours. Are European more valuable than American lives?

The masonry supports for our bridges should have solid foundations; otherwise high water may wash them away, and when the unwarned train comes along, perhaps a dozen passengers are drowned or seriously injured.

Iron and steel are so cheap nowadays that the use of wood in bridges and trestle is unwarranted. Wooden structures are liable to be burned or washed away. But whether such structures are wood or iron they should be regularly inspected by competent men, who should bear in mind that they can inspect a structure better by climbing over it than by glancing at it from the rear end of a fast-flying train.

Drawbridges are a source of great danger, and should never be used when it is possible to build other ones. We frequently hear of serious accidents from drawbridges being improperly open.

On the other hand, navigable water-ways should not be crossed in such a manner as to obstruct the free passage of vessels. The railroads should build bridges providing proper headway for vessels, and where they are not disposed to do this voluntarily, the government should see that justice is done to navigation. Shipbuilders, however, should design their vessels to as to cause the least possible expense to railroads, by as far as possible requiring less head-room or by folding down their most prominent projections, and this will no doubt be done when steamers entirely replace sailing vessels.

The present plan of railroad tracks is very defective. The use of wooden ties should be abandoned, as the rails cannot be attached to them in a substantial manner. A system of track should be devised in which the rail is firmly and safely supported, and which will at the same time remain stationary. Our rails are now easily spread, turned over, torn up or broken, and when an accident is caused by this defective construction, especially on bridges and trestles, there is little chance to save the train from destruction.

The track spikes, which are used to hold the rails to the ties, are entirely inadequate for the purpose, and besides, the present plan of construction is so weak that the lives of the passengers are placed at the mercy of any evil disposed person, who can easily pull out a few spikes and then stand by and see the train destroyed and the passengers killed. The impact of the wheels on the rail, works the spikes loose, and on almost any railroad spike after spike can be seen with heads raised half an inch above the base of the rail, which of course renders the spike useless.

Our rails should be heavier. On trunk lines not less than 100 pounds per yard is necessary to perform the work required of it. Our present light rail seems to be not even properly inspected, as I have seen all sorts of fractures in steel rails that had passed reputable rail inspectors.

But before we get to increasing the weight of our rail, a system of rail fastenings should be devised that will make the rail joint equal to the strength of any part of the

## Safety on Railways.

rail. A rope is no stronger than its weakest point, and therefore the rail need not be stronger than its joints.

The railroad traveler stands a poor chance for his life when he is dashing along at the rate of fifty or sixty miles an hour over a rail that is too light and sometimes badly made and brittle, with weak joints and sometimes insecurely attached to weak and often rotten supports.

The reciprocating action of our steam locomotive causes it to pound our track to pieces and limit our speed. Why cannot we have in its place an electric motor than will not deafen us with its shriek and blind us with its cinders and dust? Why can we not get out of the ruts we are in and not drift on in an unsatisfactory groove, simply because it was hollowed out for us by some one who went before? The fact is our track should be straight, and when capitalists are willing to spend the money to secure this, we will travel 150 miles an hour.

It is contrary to common sense and mechanics for the present plan of cars, high, top-heavy affairs, to remain on the rails when they are so close together, particularly on curves, the outside rails of which are not properly elevated to allow for centrifugal force. The gauge should be widened; we can then construct wide cars, so they will not turn over and the sides smash in when derailed.

Another very weak construction is the style of wheel in use under our cars. I have often wondered how many railroad travelers know that only about one square inch in section of wheel may be imperfect metal-casting and is all that stands between them and physical destruction. The present car wheel, heavy as it is and strong as it appears, is a source of serious danger, but it will not soon be improved by the makers, so long as railroad companies demand cheap wheels, which are bought usually by purchasing agents, who are not often expert in the strength of materials.

Our cars should be so constructed that they will not telescope and crush or burn in collision; we should, therefore, use strong and fire-proof materials, such as steel, india-rubber, etc., such materials will give greater strength, durability, lightness, safety and capacity for greater speed.

Our systems of heating and lighting the average railroad car are simply barbarous. True, electricity is used in sleeping, dining, parlor and private cars, but these are only for high-priced travel. Nearly all other cars are heated with stoves and lighted with oil, both of which promptly set fire to a wreck and add the torture of burning to the pain of broken heads and legs.

Passenger trains are generally equipped with airbrakes but few freight cars have them. All railroads should use such brakes on these cars, as it is simply barbarous to force human beings to risk life and limb on their tops in order to use the old-fashioned handbrake. Hundreds of poor fellows annually lose their lives by falling from wet and slippery cars. Air-brakes and automatic couplers should be placed on all freight cars.

A veritable Juggernaut is our present system of coupling cars by hand. Those who enter a railroad company's service as car couplers sign an agreement not to go between the cars to couple them, but a brakeman is only human, and after a few days he is apt to violate his agreement. At last he goes once too often and is crushed to death. The only way to cure this trouble is the use of automatic couplers.

All passenger cars should be vestibuled, so that people passing from one car to another while the train is in motion will not fall off. The present style of vestibuling cars seems good, and certainly many accidents are prevented by it.

Inefficient and careless employees are often the cause of accident. Unless men know that actual danger exists they are not apt to take decided precautions for safety, or, in other words, when they have neglected required precautions several times with no bad results, they are apt to neglect them habitually, and then, nine times in ten, the worst happens.

It is the usual custom on railroads to discharge men when they are the cause of accidents, even inadvertently, but some roads do not think this best, and experience often shows this belief to be a sound one. The man who has caused an accident or knows he has come near causing one, will be more careful in future if he is properly talked to by his superior and allowed to keep his position.

Railroad employees should be treated as reasonable and sensible human beings, and only such orders given to them as they can obey without risk. Otherwise they will take chances, and accidents of greater or less importance will be the result. A good man may be ruined by lack of judgment in his superiors.

The whole system of railroading is full of danger, but none is so great as inefficient service. Therefore, intelligent men, who take an interest and pride in their work, should, as far as possible, be selected, and promotions should be made with judgment; young or incompetent men should not be placed over older and more experienced ones.

We do many things daily because some one did them before us. Let us have sufficient independence to break away from the old lines, if we have sufficient brains to lay down better ones, and better ones are what must be had.

There is room and a great deal of it for general improvement in railroading, and it is hoped that the railroad managers will not only keep up with the march of the times, but go ahead. Will they do it?

REFERENCE TABLE for evidence submitted before Select Committee of Ontario Legislature, 1885:

Ontario Sessional Papers, 1878, paper 14.

“ “ “ 1885, paper 56.

Ontario Statutes, 1886, cap. 28, page 106.

TABLE OF REFERENCE showing the names of all persons who gave evidence before the Congressional Committee at Washington, U.S.A., charged with a Bill dealing with Railway Couplers and Air Brakes. Taken from U. S. Senate Report No. 1049, 52nd Congress, vol. 5.

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“	Edward A. Moseley	16
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# Safety on Railways.

## UNITED STATES STATUTES AT LARGE.

*52nd Congress, 1891-1893. Vol 27, 1893.*

*Chap. 196.* An act to promote the safety of employees and travelers upon railroads by compelling common carriers engaged in interstate commerce to equip their cars with automatic couplers and continuous brakes and their locomotives with driving-wheel brakes, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that from and after the first day of January, eighteen hundred and ninety-eight, it shall be unlawful for any common carrier engaged in interstate commerce by railroad to use on its line any locomotive engine in moving interstate traffic not equipped with a power driving wheel brake and appliances for operating the train-brake system, or to run any train in such traffic after said date that has not a sufficient number of cars in it so equipped with power or train brakes that the engineer on the locomotive drawing such train can control its speed without requiring brakemen to use the common hand brake for that purpose.

Sec. 2.—That on and after the first day of January, eighteen hundred and ninety-eight, it shall be unlawful for any such common carrier to haul or permit to be hauled or used on its line any car used in moving interstate traffic not equipped with couplers coupling automatically by impact, and which can be uncoupled without the necessity of men going between the ends of the cars.

Sec. 3.—That when any person, firm, company or corporation engaged in interstate commerce by railroad shall have equipped a sufficient number of its cars so as to comply with the provisions of section one of this act, it may lawfully refuse to receive from connecting lines of road or shippers any cars not equipped sufficiently, in accordance with the first section of this act, with such power or train brakes as will work and readily interchange with the brakes in use on its own cars, as required by this act.

Sec. 4.—That from and after the first day of July, eighteen hundred and ninety-five, until otherwise ordered by the Interstate Commerce Commission, it shall be unlawful for any railroad company to use any car in interstate commerce that is not provided with secure grab irons or handholds in the ends and sides of each car for greater security to men in coupling and uncoupling cars.

Sec. 5.—That within ninety days from the passage of this act the American Railway Association is authorized hereby to designate to the Interstate Commerce Commission the standard height of drawbars for freight cars, measured perpendicular from the level of the tops of the rails to the centers of the drawbars, for each of the several gauges of railroads, in use in the United States, and shall fix a maximum variation from such standard height to be allowed between the drawbars of empty and loaded cars, upon their determination being certified to the Interstate Commerce Commission, said commission shall at once give notice of the standard fixed upon to all common carriers, owners, or lessees engaged in interstate commerce in the United States by such means as the commission may deem proper. But should said association fail to determine a standard as above provided, it shall be the duty of the Interstate Commerce Commission to do so, before July first, eighteen hundred and ninety-four, and immediately to give notice thereof as aforesaid. And after July first, eighteen hundred and ninety-five, no cars, either loaded or unloaded, shall be used in interstate traffic which do not comply with the standard above provided for.

Sec. 6.—That any such common carrier using any locomotive engine running any train, or hauling or permitting to be hauled or used on its line any car in violation of any of the provisions of this act, shall be liable to a penalty of one hundred dollars for each and every such violation, to be recovered in a suit or suits to be brought by the

United States district attorney in the district court of the United States, having jurisdiction in the locality where such violation shall have been committed, and it shall be the duty of such district attorney to bring such suits upon duly verified information being lodged with him of such violation having occurred. And it shall also be the duty of the Interstate Commerce Commission to lodge with the proper district attorneys information of any such violations as may come to its knowledge: Provided, that nothing in this act contained shall apply to trains composed of four wheel cars, or to locomotives used in hauling such trains.

Sec. 7.—That the Interstate Commerce Commission may from time to time upon full hearing and for good cause extend the period within which any common carrier shall comply with the provisions of this act.

Sec. 8.—That any employee of any such common carrier who may be injured by any locomotive, car, or train in use contrary to the provision of this act, shall not be deemed thereby to have assumed the risk thereby occasioned, although continuing in the employment of such carrier after the unlawful use of such locomotive, car, or train had been brought to his knowledge.

Approved—March 2nd, 1893.

## Safety on Railways.

TABLE showing number of employees, passengers and others killed and injured by accidents on Canadian railways from 30th June, 1886, to 30th June, 1895, both inclusive, compiled from annual reports of Minister of Railways and Canals for said years.

Year.	Occupation.	Killed.	Injured.	Total.
1886	Employees .....	66	432	
	Passengers and others .....	78	139	
		144	571	715
1887	Employees .....	84	512	
	Passengers and others .....	94	121	
		178	633	811
1888	Employees .....	101	614	
	Passengers and others .....	130	162	
		231	776	1,007
1889	Employees .....	85	636	
	Passengers and others .....	125	239	
		210	875	1,085
1890	Employees .....	83	678	
	Passengers and others .....	134	160	
		217	838	1,055
1891	Employees .....	65	582	
	Passengers and others .....	134	236	
		196	818	1,014
1892	Employees .....	109	700	
	Passengers and others .....	124	179	
		233	879	1,112
1893	Employees .....	70	526	
	Passengers and others .....	146	182	
		216	708	924
1894	Employees .....	69	521	
	Passengers and others .....	142	173	
		211	694	905
1895	Employees .....	49	488	
	Passengers and others .....	138	170	
		187	658	845
	Total killed and injured .....	2,026	7,450	9,473
	Total employees .....	781	5,689	
	Total passengers and others .....	1,245	1,761	

60-61 Victoria.

Appendix (No. 2.)

A. 1897

# REPORT

OF THE

SELECT STANDING COMMITTEE

ON

# AGRICULTURE AND COLONIZATION

SECOND SESSION, EIGHTH PARLIAMENT

1897

*PRINTED BY ORDER OF PARLIAMENT*



OTTAWA

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

1897



# Agriculture and Colonization.

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## THE COMMITTEE.

(THOMAS BAIN, Esq., *Chairman.*)

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Talbot,  
Taylor,  
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Tucker,  
Turcot,  
Tyrwhitt,  
Wilson,  
Yeo.

# Agriculture and Colonization.

## REPORT.

The Select Standing Committee on Agriculture and Colonization submit their Third and final Report, together with the evidence taken at the several sittings of the Committee, annexed hereto, and as forming a part of this report.

The investigations of the Committee have been conducted under two divisions, viz. :—Agriculture, including dairying ; and the diseases of domestic animals, including quarantine.

On the first named division, agriculture, including dairying, the Committee have had before them, on evidence, Professor James W. Robertson, Commissioner of Agriculture and Dairying ; and the following officers connected with the Dominion Experimental Farms, whose headquarters are at the Central Experimental Farm, at Ottawa : Dr. William Saunders, Director ; Dr. James Fletcher, Entomologist and Botanist ; Mr. John Craig, Horticulturist ; Mr. Frank T. Shutt, Chief Chemist ; and Mr. A. G. Gilbert, Manager of the Poultry Division. Also from the Branch Experimental Farms : Mr. Angus McKay, Superintendent of the Indian Head Farm ; Mr. S. A. Bedford, Superintendent of the Brandon Farm ; and Mr. Thomas A. Sharpe, Superintendent of the Farm at Agassiz.

### COLD STORAGE.

The evidence of Mr. Robertson, Commissioner of Agriculture and Dairying, was mainly on the subject of cold storage, followed by a brief statement in regard to the employment in Great Britain of canvassers for customers for Canadian products, and the establishment and management by the Government, of creameries in the North-west Territories of Canada.

Speaking of the arrangements which have been made by the Department of Agriculture to provide cold storage, Mr. Robertson indicated the uses of cold storage. He said that the values of perishable food products depended mainly upon their condition, being determined largely by the daintiness of their flavour, and the niceness of their appearance. The climate, soil, and available labour in Canada are suitable for the production of the highest grade of food products ; but in order that the farmers may obtain the highest prices for them, they must be protected in their best condition until they reach the ultimate consumers.

The chief uses of cold storage in agricultural commerce are (1), to preserve commodities and thus avoid direct loss ; (2) to prolong the marketing season or period of consumption ; and (3) to enable the owner to choose his own time for selling. In planning a system of cold storage the interests of the producer, buyers or collectors, carriers or transportation companies, distributors and consumers, have all to be taken account of.

He stated that the Secretary of the Department of Agriculture of the United States had announced that his department also would make provision for landing butter from

the United States in Great Britain by cold storage conveniences. The value of the twelve main food products imported into Great Britain from all countries in 1896 was \$600,296,866. The Commissioner pointed out that the exports of butter from Canada had increased very greatly since 1894, since which time some provision was made for cold storage chambers on steamships.

Mr. Robertson stated that arrangements had been made for insulated chambers and mechanical refrigerating plant upon seventeen steamships sailing between Montreal and Great Britain during the current summer ; and intimated that negotiations are in progress to provide cold storage on steamships from St. John, N.B., and Halifax, N.S., for London, England.

In the matter of providing cold storage buildings, the Commissioner gave evidence on methods of insulation and cooling ; also on the storage of ice for cooling purposes. He said that of all insulating substances known, air held perfectly still was the most efficient. Building paper was used to hold the air still in spaces in walls, ceilings and floors ; and odorless lumber was used in construction to protect the paper.

The Commissioner gave detailed information on the provisions which have been made for paying a bonus to the owners of those creameries who provide efficient cold storage at their creameries. Plans showing how a building can be thoroughly insulated and cooled were prepared and sent from the Department of Agriculture to all applicants. When the regulations are complied with, the bonus to be paid in three sums, viz. : \$50, during the current year, and \$25 each in 1898 and 1899.

Regard has been had to the desirability of having cool storage for cheese, and cold storage for eggs and poultry destined for the market of Great Britain.

Provision has also been made for the carriage of dressed meats in cold storage ; and negotiations are in progress between the Department of Agriculture and one of the large firms in Ontario, looking towards making trial shipments of dressed meats, this season. Special provision has been made for trial shipments of fruits, such as grapes, pears, peaches and tomatoes, and a cold storage building has been erected at Grimsby, Ontario, for that purpose.

Arrangements have been made with the railway companies for refrigerator cars fully iced, to be run regularly on their main lines into shipping ports such as Montreal, Quebec, Halifax, St. John and Charlottetown.

Cold storage inspectors have been engaged to examine the cold storage buildings, railway cars, and cold storage chambers on the steamships. One of these inspectors, stationed in Montreal, will see that any through shipments, intended for a steamer having cold storage accommodation, but which may miss the steamer, are stored in a proper cold storage building until the next steamer with cold storage accommodation, goes out.

The Commissioner stated, also, that the Minister of Agriculture had authorized the engagement of two men in Great Britain to look after the distribution of perishable food products there, to canvass for customers, and to give information in reference to Canadian products.

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He outlined, also, to the Committee the plan which had been adopted for the establishment and management of a number of creameries in the North-west Territories, and added that it was expected that a portion of the butter made in these creameries would be sent to Great Britain to be used for the introduction of fresh-flavoured Canadian creamery butter in places where hitherto it has not been known ; and incidentally the butter would be used to make known the resources of the North-west Territories and the opportunities which that country offers for successful farming.

### AGRICULTURE.

Mr. Saunders, Director of the Dominion Experimental Farms, gave evidence of great value, covering many branches of the work in progress on all the experimental farms. He explained the nature and results of numerous experiments which have been carried on, to determine the usefulness of ploughing down green crops, for the improvement of land and maintaining its fertility. In this connection, he showed the great value of clover for this purpose, particularly recommending Mammoth Red Clover to be sown with grain crops, in the proportion of ten pounds of seed to the acre, and estimated that a crop of green clover, one year from planting, was, when ploughed under, almost equal in benefit to the land, to a dressing of ten to twelve tons of barn-yard manure, per acre.

He also referred to the results obtained at the Central Farm from the special fertilized plots, where the effects of different sorts of fertilizers on particular crops, are tested, showing that the best results had been obtained from the use of barn-yard manure, and that it was a great advantage to apply this whenever practicable in a fresh condition.

The Director furnished also explanations regarding the methods which have been adopted at the experimental farms, to find out what varieties of cereals were best adapted to the needs of farmers in the different and widely separated sections of the Dominion. This information is being derived from a series of uniform tests which have been established at all the farms where the same varieties of grain have been grown under similar treatment, and the dates of ripening and weight of crop of each ascertained. The results have shown a great difference in the yield of varieties, due, it seems, to their natural vigour and vitality. The average yields of the more important cereals both in Canada and Great Britain were mentioned, from which it would appear that Canadian farmers, as a whole, might by more careful treatment and selection of seed, utilize their lands more profitably than they are now doing. From the evidence submitted, it seems clear that the question of selection of the best and most prolific sorts of seed, by our farmers, is one of very great importance. The value and usefulness of the many sorts of cross-bred grain which have been produced at the experimental farms were also spoken of and specimens shown of some of the most promising varieties. Some of these varieties have exceeded all other sorts grown at the experimental farms, in weight of crop, and have manifested much vigour and adaptability in their growth.

The free distribution of three pound samples of grain, among farmers, for the improvement of seed was spoken of, and the good effects already apparent from this important branch of the work, referred to. About 36,000 samples have been sent out during the present season.

The tests of sowing cereals at different dates, to find out the best time for seeding, were furnished, and show great advantages arising from early sowing of grain. In the growing of roots also, it was demonstrated to be of great advantage to sow early.

The results of many experiments in the growing of flax were given, conducted alike on all the experimental farms. These tests were designed to give information on the best time for sowing flax, and the quantity of seed which should be sown per acre to produce the best crop.

Experiments in growing trees for shelter and timber, also for ornamental purposes were presented, and many particulars given regarding the progress of this important branch of the work at all the farms. At the Central Farm there are now more than 20,000 trees under trial; and at the North-west farms much larger numbers, and their usefulness for shelter and wind breaks have been demonstrated.

Feeding tests which have been conducted during the past year, under the supervision of the Director, with steers and swine, were also fully furnished in detail, and the relative advantages of the several rations under trial for the economical production of beef and pork, pointed out many facts which will be very useful to Canadian farmers, have been carefully worked out in reference to the fattening of stock.

The Director stated that, experiments instituted by him have been in progress for several years past, with the view to producing new varieties of fruits hardy enough to endure the climate of the North-west were also referred to by him, and interesting details given concerning the progress of this work, in the improvement of crab apples, wild plums and sand cherries.

The salient points of the experimental work in progress on all the branch farms were pointed out, and some particulars furnished as to the results obtained. At these branch farms an effort is made in all cases, to take up first, for investigation, those difficulties and problems which are of the most pressing importance to the settlers living in those sections where the farms have been located.

Mr. James W. Fletcher, Entomologist and Botanist of the Dominion Farms, gave valuable evidence which establishes the encouraging fact that scientific treatment of all the insect and fungous pests that have hitherto appeared in this country, carrying with them incalculable loss to the general farmer and horticulturist in every department, has thus far, in every case, overcome the invaders, and that only intelligent perseverance is now required, by the application of spraying and other established remedies applied by his department, at numerous points all over the country, to render these destructive visitors almost innocuous.

The statements of the Botanist as found in his evidence annexed in relation to fruit-bearing shrubbery, ornamental shrubbery, and useful grasses now cultivated on the Experimental Farm, together with flowering plants which have stood the test of climate, are of much value in order to ascertain before going into expenditure what species of these various classes are likely to prove successful in any specified locality. He says that information on these points sought by letter to his department, invariably receives attention by reply.

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Mr. John Craig, Horticulturist of the Dominion Experimental Farms, pointed out that as the result of study and careful testing of climatic conditions and the adaptability of varieties to these conditions, considerable changes are going on with regard to fruit growing practices and the classes of fruits now cultivated in some of the principal districts of Ontario and the Eastern provinces generally. In southern Ontario, where apples were formerly profitable, peaches, grapes, pears and small fruits are taking their place, and in northern Ontario, the apple area is extending.

The year 1896 from the fruit growers' standpoint was characterized by an extraordinary yield of apples in all portions of the Dominion, and of pears, plums and grapes in southern Ontario.

The advantages of spraying to prevent insect and fungous diseases had been pressed during the year, both by precept and example. The large yield of fruit, he is of opinion, is undoubtedly due, in part, to the fact that the practice is now becoming more general, and steadily extending. The Horticulturist gives the cost of spraying at from \$4 to \$6 per acre, and his estimate is that the cultivator receives on an average, 20 to 50 per cent increased return, in improved quality from his investment in systematic spraying.

Of noxious insects that have made their appearance during the year, the most injurious, if allowed to spread, is that of the San Jose Scale, but as the appearance of this new pest, in Canada, is thus far confined to two small sections of country, it is hoped that the prompt means recommended will be adopted and found amply successful to prevent its further spread. Some other troubles of a minor and local character with grapes and stone fruits conclude the list, under this head, for the year.

A reference to Mr. Craig's evidence will exemplify many other points of great interest in the way of rendering investments in orchard crops at once more profitable and secure to the investors. Of these important points in progressive horticulture are found, resort to orchard cover crops; mulching to retard blossoming; experiments with evaporating fruits for preservation; and the preservation of grape juice from fermentation for an indefinite period will be found recorded in succession, in Mr. Craig's evidence annexed, all of these tests carefully conducted will be found to be of very great value to such as are pursuing horticulture for profit.

Mr. Frank T. Shutt, Chief Chemist of the Experimental Farm, showed by many interesting examples, the importance of the application of the science of chemistry to agricultural operations, so as to obtain the largest possible return of crops for the labour expended; to conserve the soil from undue exhaustion, and how best, in view of necessarily close economy in cost, to restore the elements of fertility once drawn from the soil. In this connection, he lays much stress upon the ploughing down of green crops, particularly clover, which he demonstrates to supply to the soil, by drawing from the atmosphere, one of the most costly elements that enters into the composition of fertilizers, and one that forms an indispensable supply to the growth of all ordinary crops.

The chemist's explanation on the comparative values of green and barn-yard manures, and a like comparison between barn-yard manure when applied to the soil fresh, and when rotted, and as to how far rotting may be carried on without loss of the elements

of fertility composing it, will be found valuable in guiding the farmer in his practical operations, particularly as these tests have been worked out by actual experiments on the Central Farm.

The numerous samples of well waters sent to the laboratory at the Central Farm for test of their qualities, is a valuable phase of the practical use of the laboratory to the farming community, but the large percentage of these waters which, Mr. Shutt says, he has found by careful chemical analysis to be utterly unfit for human use, suggests a condition in domestic economy that seriously threatens the public health, and calls for attention, in order, as far as possible, to provide remedies.

Mr. A. G. Gilbert, Poultry Manager, furnished interesting results obtained from experiments conducted by him, during the last year, with a given number of fowls of assorted breeds. These experiments give the quantity, kind and cost of rations supplied to the selected fowls at different seasons of the year, and the value of the products obtained as returns of eggs and chickens produced; and the prices realized for these in the markets. These experiments were conducted with a view to having eggs for sale at the season of the year when prices rule highest, and in like manner chickens ready for the market at the season of best demand for broilers.

These combined experiments are furnished in Mr. Gilbert's evidence in the form of debit and credit account, and will be at least interesting as going to show how far poultry keeping may be made profitable as an adjunct to the farm.

Reference has already been made to the appearance before the Committee of the Superintendents of three of the Branch Experimental Farms. The statements of Mr. McKay, of the Indian Head Farm, and of Mr. S. A. Bedford, of the Brandon Farm, were similar as to methods and experiment, though describing local conditions somewhat dissimilar, owing to the distance separating their individual spheres of location. There appears to be an almost singular uniformity of success crowning the labours of the experimenters at each of these farms, in the direction of overcoming climatic and other special difficulties, that at the early settlement of Manitoba and the North-west Territories, appeared insuperable to farmers accustomed to the methods and conditions of successful tillage in the old provinces. The chief difficulty dreaded by the pioneer farmers in the west is that of prolonged drought in the growing season. That climatic difficulty is found to be successfully and reliably overcome by summer fallowing of the soil. Tree planting, commenced on the experimental farms as object lessons to the farmers of the country, has proven largely successful, and this encouragement stimulates rapid development, until now in many places long shelter belts protect field crops from the effect of heavy winds, and at other places plantations are formed in clumps, designated "wind brakes."

The effect of forest planting is already being beneficially felt on the face of the great prairie country, once bare of wood for even domestic use. The continuance for a few years more of successful, persevering, forest planting can scarcely fail to add vastly, in many important respects, to the living comforts of Canada's wide western country, whose natural fertility of soil is not excelled the world over. The testimony of these two gentlemen (Messrs. McKay and Bedford) as to the most gratifying success of the attempt to grow the Awnless Brome grass (*Bromis inermis*) in the Territories cannot

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but be pleasing to all interested in that magnificent and large portion of the Dominion, as well as being an additional and substantial inducement to intending immigrants who wish to come in and settle down to agriculture, whether stock raising, *per se*, or to mixed farming. The general experience heretofore was that the natural meadows were being exhausted, and in many cases were too far distant from the farms to be practically available, and that the natural prairie grass was becoming insufficient to supply the increasing demands upon it.

Here were two serious obstacles looming up, in relation to the supply of both fodder grass and grazing; but on the testimony of these two gentlemen, from their important position in scientific agriculture, the Awnless Brome grass comes in just when required, and it is thought that, for both fodder and grazing purposes, solves the problem of abundant stock feeding material in the Territories for all time to come.

It is a grass found to be at once succulent and palatable and farm stock is found to relish it whether in the grass state or cured into fodder, and as a feed alternative with timothy grass, experiment has shown it to be a valuable adjunct to feeding, wherever it has been tried. This evidence on the value of the Awnless Brome grass is verified by the united testimony of Dr. Saunders, the Director, and of Dr. Fletcher, the Botanist.

To such as contemplate the possibility of taking up homes on the fertile plains of the great western territories of Canada and wish for material from which to form an intelligent estimate of their chances of success, the evidence of Messrs. McKay and Bedford, annexed hereto, will each be found to contain valuable and reliable information on the prevailing condition of successful farming in that wide field now inviting agricultural enterprise. The information will be found equally valuable to intending immigrants from Europe, or to such of the Canadian people of the old provinces as may desire to enlarge their present sphere of activity.

Mr. Thomas A. Sharpe, Superintendent of the Experimental Farm at Agassiz, also appeared before the Committee, and presented facts of interest as to the climatic conditions in relation to fruit growing and general agriculture in British Columbia.

The farm at Agassiz is devoted almost exclusively to experiment with fruit growing, although experimental work in grain growing and root cultivation has not been overlooked. Though but ten years have elapsed since Mr. Sharpe commenced to reclaim the land from its natural uncultivated condition, he says there are now about 125 acres under crop, and a great deal planted in fruit trees, of which about 15 acres are of mountain area at different elevations. There are on the farm about 70 acres under fruit situate on the lower level of the farm; and on mountain areas 10 to 12 acres are also under fruit; and altogether, there are in the farm over 2,000 varieties of fruits under cultivation. The farm consists of 320 acres of valley land and about 800 acres of mountain land, ranging from 800 to 1,200 feet high. Situated as this area is, within a most hospitable climate, and the varied elevations of the foot-hill lands, rising in succession from low river valley lands, it is thought that those varieties of elevation will aid very materially in giving opportunity for experimenting at various normal temperatures of atmosphere.

As to climatic conditions, character of soil and other circumstances affecting agricultural prospects in Southern and Central British Columbia, the evidence of Mr. Sharpe, hereto appended, will be found to furnish much valuable information in concise form.

#### DISEASES OF ANIMALS AND QUARANTINE.

On the second part of the investigation before the Committee, viz., Diseases of domestic animals and quarantine, the Committee had Dr. McEachran before them, two sessions. Tuberculosis in cattle chiefly engaged his attention; its development in our herds and transmission to the human subject by the use of milk and the flesh of animals affected by the disease.

He states that, after mankind, cattle are most susceptible to the disease. Swine come next. Sheep very little. Poultry are highly susceptible to its attacks, and horses but rarely. The presence of one affected animal in a stable where the disease is in the lungs, is a fertile source of its distribution through a herd of cattle, especially when housed for the winter. Milk from a diseased cow, distributes it readily to the human subject, not only when consumed fresh in the family but also when supplied to the creamery.

Dr. McEachran believes that in proportion to the number of our cattle, that Canada is as free from this disease as any other country in the world, but recommends that, to avert future trouble, active steps should be taken to prevent its further spread in our herds and to exterminate it when found.

He suggests that all male animals before being introduced into new herds should be subjected to the tuberculin test, and be accompanied by a certificate from a competent veterinary that they have successfully stood the test, and that herds should be tested where its existence is suspected and, where found, that infected animals should be isolated or destroyed.

Milk, being fluid, lends itself to easy and complete sterilization, and if exposed to a temperature at which water boils, it will become perfectly sterile and may be used without danger of tuberculosis. Unfortunately it is seldom that milk is used in that way.

In destroying animals affected by tuberculosis, it is not necessary to condemn the meat in all cases as unfit for human food. In France, Germany, Great Britain and the United States, it is the practice to allow the meat to be sold where the disease has been local and not widespread through the carcass.

That the Minister of Agriculture for the Dominion and the Hon. Mr. Dryden, Minister of Agriculture for the province of Ontario, both of whom were present and heard the evidence given by Dr. McEachran, are alive to the interests of the farmers and dairymen in this matter will be seen by a reference to their views as expressed before the committee, and the best means of dealing with the problem is engaging their serious attention, will be shown by a perusal of their remarks appended to this report.

Dr. McEachran, as chief inspector of stock quarantine, spoke also of the modifications of these regulations between the United States and Canada effected last December.

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Previous to that time a valuable market was practically lost to Canadian breeders of thoroughbred stock, because animals intended for the United States had to be placed in quarantine on their entry into that country and kept there for three months, and the same provision applied to animals brought from there into Canada. Exporters of cattle, too, were debarred from shipping to Great Britain from United States ports.

The result of the negotiations between the Minister of Agriculture and the Secretary of Agriculture at Washington, was that cattle for breeding purposes are passed to and from each country without quarantine, on production of a certificate from a competent veterinary surgeon that they had been subjected to the tuberculin test, and found free from tuberculosis.

Cattle for ranging purposes, settlers' cattle, and cattle for export at the ports of both countries, are also passed on simple inspection; this being a friendly arrangement, mutually beneficial to both countries and especially valuable to Canadian shippers of cattle to Great Britain.

The quarantine agreement with the United States is appended in full in the evidence of Dr. McEachran, and will be found worthy of perusal for the details, not only relating to cattle quarantine but to all kinds of stock, while the disinfecting of cars, the use of the tuberculin test, and notes on a variety of other diseases to which our stock are subject, make his evidence as appended well worthy of perusal.

He further stated that when Dr. Montague was Minister of Agriculture, on a visit to England, a report was circulated in Liverpool that Canadian horses landed there, were suffering from glanders, and an effort was made to induce the British Government to schedule Canadian horses.

Under the Minister's orders then, a system of inspection for horses was established at the ports of shipment and an Order in Council regulating the same was passed in May, 1896, to prevent the export of horses affected by glanders, which has since been kept up, and all horses showing any such symptoms are not allowed to be exported.

From the limited time at the disposal of the committee towards the close of the session, with the pressure of other work on the members, the committee were unable to deal with the colonization branch of their work.

All of which is respectfully submitted.

THOS. BAIN,  
*Chairman.*

Committee Room 46,  
House of Commons, 23rd June, 1897.



Agriculture and Colonization.

THE EVIDENCE

PART I

AGRICULTURE INCLUDING DAIRYING



# Agriculture and Colonization.

COMMITTEE ROOM, 46,  
HOUSE OF COMMONS, THURSDAY, 6th May, 1897.

The Select Standing Committee on Agriculture and Colonization met at 10.30 o'clock a.m., this day, Mr. Bain, chairman, presiding.

Mr. JAMES W. ROBERTSON, Commissioner of Agriculture and Dairying, was present by request, and on invitation addressed the Committee as follows:—

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE,—In speaking of the arrangements which have been made by the Department of Agriculture to provide cold storage, it may be well to spend a minute or two in referring to the uses of cold storage, that it may be seen that those arrangements are necessary, and that they are applicable to the conditions under which the producing of foods is carried on in this country now. I may make the remark that the ultimate object, as well as the primary purpose of agriculture, is to produce foods. The surplus of foods of various kinds, forms the basis of commerce in Canada.

## VALUES DEPEND UPON CONDITION.

Every food commodity has two values, (1) an exchange value, according to which it can be exchanged at a certain rate for other things, and (2) an intrinsic or food value. These values are different and independent of each other. Cold storage has to do with regulating both to some extent. I may illustrate by saying that a standard grade of wheat when in good condition has always the same intrinsic or food value. A given quantity of it will always make the same quantity of flour or the same number of loaves of bread, and it can nourish the same number of people. The intrinsic or food value of a bushel of wheat does not change except as its condition changes. The intrinsic or food value of a pound of butter does not change, except in so far as its condition changes; and when its condition changes to the lessening of its food value, its exchange or market value is greatly reduced. Within the limits of the current market prices, its condition rather than its composition determines its value. The actual exchange value, or range of market prices, is affected and settled by many causes and circumstances which need not be touched upon here. At one time a man can exchange a bushel of wheat for so many more pounds of groceries than at another time. That part of the question is not touched by cold storage, except in so far as cold storage will preserve the quality and fine condition of a perishable food product, and thus give it a higher intrinsic value, with a consequent higher exchange value in the same market at the same time, than it would have had if it had not been so preserved. The value of food products depends chiefly upon their condition, and not upon their composition. We have been going on the assumption that the composition of a food was what regulated its value. We have a climate and a soil which give us a chance to make fine food products; but we have not been getting the best results owing to the fact that they are always being spoiled, from the day they are produced until they reach the consumers. This is especially true of such perishable food products as butter, meat, eggs, poultry and fruits; but if we realize the expectations which have been formed, the system of cold storage arranged for, will protect them from deterioration until they reach the ultimate consumers. The market value of nearly all these things is determined by the daintiness of their flavour and the niceness of their appearance. A pound of butter has as much fat in it, if it smells strong and looks mussy, as if it smells nice and looks neat. The composition does not determine the value; but the condition, the appearance, the flavour, and the colour do determine almost entirely the value of all these fine

food products. The production of these foods is not and never can be made profitable, unless followed by the use of means for their preservation ; so that the consumers, no matter where they live, will get them in as nice a condition as when they left the hands of those who produced them.

#### THE USES OF COLD STORAGE.

Many men look upon cold storage as some men looked upon the silo,—as having in itself some creative power whereby a farmer who used a silo would become rich without effort on his own part. Cold storage has no creative power ; it does not create wealth. It merely preserves what is already wealth, and prevents it from becoming a loss. It has no regenerative magic ; it cannot bring back to a good condition what is already spoiled. It merely can keep what is put into it in a practically unchanged condition for a prolonged period of time. It has three chief uses in agricultural commerce. The first is to preserve commodities and thus avoid direct loss. The second is to prolong the marketing season or the period of consumption. For instance in the case of butter the marketing period is not more than ten days, unless the butter be somehow preserved. The marketing period for strawberries is not more than five days after the berries are picked unless they be somehow preserved. If the season for marketing and consumption can be prolonged, the producer has just so much better a chance to get rid of his goods at a high price. The third use is to enable the owner to choose his own time for selling. Anyone who knows anything of commercial or manufacturing affairs knows what a great advantage it is to a man to be able to choose his time of selling, and not to be compelled to sell whether he will or not at an unfavourable time. The whole of the cold storage plans are intended to provide conveniences for conveying perishable products from the producers to the consumers in their best condition. So far as they do that, they will prevent loss to the producers, will give the consumers better articles, make them consume more of them, and incline them to pay higher prices. When the producers get their share of those higher prices, they will produce more and have more profit.

In all profit-making in Canada, different interests are concerned ; and in considering and planning a system of cold storage, all these interests have to be taken account of. (1) There are the interests of the producers—those who grow fruits, those who make butter, those who provide meats, those who rear poultry, those who market eggs. (2) There are the interests of the buyers or collectors of these products—not identical with those of the producers, but so bound up with them that the one cannot be seriously damaged without the other being hurt. (3) There are the interests of the carriers or the transportation companies—who carry these products from the place of production to the place where they are distributed from. (4) There are the interests of the distributors—provision merchants or fruit merchants. (5) And, finally, there are the interests of the consumers. Any plan that does not provide for helping all these interests to avoid loss, is just so far incomplete ; and in so far as it helps all of them to prevent losses or deteriorations, it gives every one a chance for more profit, and leaves more real wealth in the country. The middlemen are quite as essential to profitable agriculture in Canada as are the producers ; and any carelessly worded remark to the effect that the middlemen should be brushed away, is to my mind a threat to the wealth-producing capacity of the country.

#### THE BRITISH MARKET FOR FOODS.

How can cold storage be used ? So far as the Department of Agriculture has been making arrangements, cold storage has been provided mainly and almost only for food products intended for export. Incidentally encouragement has been given to the establishment of cold storage warehouses in cities so that those who live in cities may get better products, and those who supply these products may get better prices. But the Department of Agriculture is mainly concerned in this regard in doing what it can to improve the export trade. I have exhibited a table of figures to illustrate what a demand there is in Great Britain for food products which are susceptible of being improved and increased in value by cold storage methods.

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## THE UNITED STATES AFTER THE BUTTER MARKET.

In support of the statement that Great Britain is the market to which perishable food products from all civilized lands on the surface of the globe are sent, I shall read—what no less an authority than the Secretary of Agriculture of the United States,—is reported as saying about butter :—

Shipments abroad will be made in the future, and it is necessary to ascertain for our people what the world's market wants, and when we speak of the world's market we mean the English market. The English bought \$65,000,000 worth of butter last year. The United States supplied perhaps 1 per cent of it. Denmark supplied over \$28,000,000 worth. The United States furnished the cow food to the Europeans who made the butter for British consumption.

The Secretary goes on to say that he proposes to carry into effect for the United States practically what the Department of Agriculture has already done for Canada. He proceeds :—

It is proposed that the information be obtained for the American butter makers by purchasing first-class creamery butter in different localities of the United States, having the butter put up in different kinds of packages—the regulation 60 pound tub, the Australian foot square box, sealed tin cans, &c. The agents of the Department will see to the transfer from the refrigerator cars to the refrigerator steamboats in New York, and ascertain whether provision is made there for the proper care of butter while crossing the Atlantic. If not, the Department of Agriculture will have boxes made to protect the butter in transit from bad odours that might come from meat, fruit and other products.

When the butter arrives in London it will be met at the wharf by an agent of the Department and put on the market. It will be ascertained what packages suit the British public best—whether there is too much salt or too little ; whether there is too high colour or too low colour ; how our best butter sells there in comparison with the Danish butter. The whole history of the transaction will be written up, from the maker to the consumer, and this process will be repeated again and again, and instructions given to our makers until the butter wanted in the British market can be regularly supplied here by the average creameryman.

This information will be given to the dairymen of the United States through farmers' bulletins which will be sent to every State in the Union, and, if possible, to every dairyman in the Union, by the Department of Agriculture.

The following table shows the demand in Great Britain for the food products of Canada. The figures of the value of imports of these twelve classes of food products are eloquent of possible, and I think most probable, increase in prosperity for farmers in Canada. They indicate a market not of sixty millions, but of six hundred millions of dollars, for exactly the commodities this country can produce in abundance and excellence :—

Table showing the Values of Food Products imported by Great Britain, and the proportion thereof imported from Canada, for the Years ended 31st December, 1895 and 1896, respectively.

ARTICLES.	Values in 1895.	Values in 1896.	IMPORTS FROM CANADA.	
			1895.	1896.
	\$	\$	\$	\$
Wheat, barley, oats, flour, etc . . . . .	241,986,692	256,924,457	7,335,599	+
Animals (living)—for food . . . . .	43,635,759	50,801,669	8,052,294	8,438,094
Dressed meats . . . . .	114,109,534	118,509,650	4,608,904	+
Cheese . . . . .	22,752,299	23,848,749	14,220,505	12,601,265
Butter . . . . .	69,326,786	74,674,537	536,797	1,653,421
Eggs . . . . .	19,483,437	20,364,892	524,577	866,904
Fish . . . . .	14,495,226	15,635,199	2,974,850	3,724,081
Fruit (raw) . . . . .	23,680,290	*15,429,249	1,711,769	+
Lard . . . . .	14,317,446	11,037,741	103,833	+
Milk, condensed or preserved . . . . .	5,273,320	5,705,836	+	+
Potatoes . . . . .	5,693,620	4,418,325	556	+
Poultry and game . . . . .	2,945,112	2,946,562	6,845	+
Totals . . . . .	577,699,521	600,296,866	40,076,529	+

\* Not including oranges and lemons.

I will call attention to two matters. In the very large item of \$114,109,534 in 1895 for dressed meats, the share of Canada was a comparatively small one. Nearly the whole of that supplied by Canada was in the form of hams and bacon, and not in the form of fresh dressed meats.

In the article of cheese out of an importation of \$22,752,299 worth in 1895, Canada supplied \$14,220,505 worth, whereas in 1895 out of an importation of butter by Great Britain of \$69,326,786 worth, Canada supplied only \$536,797 worth. To my mind the reason—not perhaps the sole reason but the chief reason—why we supplied so little butter and so much cheese, is because cheese does not get injured in being carried at an ordinary atmospheric temperature. It can be carried all the way without being spoiled, whereas butter has been spoiled. There is nothing in the climate, the grass, or the people that is more favourable to cheese than butter; and there is just as much skill in Canada to make butter as there is to make cheese. But until 1895 there were no means whereby butter that was made in Canada could be sent safely to Great Britain. It arrived there in a deteriorated condition, and therefore got us a low grade of customers and a low grade of prices. We had a small chance on the market. These are the figures for 1896 as far as they are available. They are taken from the British Trade Returns for the year ending December 31st. We have gained a good deal in butter from the figures of 1895; and we will go on increasing in much larger quantities during the coming years.

#### COLD STORAGE ON STEAMSHIPS.

Perhaps the most important link, at least one of the very important links, in the chain of cold storage that may be provided, is the cold storage on the ocean steamships. In 1895 an effort was made to provide cold storage chambers to be cooled by the use of ice. That was in a measure satisfactory as far as it went. The same practice was continued last year and was in a measure satisfactory. It was a great improvement upon the methods that were followed before; but it was not entirely satisfactory and was not sufficient. By direction of the Minister of Agriculture arrangements have been made for mechanical refrigeration upon 17 steamships leaving Montreal this summer. They will provide safe and reasonably cheap carriage, for perishable food products during the season.

#### SAILINGS FROM MONTREAL.

(1) A weekly cold storage service is to be given from Montreal to London jointly by the Allan and Thomson lines of steamers. The agents in Montreal are: For the Allan line, Messrs. H. & A. Allan; for the Thomson line, Messrs. Robert Reford & Co.

(2) A weekly cold storage service is to be given from Montreal to Avonmouth for Bristol by the New Dominion line. The agents in Montreal are Messrs. Elder Dempster & Co.

(3) A nearly weekly cold storage service is to be given jointly by the Allan and Dominion lines from Montreal to Liverpool. The agents in Montreal are: For the Allan line, Messrs. H. & A. Allan; for the Dominion line, Messrs. D. Torrance & Co.

(4) A nearly fortnightly cold storage service from Montreal to Glasgow is to be given jointly by the Allan and Donaldson lines. The agents in Montreal are: For the Allan line, Messrs. H. & A. Allan; for the Donaldson line, Messrs. R. Reford & Co.

Intending shippers may learn the names of the steamships, the exact dates of sailings and other particulars, on inquiry from the agents of the several lines.

That gives 17 steamships plying regularly on the St. Lawrence route to be thoroughly fitted with mechanical refrigerating plant and insulated compartments. A little more cold storage space is provided on them than is likely to be used this year, but no more than will likely be fully occupied by cargoes next year.

(5) Negotiations are in progress, but agreements are not yet signed, to provide fortnightly cold storage service from St. John and Halifax to London.

(6) Negotiations are in progress for a monthly cold storage service from Prince Edward Island to Great Britain.

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These will provide a safe outlet with cheap transportation for the perishable products of all the provinces; Ontario, Quebec and the western provinces having facilities through Montreal and the city of Quebec; and the maritime provinces through St. John, Halifax and Charlottetown.

The agreements call for insulated compartments, with mechanical refrigerators of the best kind, including duplex machines, so that in the event of a break-down of one part, the other part can continue during the voyage. The agreements provide that the companies shall not charge more than 10 shillings per ton extra for the cold storage service. That is a very small charge, less than 10 cents per 100 pounds on the products carried. Regulations have been made also with regard to the allotment of space, and as this matter is for the immediate information of the Committee, and expected also to be for the guidance of shippers, I would like to mention the regulations in full, as inquiries have come from all parts of Canada as to the facilities afforded. I shall read that particular clause:—

### ALLOTMENT OF SPACE ON STEAMSHIPS.

(a.) It is agreed that about one-half of the cold storage space on each steamship—or such proportion of the cold storage space on each steamship as a recognition of the interests of all the shippers shall indicate as being a fair proportion for the shippers in Montreal—shall be reserved for cargo in cold storage locally engaged and shipped at Montreal, until three days before the sailing of the steamship.

(b.) In cases where the space available for cargo from Montreal is not sufficient for the quantity of cargo offered, the said space shall be allotted to the several shippers on a basis pro rata.

That is to say, even if one man wants to monopolize the space, he can only get his fair share.

*By Mr. Wilson:*

Q. Is that a rule for those who come early or late?—A. The space is to be allotted three days before the sailing of the vessel.

Q. And then what is left shall be divided up?—A. No; applications are received up to three days before the sailing of the vessel. If the applications are not sufficient to take all the space, everybody gets a full allotment. If, however, the applications are for more than the capacity, then every one gets his fair share.

(c.) To entitle shippers from Montreal to a share in the allotment of space, the applications shall be made in writing to the steamship agent at least three days before the sailing of the steamship, and the applications for space for shipments from places other than Montreal shall be made at least four days before the sailing of the steamship.

(d.) In all cases fresh-made creamery butter shall have a preference over other cargo.

(e.) Space sufficient for two carloads of products, which may be indicated by the Minister of Agriculture as being products sent forward as trial shipments, shall be reserved on each steamship, if notification be given to the steamship agent seven days before the sailing of such steamship.

(f.) The expenses for special fittings or accommodation required for such trial shipments are to be paid by the Department of Agriculture, but if such fittings become part of the permanent cold-storage equipment of the steamship, they are to be counted as a part of the initial cost of fitting the steamship with cold-storage chambers, and are to be settled for on the basis agreed to in that connection.

(g.) When the Department of Agriculture reserves a portion of space in any steamship for trial shipments, the Department shall pay freight charges at such a rate as the space would have earned at the current charge for butter and cheese.

*By Mr. Broder:*

Q. Whether occupied or not?—A. Yes. The freight charged for all cold storage chambers is based upon the current rate for butter and cheese, that being a safe basis. Other products will be carried in the cold storage chambers at a rate of freight based upon what the space they occupy would have earned at the freight rate on butter and cheese.

If required by the Government, steamers from Montreal, fitted with mechanical refrigeration, are to call at Quebec to take on board not less than five hundred packages of butter, cargo to be delivered alongside steamer in the river, promptly on arrival of steamer from Montreal.

*By Mr. McNeill :*

Q. Have you made any computation of what the probable cost of our grapes would likely be for freight?—A. Yes. The whole freight charges on the ocean on butter and cheese are a little less than half a cent per pound; and the rates on all other products are to be based upon the amount which the space occupied by them would have earned if filled by butter or cheese. Grapes would occupy about the same number of cubic feet per ton as cheese and butter. I shall have occasion to mention them again.

*By Mr. Wilson :*

You mean ocean rates?—A. Yes, including cold storage.

*By Mr. Broder :*

Q. Part of that to be paid by the Government?—A. No; nothing of that is to be paid by the Government. The steamship company may charge the shipper ten shillings a ton, in addition to the current freight charge for cheese and butter going without cold storage.

Q. That is added to the ordinary freight, and you say that the Government does not pay for that?—A. No; the shipper pays the extra charge of ten shillings per ton.

Q. Then the Government does not save the shipper any cost at all?—A. The financial arrangements with the steamship agents will be given, I suppose, by the Minister of Agriculture when the estimates are discussed, and therefore I am not to touch on that at present. The Government has arranged with the steamship companies, and the Government pays a considerable part of the initial cost of fitting the steamers with cold storage plant in order to get these favourable terms for the shippers. I am informed that the extra charge for cold storage on steamships from the Atlantic ports of the United States, is often three or four times as much as the maximum which may be charged Canadian shippers as arranged for by the Department of Agriculture.

#### INLAND COLD STORAGE.

It would not have been wise on the part of the government to provide cold storage chambers on the steamers, unless such steps as could be taken, were taken to ensure that the products, when they got to the steamships were in an undeteriorated condition. It would be throwing money away to carry products to the cold storage chambers on the steamships in a partly spoiled condition. Bulletins giving as precise information as possible on the principles of construction for cold storage buildings have been prepared and distributed. These principles are little understood, and a knowledge of them would be helpful to the people of Canada. By our correspondence I find that only a few of the persons in Canada who had cold storage buildings, had an understanding of the principles underlying the construction or management of cold storage premises. With most people it was a rule of thumb all through. The insulation of a cold storage building is perhaps the most essential part. The cooling process is not difficult of application; but the great loss is from the penetration of heat from the outside into the interior. From experiments conducted to ascertain what proportion of ice would be consumed in cooling the contents of the building, and what proportion would be consumed by heat which came through a well-insulated building, it was found that seven-eighths of the ice was consumed in counteracting the heat influences from the outside, and only one-eighth was used to cool the contents of the building. A bulletin dated January 16th, 1897, was issued giving directions for the insulation of buildings and I will substitute part of it for what I might not say so concisely, clearly or fully in speaking from notes.

#### INSULATION OF BUILDINGS.

The insulation of a cold storage building should make it as nearly air-tight as practicable. A cold storage room should not be larger than is actually necessary.

An insulating material is any substance which prevents or almost wholly prevents the passage through itself of the form of energy known as heat. Different substances

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conduct heat more or less rapidly, and are spoken of as being good conductors or poor conductors of heat. Whatever is a good conductor of heat would be a very poor insulating material; and a substance is a good insulating material in proportion as it is a poor conductor, or non-conductor, of heat.

For the insulation of a cold storage building the requirements are that the interior of the room or rooms, where the products are to be stored, shall be separated from the ground and from the ordinary atmosphere by efficient insulating substances. Among these are wood, paper, and still air, such as air confined in hollow spaces formed by lumber and paper, or by some other insulating materials, such as mineral wool, dry sawdust, or dry wood shavings. If the sawdust or other material becomes saturated with water, it loses its insulating qualities and becomes practically a heat conducting material, like a body of water.

Air in circulation is practically always conveying heat or cold, and is one of the best distributors or carriers of heat or cold. But it is slow to convey heat, except by its own motion, and thus it becomes an insulator which offers the greatest obstruction to the transference of heat through itself, when it has not freedom to circulate.

The insulating efficiency of hollow spaces in the walls depends upon the closeness of their construction. If the air in them can circulate, to that extent their insulating quality is lessened. To prevent the circulating of air, every precaution should be taken in putting on the building-paper to make the places where it laps thoroughly close; and two layers of building-paper should be put on the outside of the rough boards on the studs.

Building paper is an excellent insulating material. It is practically air-proof, and thus prevents circulation of air through itself; but if the places where it laps over, in being put on, are not made perfectly close, that air-proof quality is lost. Particular pains should be taken in putting the building paper on, to see that it is not torn at any place and that there are no holes in it. Whenever a hole appears a patch should be tacked on, making that part close. Two layers of building paper should be used between the two boards which make the inside lining of the refrigerator room.

It is necessary that the paper used should be free from all offensive odour. Tar paper is not suitable. It should be strong, and it is preferable that it should be water-proof and vermin-proof. Different qualities of paper cost different prices. Paper suitable for use may be purchased, costing from \$2 to \$4 per 1,000 square feet.

The hollow spaces between the rough boards on both sides of the studs should be filled at the bottom to a depth of 6 inches with mineral wool. If put in carefully, mineral wool will hold the air in confinement and prevent it from getting in or getting out.

If the spaces in the wall could be filled from bottom to top with mineral wool, the insulation would be all the more thorough; but that would add unnecessarily to the cost of the building. Mineral wool is vermin-proof. If sawdust should be used in its stead, the insulating quality of the sawdust would be satisfactory; but sawdust is apt, after a few years, to become musty, and to give off smells which would taint butter. It also becomes a harbour and nesting place for mice and rats. Mineral wool can be bought for about \$15 per ton in large quantities; it may cost more when bought in small quantities. One hundred pounds of it will pack from 40 to 45 lineal feet of wall, 6 inches deep in the hollow space, 6 inches wide between the studs. The cheap quality of mineral wool is suitable for this purpose, and wherever practicable it is of advantage to have 6 inches of it at the bottom of every hollow space to prevent any air from getting in or out.

The layers of paper, and the hollow spaces in the sides of the wall, should in every case be continued around in the ceiling without interruption. If the walls be finished up past the ceiling and then the ceiling be brought against them, touching only the inside of them, the air may find admission inwards and outwards through cracks or slight openings between the ceiling and the walls. Where the layers of building-paper and the hollow spaces in the wall are continued around without interruption in the ceiling, the insulation is thorough and air cannot get out or in at the corners.

The layers of paper in the walls should also, where practicable, be brought down under the top thickness of the flooring lumber. If an opening occurs in the floor, or

between the floor and the walls, then the cold air of the refrigerator will flow out through that, as water would flow out of a vessel if a hole existed in the side or bottom of it.

The lumber for insulation should be spruce, basswood, hemlock, or other wood free from objectionable odour. No pine or other wood of strong odour should be used. All rooms should be whitewashed inside before being used for storage purposes.

When the door of a refrigerator room is opened into a chamber or place where the air is warm, the cold air of the refrigerator flows out quickly, and the warm air of the other place flows in. To prevent injury from that cause to products which may be held in a refrigerator, it is recommended in every case that a receiving room or ante-room be constructed. The doors of it may be closed before the doors of the refrigerator are opened. Each door should be of double thickness. A door should be hinged on both the inside and the outside of each wall. Attention to these small matters will permit the refrigerator to be kept at a uniformly low temperature for the preservation of its contents. If butter be cooled to a temperature of even 35° Fahr. during 22 hours of the day, and left to warm up to 45° Fahr. during the other two hours, the injury to the butter lessens its keeping qualities and its commercial value. The same is true of other perishable food products.

With this bulletin, part of which I put in as evidence, we have prepared a large number of blue prints, such as those on the table. We have sent out 1,216 copies; and there has been a large correspondence which as far as practicable has been educational in character, giving those who need this service, information how to provide it for themselves.

#### COLD STORAGE AT CREAMERIES.

I come next to special cold storage at creameries. It was found essential that the creameries should have conveniences for protecting their butter against injury by heat from the time it was made, otherwise the butter would start on its journey to any market in a rather bad condition. If advice or information only were given to creamery men probably one in ten would take it, and act upon it this year. Probably two in ten next year. That process of providing cold storage accommodation would be slow. Instead of that the Department of Agriculture arranged, after Parliament had voted a certain sum last session, to offer a bonus of \$100 to the owner of any creamery who would provide a suitable cold storage building. The announcement was as follows:—

To encourage the owners of creameries to provide the cold storage accommodation which is so desirable, the Government will grant a bonus of \$50 per creamery to every creamery which provides and keeps in use a refrigerator room according to the plans and regulations during the season of 1897; the Government will pay a bonus of \$25 per creamery to every creamery which provides and keeps in use a refrigerator room according to the plans and regulations, during the season of 1898; and the Government will pay a bonus of \$25 per creamery to every creamery which provides and keeps in use a refrigerator room according to the plans and regulations, during the season of 1899.

It will thus be seen that the owner of a creamery who provides the necessary refrigerator room, and keeps it in use according to the regulations during the years 1897, 1898 and 1899, may receive a bonus of \$100 per creamery.

*By Mr. Wilson :*

Q. Are there many taking advantage of that?—A. So far, blue print drawings have been sent to 348 persons. We have no assurance that all have used them; but my impression is that about 250 have. We estimated for about 200 creameries. The outlay for the current year may exceed the estimate by about 50 creameries.

#### INCREASE IN EXPORTS OF BUTTER.

To show the very rapid gain in the export butter trade, with such imperfect cold storage on the steamships only as could be obtained, I may say that from the Port of Montreal in 1894 there were sent out 32,055 packages of butter; 69,664 packages

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were shipped in 1895; and in 1896 the quantity was 157,321 packages. That was a fair rate of increase in the butter trade. Taking the quantities and values imported into Great Britain in the calendar years of 1894, and 1896, these are the facts.

Quantities and Values of Butter, Imported into Great Britain, during the Calendar Years 1894 and 1896.

(Taken from British Returns.)

Countries.	1894.		*1896.	
	Quantity.	Value.	Quantity.	Value.
	Lbs.	\$	Lbs.	\$
Canada .....	2,339,344	438,589	9,895,984	1,653,421
Australia and South Australia.....	167,104	36,140	+	+
Victoria.....	21,324,576	4,565,425	17,344,880	3,745,849
New South Wales.....	3,873,072	807,258	871,024	183,431
New Zealand.....	7,350,112	1,550,398	6,313,776	1,352,437
Other British Possessions.....	182,112	21,666	†	+
United States.....	3,359,552	612,942	15,853,936	3,095,288
Russia.....	8,870,512	1,907,461	+	+
Sweden.....	29,826,272	6,880,391	36,268,848	8,101,467
Norway.....	1,757,056	374,723	+	+
Denmark.....	123,479,216	28,440,576	137,623,808	30,603,581
Germany.....	15,428,560	3,421,072	2,076,400	2,609,731
Holland.....	18,497,584	4,048,828	26,260,528	5,629,449
Belgium.....	4,253,424	911,634	+	+
France.....	47,560,240	11,445,753	52,371,312	12,350,092
Other Countries.....	112,784	26,412	25,369,568	5,439,791
Total.....	288,381,520	65,489,268	340,250,064	74,674,537

\* Subject to revision. † Included in "Other Countries."

The imports of butter from Canada in 1894 were \$438,589, whereas the imports in 1896, were \$1,653,421, a gain of about one and a quarter millions of dollars in two years, with an appreciable advance in our relative place, as to price, in the British market. Now is the time for Canadians to try to capture that market. It has been seen by some of us for three or four years that there was bound to be a tremendous increase in the demand for butter in the British markets; and many countries are trying to so place their butter as to secure the preference there. In 1894, which is as yesterday, the British imports of butter amounted to \$65,489,268; whereas in 1896, two years later, the value was \$74,674,537, or a gain of over \$9,000,000 in two years. Now it is for us to look out and get a share of the increase, if that only, of the imports of those markets. We should try to capture the whole of the increase annually; and with favourable conditions for shipping our butter, and the British preference for things Canadian, we have a good chance to more than double our exports annually for years to come.

*By Mr. McNeill:*

Q. It is making a good market for itself?—A. Excellent; in some cases at prices over the Australian and next to the Danish.

There is a good deal said about the great increase in the exports of butter from Victoria. That colony arranged to give a bonus for five years, beginning in 1889 and ending in 1894. In 1894 the British Trade Returns give the imports from Victoria at \$4,565,425. Since that time Canada has gained one and a quarter millions of dollars, and Victoria has lost over three-quarters of a million of dollars.

*By Mr. Sproule :*

Q. Is that because the bonus stopped?—A. Not wholly because of that. — It was to some extent by weather and a little by the market prices.

In assisting cold storage for the creameries, the Government offered the bonus of \$100, payable in three years, provided certain conditions were complied with. I might repeat here, that in order to have creamery butter in a perfect state when it is delivered to the consumers in Great Britain, it should be protected in cold storage from one day after it is made. As the Government had decided to arrange for what will be practically a chain of cold storage service from the producers in Canada to the consumers in Great Britain, it was necessary that the owners of the creameries, the manufacturers of butter and the farmers who furnish the milk and cream should all co-operate to bring about the best results. Very few creameries were until this season equipped with sufficient or efficient cold storage accommodation. A bulletin was prepared giving information on the storage of ice and the improvement by thorough insulation of existing storage rooms. Part of it was as follows :—

#### THE STORAGE OF ICE.

In the storage of ice, particular care is required to prevent waste by melting.

Ice is melted only when the temperature is above 32° Fahr. The increase in temperature comes from some source external to the ice. When a lump of ice is left lying on the ground in warm weather, it is melted by the heat from the ground on which it lies, and by the heat from the air which surrounds it. To prevent ice from being melted by the heat of the ground or the atmosphere, insulating materials of different sorts have been used. An insulating material for this purpose is any substance which prevents, or almost wholly prevents, the passage through itself of the form of energy known as heat. Different substances conduct heat more or less rapidly, and are spoken of as being good conductors or poor conductors of heat. Whatever is a good conductor of heat would be a very poor insulating material ; and a substance is a good insulator in proportion as it is a poor conductor, or non-conductor of heat.

For the preservation of ice during the summer, the requirements are that the ice shall be separated from the ground by some insulating substance, such as dry sawdust, dry shavings, or air in hollow spaces formed by wood and paper, or by some other insulating material. If the sawdust or other material becomes saturated with water, it loses its insulating qualities. It becomes then practically a heat conducting material, like a body of water. The ice should also be protected from the heat of the atmosphere when the temperature is higher than 30° Fahr.

An efficient form of a cheap floor for an ice-house is made by using 12 inches of cobble or broken stones, covered with coarse gravel or sand. The top of that should be covered with 6 inches of dry sawdust. The sawdust becomes an insulating layer, preventing the warmth of the ground from melting the ice. Where dry sawdust is not available, a layer of dry straw, chaff or hay, 12 inches thick before the ice is put on it, may be used instead. The floor should prevent air from getting in or out, and yet should permit ready drainage of any water from melting ice.

To prevent the sides of the mass of ice from being melted by the influence of the atmosphere, it is sufficient to use a building of simple balloon frame, covered by one thickness of clapboards outside, to keep any rain from wetting the insulating material which surrounds the ice. The outside wall of an ice house is more effective to protect the contents of the building from the heat of the rays of the sun, when it is whitewashed, or painted almost white. If the inside of the studs of the balloon frame be sheeted with one thickness of inch lumber, the hollow space between the clapboards and the inside sheeting will be a flue for the circulation of air and will prevent the sun's rays, where the building is exposed to them, from warming the inside of the walls enough to make an appreciable difference in the temperature of the insulating material which lies between the walls and the ice. Dry hay and straw when packed fairly close between the ice

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and the wall make excellent insulators. They do not conduct water by capillary movement as readily as sawdust. When a layer of sawdust, between the ice and the sides of the building in which it is kept, becomes wet on the side next to the ice, the water or dampness is likely to permeate the whole of the sawdust, and thus to destroy its non-conducting properties. Fine hay and straw are preferable; but when they are used care should be taken to have them thoroughly dry. A serious risk in the use of hay or straw is that they may contain small particles of ice, or snow. When hay or straw are used in such a way, with small particles of ice, hail or snow mixed with them, these melt and make the whole of the insulating material damp. To that extent they lessen its efficiency.

For the covering of the top of the ice a layer of sawdust, one foot thick, is sufficient, if it be put on dry and left undisturbed. When sawdust has to be moved frequently for the taking out of ice from time to time, the warmer portion of the sawdust lying near the surface becomes mixed with the other portions and may be put back close to the ice. That causes a slight melting of the ice; and the dampness thus caused makes the layer of sawdust wet, and to that extent destroys its insulating properties. For that and other reasons, notably convenience in removing and replacing, it is desirable to use a layer of clean, dry, fine straw or hay 18 inches thick as a covering on the top of the ice. When the hay or straw is removed from a part of the surface, to permit ice to be taken out, it may be put back again with little waste of ice and almost no loss of the non-conducting qualities of the covering.

Where ice is covered with a layer of sawdust, or hay, or straw to preserve it from melting, provision should be made for ventilation over the top. The covering layer might become heated otherwise; and if the rays of the sun beat on the roof of the ice-house, and there be not sufficient ventilation, in the gable ends or on the roof, to allow the heated air to escape, that part becomes practically a mild-tempered oven for melting the contents of the building.

Fifty pounds of ice, when packed, may be taken to occupy one cubic foot of space. Therefore, every 40 cubic feet of capacity in a building is equal to the holding of one ton of ice. Where the wall of the ice-house is not insulated, the ice should be packed in the building 12 inches from the inside of the walls, and that space, as well as the space between the studs, should be packed full of thoroughly dry, fine hay or straw, entirely free from ice chips and snow.

For the filling of the ice-house a slide of strong planks may be made; and a rope passing through a pulley inside the ice-house can be used for pulling up the blocks of ice. It is important that the ice should be packed as closely as possible. Any spaces between the blocks should be packed full of broken ice in order to prevent the presence or circulation of air around the several blocks.

Drawings were prepared, and blue-print copies were sent to all applicants, showing (1) the form of construction for a small ice-house, (2) an ice-house and refrigerator such as ought to be attached to an ordinary creamery, and (3) the insulation to be put inside the walls of an ordinary cold storage room at a creamery, to entitle the owner to the government bonus.

### FORMS OF APPLICATION TO BE FILLED UP.

The regulations for the payment of a bonus require that every creamery owner must fill up a form, stating the nature of the insulation of his cold storage room. Copies of bulletins containing information as to insulation have been sent to each one, so that if they fail it is not for lack of information.

*By Mr. McGregor :*

Q. Will they not be inspected?—A. Yes; but it is difficult to inspect all before the butter-making season begins.

The form must also show a record of the daily temperature in the cold storage room, kept by the butter-maker and attested by two witnesses, who are willing to certify that they believe his statements to be correct. That is not so much to hedge about the

Department for the safety of its bonus as to require the butter-makers to keep correct records for their own benefit. The quantity of butter is to be not less than 15,000 lbs. from the 1st of April to the 1st of December at each creamery. The number of applications so far received for plans come to 348, of which 139 came from Ontario; 132 from Quebec; and 77 from other provinces. Some of these are from others than owners of creameries.

Even when the butter is preserved in cold storage, there are a few other matters which need to be emphasized to farmers and others. The Department has published full and detailed information on the art of making butter; but with the butter made properly, comparative failure results when the packages are not suitable in shape, size and appearance.

#### PACKAGES FOR BUTTER.

*By Mr. McGregor :*

Q. What should the package be like?—A. Butter for export should be put up in square boxes 56 lbs. net—the British half hundredweight. The square box is a neat cheap package, gets the preference in the English market, is stronger and takes up less space than the tub, and leaves the butter in convenient shape when it is taken off.

*By Mr. Carscallen :*

Q. What sort of wood should be used for those boxes?—A. Spruce.

*By Mr. Campbell :*

Q. How about Bass wood?—A. Bass wood will do, but I do not like it as well as spruce. Pine wood should not be used at all. I found an instance of what injury the odour of pine may do, in visiting one of the cold storage buildings in Manitoba when I was up there in February. I found the building admirably arranged for keeping the butter cold, but it was lined throughout with pine; and every package I saw which came through that building last summer had the piney smell and taste. I could not understand it until I found the cause there. Butter seems to have a peculiar proclivity for absorbing the odour of pine.

Mr. McNEILL—And it lasts a long time.

*By Mr. Sproule :*

Q. What thickness should the boards of the boxes be?—A. Five-eighths of an inch, with the corners of the box dovetailed, all joints tongued and grooved, and the inside covered with paraffine wax. Besides the butter maker should line them with very thick paraffine or parchment paper. Last year more than double the value of the paraffine paper used was lost, by the using of thin paper, which stuck to the butter and gave it a bad appearance. The butter makers should guard against using thin flimsy paper. If the butter is two weeks on the way to England, the thin paper sticks to it and when taken off leaves it with a dull appearance. The thick heavy parchment paper comes off and leaves the surface with a sparkling lustre that pleases the buyer's eye. We buy these boxes for 20 cents a-piece and they are gotten up in the nicest form for that price. Every box should be put into a bag. Shippers with years of experience use bags on their tubs; but they seem to think that boxes do not require bags. Butter in boxes that are in bags from the creameries to Montreal, would sell in Britain for higher prices than in similar boxes without the bags. Soiling of the box often happens between the creamery and the railway station and between the railway station and the shipping port; therefore a bag is necessary. Bags of coarse canvas will cost from  $4\frac{1}{2}$  cents to  $4\frac{3}{4}$  cents each.

*By Mr. Campbell :*

Q. That would be made of jute?—A. Yes.

## Agriculture and Colonization.

*By Mr. McMillan :*

Q. How do you convey butter from the creamery to the station?—A. There is no better time to take it to the station than at night, when that can be done. If in the day time it should be covered; a good method is to put some green grass on top of it.

### COOL STORAGE FOR CHEESE.

Provision has been made in the cold storage arrangements for other products besides butter. Accommodation is provided in the steamships for carrying cheese. Information has been given to the owners and those who operate cheese factories on how to apply "cold storage" to cheese rooms during the process of curing. I think in this matter there is room for great improvement and a large saving. The demand in Great Britain has been growing for years for a soft cheese,—a cheese that is rich in body apart from having a large percentage of butter fat in it. It is quite impracticable to send soft cheese to England and have it arrive in good condition by the old carrying methods. If every cheese-curing room had a small ice-house at the end of it with openings for regulating the inflow of cool air, by which the temperature could be kept at 65° Fahr. continuously, a larger quantity of cheese could be made per 100 lbs. of milk. Such cheese would fetch relatively a higher price in England, and also would cause a larger consumptive demand.

*By Mr. McGregor :*

Q. Would it ripen as quickly in cold storage as out?—A. No, not as quickly as at a higher temperature; but the maker should hold the temperature near 65° Fahr. At the Kingston dairy school when formerly under my direction, and now under the care of the Ontario Government, a course of experiments was conducted by Dr. Connell of Queen's University, to show the nature of the bacteria which grow in cheese at different temperatures. As a rule the bacteria which grow in cheese above 65° Fahr., give rise to bad flavours. The bacteria which come from the manure of cattle will not flourish at that temperature. It is highly important that fine cheese be kept at a temperature always under 70° Fahr.

### EGGS.

Some provision has been made for the carriage of eggs. The demand in Great Britain for perishable food products is always a discriminating demand. In this country eggs are eggs; and you seldom hear a housekeeper speak of eggs being small or large. In England eggs are sold in different grades according to their weight by the long hundred of ten dozens. In these matters, apart from the size of the eggs, the British people are very fastidious and discriminating in regard to appearance and condition. The Minister of Agriculture asked me to accompany him to a conference of the egg men in Western Ontario on this subject last winter. A few of the points that were brought to the attention of the Minister of Agriculture were these: It is expected that in July, 35 car loads of eggs will be going forward requiring cold storage on steamships, 50 car loads in August, and 60 car loads in September. They assumed that probably one quarter more would be sent by other shippers from Western Ontario who were not represented at the meeting. Since then by reason of the prospect of an almost excluding tariff barrier erected by the United States, a very much larger proportion of the eggs from Canada must necessarily find another outlet; and that will increase the shipment of eggs to Great Britain very largely through these cold storage conveniences. The temperature on the steamships is desired to be from 38° to 42° Fahr.

*By Mr. McGregor :*

Q. That is about the same temperature as is required for butter?—A. A little higher than for butter. We like it for butter down to 32° Fahr. or under. Some handlers of eggs complain that when the eggs are put in cold storage and taken out again, they acquire a

mussy appearance. They say the eggs sweat. There is no exudation of moisture through the shells of the eggs; but when the eggs are taken from cold storage and exposed in a warmer room, there is a condensation of moisture from the air upon their surface. If the egg cases are left closed for two or three days after they are taken from cold storage, the contents will be warmed gradually, and the eggs will have as nice an appearance as when they were put in. I have seen eggs which did not look more than two days old which had been in cold storage for four months. If they had been exposed at once on being taken from the cold storage chamber, in an English atmosphere especially, they would have looked damp and black.

The shippers desire that a standard of weight for a dozen of eggs be established at  $1\frac{1}{2}$  lbs. per dozen. Large eggs, they say, will keep longer as a rule than small eggs, because the albumen in large eggs is thicker than it is in small eggs. The thinner the albumen the more quickly the yolk of the egg rises to the top, and gives the egg rather a stale and undesirable appearance. Eggs are sold in Great Britain at certain weights per long hundred of ten dozens. One grade is 15 lbs. per long hundred; another is  $16\frac{1}{2}$  lbs. per long hundred. The latter are a very large size. The 30-dozen case is the one that would be chiefly used for export shipments. They cost, complete with paste-board frames, about 22 cents each. About 14 or 15 cases of that size can be carried in what is called a ship's ton of 40 cubic feet. The 30-dozen case is the one that will be generally used in sending eggs to Great Britain. It is called the quarter case, being one-quarter of 120 dozens, which makes a full case as received from European markets.

In the matter of improving our egg trade, I think these three points need frequent repetition until acted upon by all those engaged in carrying on this business. The first is that of frequent and regular collection from the farmers by somebody,—the eggs being brought together and kept in a place where there will be no change or spoiling. The second is that all the eggs should be clean in appearance. Clean eggs bring from one cent to three cents a dozen more in Great Britain than eggs that look dauby and soiled. Three cents a dozen on eggs, when the farmers get only nine cents a dozen, means 33 per cent. Those who purchase the eggs at high prices are bound to have food looking nice on the exterior as well as of good quality inside. The third point is that every producer of eggs should leave out all the doubtful and small ones from those he sells for export. One of the dealers recommends that soiled eggs should be washed. That is Mr. David Moyer of Almonte, who has made a success of this business. In the matter of pickling eggs, it is desirable that they should be pickled in cold storage rooms where the pickle itself will be cold. Pickling protects the eggs against bacteria and other active agents that cause decay by acting through the pores of the shells.

*By Mr. McGregor :*

Q. Would you ship eggs put in pickle?—A. Yes, that is done frequently by large shippers. In this country there is such a large supply of eggs, and such low prices in Great Britain until the end of June, that the shippers cannot ship at a profit until after that time. This state of things requires that the eggs should be preserved somehow; and if to be preserved in pickle they should be pickled in cold storage. I have many applications from egg shippers for a recipe for making pickle. Almost every egg shipper seems to have his own particular recipe for the purpose. In my judgment one thing is all essential for the making of a good egg pickle; it is that the pickle should be of precisely the same specific gravity as the albumen of the egg, so that there will be no exchange of the pickle into the egg, or of the egg into the pickle. A rule of thumb will not give good results. If the egg men would get some delicate densimeters and have a chemist make up a pickle of precisely the same specific gravity as the contents of the eggs it would, I am confident, give satisfaction.

*By Mr. McMillan :*

Q. Is there any difference in the specific gravity of brown and white eggs?—A. There might be a difference in the thickness of the shell. I do not know that there is any in the contents. The point is the specific gravity of the contents of the eggs.

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*By Mr. McNeill :*

Q. Would the specific gravity of the smaller eggs be less?—A. The statement of the egg men is that the albumen in small eggs is thinner than in large ones.

The only other matter in this connection to which I desire to refer, is that eggs should not be stored near any odorous commodity, as they have almost the proclivity of butter for absorbing odours. Especial care should be taken in shipping. In one instance a shipment of eggs was placed near a large shipment of apples on the ship and became almost unsaleable, because it was complained that they had the odour of apples.

*By Mr. Sproule :*

Q. Would it make any difference in pickled eggs?—A. Pickled eggs are not so apt to be affected by odours as other eggs. In the pickling there seems to be a deposit on the shells which tends to fill the pores; perhaps that is the reason why the shells of pickled eggs are almost always burst when boiled.

### POULTRY.

A special bulletin is being prepared on the subject of the production, dressing, packing and shipping of poultry. A great deal of information has been furnished to the Department of Agriculture by the High Commissioner in London. He has sent letters from probably thirty or forty of the leading poultry dealers in Great Britain containing their suggestions and recommendations. The substance of these will be taken out for the guidance of our farmers and will be published shortly. In that matter Sir Donald Smith seems to have become more of a poultry and egg expert than some of us who are more directly connected with the business. The file from his office is filled with apt information for our people in regard to these two products. I have here the addresses of some of the firms in Great Britain from whom letters have been received, and who are desirous to develop the trade with Canadian exporters.

The addresses are: Charles T. Wall & Co., 25 Cumberland Street, Liverpool; James Willcock, 15 Water Street, Liverpool; George T. Stanley, Manchester; Sprigens & Son, 26, 27 and 28 Grand Avenue, Leadenhall Market, London, E.C.; E. Weatherly, 246-248 Central Market, London, E. C. Young Bros., 202 Central Poultry Market, Smithfield, London, E. C. Charles E. Brook & Sons, 39 Leadenhall Market, London, E. C. Howard & Co., Leadenhall Market, London, E. C. Brooke Bros., Central Market, London, E. C. Messrs. Bridgeman, Central Market, London, E. C. W. Weddell & Co., 16 St. Helen's Place, London, E. C. Hasson & Co., 10 and 12 Upper Dawson Street, Liverpool. John Duncan Son & Co., 17 Great Charlotte Street, Liverpool. James Ruddin, St. John's Market, Liverpool. Hodgson Bros., 27 and 29 Stanley Street, Liverpool. Thomas Reilly, Wholesale Fish Market, Manchester. J. Blackburn, 22 Corporation Buildings, Smithfield Market, Manchester. John Lowry, Wholesale Fish Market, Manchester. J. Donaldson, Wholesale Fish Market, Manchester. S. Later & Sons, Wholesale Fish Market, Manchester. W. Harrison & Sons, Wholesale Fish Market, Manchester. Stevenson & Pae, 25 Cochrane Street, Glasgow. J. & T. Sawers, 11-15 Howard Street, Glasgow. James Dineley, of Ellison & Dineley, Manchester. Thomas Anderson, Royal Fish Hall, 58-60 West Nile Street, Glasgow. L. & H. Williams & Co., Bazaar, Glasgow. Spiers & Pond, 38 Newgate Street, London, E. C. Wm. Whiteley, Westbourne Grove, London, W. E. Weatherley, 246, 247 and 248 Central Market, London, E. C. Young Bros., 202 Central Poultry Market, Smithfield, London, E. C. Frank Mayrhofer, 117 Ewart Road, Forest Hill, London, S. E.

The recommendations in these letters indicate that the killing should be done by cutting in the roof of the mouth, while the fowl is suspended by the legs, making it impossible for any mutilation to be seen on the outside, or for the feathers to be soiled by blood. This is held to be a painless method of killing. It also bleeds the fowl completely if the cuttings are made lengthwise, and across, and deep. In every case the bird should be fasted for twenty-four hours or longer before killing.

Cases have come to my notice where poultry have arrived in England in a very damaged condition, caused by the fermentation of food in the crops and intestines, spoiling the whole of the birds, and making them unfit for human food. The English buyers prefer to receive the poultry in the feathers, and not drawn. Of course we have to meet their preference and send the birds in the condition in which they prefer to buy them. Special care should be taken to keep the feathers clean. The birds should be cooled before being packed into boxes. If they are started right, they can now be carried so as to arrive in good condition. I examined turkeys in feather in Liverpool in the winter of 1892, before cold storage was established, and they were selling then by the case at ninepence per pound.

*By Hon. Mr. Perley :*

Q. What about other fowl?—A. Chickens, ducks and geese are prepared differently. Details of the killing and dressing of these will be put into the bulletin. Much of the practical and apt information on the rearing, feeding and dressing, has been supplied by Mr. Gilbert, Manager of the Poultry Department of the Central Experimental Farm.

*By Mr. McNeill :*

Q. Is there any preference as to size?—A. Yes, one of the complaints of the merchants is that there has not been that care in Canada in the assortment of sizes that has been exercised in other countries exporting poultry to Great Britain. Turkeys should be packed in cases, and graded to within two pounds each. For instance, if there are ten birds in a case they should weigh from ten to twelve pounds each; another case might contain birds weighing from fourteen to sixteen pounds each. Birds packed in that way will fetch a higher price per pound, than where they run from ten to sixteen pounds each in the same case. There is no general demand yet in Great Britain for poultry plucked and drawn; but where that is done, for the local trade, the birds should be plucked while warm and dry. Never in any case should the birds be put into hot water. If the bird has a mutilated appearance its value is very much reduced. Special care should be taken in removing the gall so that it will not be burst when the birds are being drawn. Any one going to Canadian hotels will get the gall taste in the poultry. The Englishman will not buy poultry with that flavour. If the gall bursts the whole bird is impregnated with that odour and taste. I think three times out of six I get it in the hotels of Canada. That can be avoided. The heart, gizzard and liver should be put back into the bird.

#### DRESSED MEATS.

Provision is to be made also for the carriage in cold storage of dressed meats, and negotiations are now in progress between the Department and one of the large firms in Ontario looking towards the making of trial shipments of dressed meats this season.

#### FRUITS.

Special provision has been made for trial shipments of fruits, particularly those that have not hitherto been exported with any degree of success, such as grapes, pears, peaches, and tomatoes, which may be called either fruit or vegetable. In 1895 a trial shipment was practically entirely ruined on the railway car between the place it was sent from and Montreal. A cold storage chamber on the steamship had no regenerative magic to bring back what was spoiled, to its primitive condition of excellence.

*By Mr. McGregor :*

Q. Have you inspectors at Montreal now?—A. One is engaged for this season. One of the essential conditions, for the safe carriage of the tender and easily injured fruits, is that they should be thoroughly cooled before they are put into the railway car. If cooled to a temperature of 35° or 36° Fahr., practically all fermentation will be stopped, and the boxes of fruit will not generate heat by their own ripening. When

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fruits are put into cases warm, and these are put directly into a car, the ripening of the fruit generates heat. In that way the fruit will become self-destructive. A cold storage building has been erected at Grimsby, Ont., at the expense of the Department, for these trial shipments. Several of the growers there have agreed to furnish at least one carload per week. The fruit will be thoroughly cooled before it is put aboard the refrigerator cars; refrigerator cars will carry it to Montreal; a special cold storage chamber will receive it on the steamship; and there will be some one in England to look after the reception and distribution of the fruit there. In this way two things will be determined: Firstly, the practicability of shipping this class fruit to Great Britain. It may not be practicable. Pears may decay from the heart. Grapes may lose the bloom on their skins from some cause we do not understand. It may not be practicable. I think it wholly practicable; this will furnish proof. Secondly, we shall learn whether the trade can be made profitable. It might be practicable and not be profitable. These two propositions will be demonstrated; and the fruit-growers can carry on the business afterwards in the light of the knowledge obtained by these experiments. Grimsby was selected because that is the only place where the fruit-growers would guarantee to furnish a carload of such fruit per week. The information gained will be equally available and useful to all the fruit-growing districts in Canada.

*By Mr. MacLaren:*

Q. How many kinds of fruit do you propose to ship?—A. Grapes, pears, peaches and tomatoes.

Q. Not strawberries?—A. No, not this year. After the first year no doubt all kinds of trial shipments will be made. The fruit-growers of the Niagara district have agreed to purchase the cold storage building after three years, if the trial shipments are a success. The Department in the meantime accepts the responsibility of meeting the initial cost of the building, guaranteeing the shippers against loss, and seeing after the shipments.

### COLD STORAGE ON RAILWAYS.

Refrigerator cars fully iced will be run regularly on the main lines leading into the shipping ports of Montreal, Quebec, St. John, Halifax and Charlottetown.

Each car will take up lots of butter and other products requiring cold storage at stations between starting point and destination.

Shippers making use of these refrigerator cars will be charged the regular "less than carload rate" from the shipping point to the destination. No extra charge will be made to them for the cold storage service or for the icing.

Exact particulars as to the time when the cars will leave the various stations can be obtained on inquiry from the local agents of the railway companies.

On the *Canadian Pacific Railway*, the cold storage service will be as follows:—

- Weekly from Windsor to Montreal via Toronto;
- On alternate weeks from Teeswater and Owen Sound, via Toronto, to Montreal;
- Weekly from Pembroke, via Ottawa, to Montreal;
- do Labelle to Montreal;
- do Quebec do
- do Scotstown to Montreal.
- do Warden to do
- do Mansonville to Montreal.
- do Edmundston, N.B., to St. John, N.B.

On the *Grand Trunk Railway*, the cold storage service will be as follows:—

- Weekly from Sarnia, via London, Hamilton and Toronto, to Montreal;
- On alternate weeks, from Warton and Goderich, via Stratford, Guelph and Toronto, to Montreal;

Weekly from Meaford, via Allandale and Toronto, to Montreal ;  
do Orillia, via Belleville, to Montreal ;  
do Chaudière Junction do  
do Massena Springs do  
do Coaticooke to Montreal.

On the *Canada Atlantic Railway* :

If required, weekly from Eganville, via Ottawa, to Montreal.

On the *Quebec and Lake St. John Railway* :

Weekly from Chicoutimi to Quebec.

On steamer of the *Richelieu and Ontario Navigation Co.*:

Weekly from Chicoutimi to Quebec.

On the *Intercolonial Railway* :

Weekly from Rimouski to Quebec and Montreal ;

do Moncton, N.B., to St. John, N.B., and Halifax, N.S.

On *Prince Edward Island* :

Cold storage service such as may be required is to be arranged for from Tignish, Souris, and Georgetown, to Charlottetown.

On the *Dominion Atlantic Railway* :

If required, weekly from Yarmouth, N.S., to Halifax N.S.

*Manitoba and the North-west Territories* :

The Canadian Pacific Railway is to arrange for a refrigerator car service where required in Manitoba and the North-west Territories.

The railway companies have agreed to provide refrigerator cars properly insulated for the protection of the perishable freight which they are intended to carry. In some instances in past years the refrigerator cars have been such in name only. The insulation has not been thorough ; the doors have not been quite close ; cars have not been properly cleaned ; and the pipe through which the water drained from the melted ice opened direct into and out of the car without any trap. That permitted the cold air to flow out, and the cooling influence of the ice was left along 200 miles or less of railway track without benefiting the contents of the car. Drawings have been prepared to show how an ordinary box car can be insulated to give satisfactory service for the carriage of butter and other perishable products on short runs.

It is recommended that the refrigerator cars for the special service arranged for by the Department of Agriculture be painted white, (1) for the sake of increased coolness, as cars painted white radiate the heat of direct sunshine much more than those painted any other colour ; and (2) for the purpose of making them distinctive and calling the attention of shippers, farmers and others who may observe them as they pass along the line with the conspicuous inscription "Government Cold Storage Line."

#### COLD STORAGE INSPECTORS.

The Department has engaged a cold storage inspector. His main duty is to see that the cold storage buildings and cars are in good condition and giving satisfaction to those who use them. We will have another inspector stationed in Montreal to look after through shipments ; and in the case of a through shipment missing the steamer, as may happen through unavoidable delay on the road, he will see that the goods are stored in a proper cold storage building till the next steamer with cold storage chambers goes out. Heretofore, that has not been any one's business, and sometimes cars of butter and cheese have been left on the wharf or in the yards ; and the contents have been damaged. If notice is given to the inspector by the shipper at the starting point, he will see that it is taken care of ; and only the actual outlay for cold storage will be charged forward on the Bill of Lading. It is not thought right that the Government should do more than this free ; no charge will be made for the services of the inspector.

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### COLD STORAGE WAREHOUSES.

Cold storage buildings are now in existence at Montreal; and a grant has been offered to those who will provide suitable and necessary cold storage buildings at Quebec, Halifax, St. John and Charlottetown. The persons providing them are to comply with regulations, it being necessary to have cold storage buildings at the shipping ports. Assistance has been offered towards providing a cold storage building at Toronto. I mention that lest there might be misapprehension as to why scores of places which have applied for bonuses have not received assistance, while Toronto has obtained the promise. Toronto is a great railway centre, and instead of running all the cold storage cars, starting from places in western Ontario through to Montreal, it seemed economical to consolidate the shipments into carload lots at Toronto for Montreal. That is the reason why assistance has been promised at Toronto. One other cold storage building has been provided by the Government. It is at Revelstoke, British Columbia. That is an exceptional case, exceptional in this way: there is a large demand for butter, eggs, poultry and meats throughout the whole mining region south of Revelstoke. Merchants can buy these perishable products at Spokane Falls, and other places in the United States, and have them delivered within 24 hours after they are ordered, while they had to wait four or five days to get them from the Calgary District, in the North-west Territories. With cold storage at Revelstoke, car lots can be sent there, and the products distributed from there to the mining towns in less time and at as low rates of freight as from United States points. The residents of the mining regions will get these things fresh and cheap; and the farmers of Alberta will get the market for these products. That is the other exception to the Government plan for aiding cold storage buildings necessary for promoting and improving the export trade, but not buildings which would be only local in their character and service.

*By Mr. Clancy:*

Q. Is it proposed to aid for local purposes the building at Toronto?—A. It may be used for local purposes; but will not be helped by Government in that respect. The owners may provide local cold storage but the aid from the Department is to obtain accommodation for through shipments.

I am informed the company is fitting a cold storage warehouse many times larger than is required for through shipments; but the grant is only for what accommodation the Government requires.

### CANVASSERS FOR CUSTOMERS.

The Minister of Agriculture authorizes me to state that he has decided to place at least two men in Great Britain to look after the distribution of perishable food products. The Government will not compete or conflict with the regular commercial agencies; but the Government will do what it can, to aid in securing the best possible market in Great Britain for Canadian farm products. I am going over myself shortly for several objects: (1) to see the existing conditions of the markets there; (2) to learn the newest preferences for packages, styles and qualities of goods; (3) to give information to Boards of Trade and Produce Exchanges about the arrangements made by the Government for getting Canadian products into the markets by these new cold storage channels, to try to get rid of the lingering remains of the old prejudice against Canadian butter, and to let them know that a new era has come, with the promise of the very best class of products from Canada in the future; (4) to start one or two men as promoters of trade or canvassers for customers for Canadian products. Two men will be left in Great Britain to carry on the work. I may give the Committee an illustration of what their work will be. One of the men will go, say, to the largest and leading retail provision dealer in the city and say to him: "Canadian creamery butter is the best that now comes to Great Britain." The merchant knowing only the old reputation may say it is not. Then our agent will say: "Let me send you a trial lot of 5 or 10 packages of 56 pounds each at any reasonable price you name." That price need not be the highest market price. By that means he will take into his shop samples of butter from our Government Dairy Stations, see what it is like and induce his customers to try it. The agent would not

offer these samples to repeat another sale from the Government but would say: "You can get Canadian butter of similar quality from these people," giving the names of the importers of Canadian creamery butter in Britain, and the exporters of butter in Canada, or the agents they may have in Great Britain. He will do the same with fruits and other products as far as possible. He will be in a sense a national commercial traveller, not selling for any particular firm, but pointing out that many firms in Canada can furnish the same class of products as he shows samples of.

*By Mr. McMillan :*

Q. Are there any cold storage facilities in Great Britain?—A. The Government has taken no action in providing cold storage in Great Britain; but has ascertained that cold storage accommodation can be obtained there at reasonable rates.

*By Mr. McGregor :*

Q. Can you tell us anything about frozen fish?—A. We have had correspondence and inquiries, but that is not in our Department.

Q. How would you ship it?—A. It would require to be carried in compartments separate from those used for carrying the other products referred to.

Mr. McNEILL.—I wish to say, Mr. Chairman, how very much I approve of the proposal to have these two men in England to push our trade there. I had a little experience when over there last in regard to this matter, which showed how important it is and how likely it is to fill a great want. I was in one of the largest establishments in Belfast and found it was almost impossible to persuade the people of that establishment that we could provide them with good cheese from Canada. It is just the same in regard to butter. If we had one of these men there to say to such merchants, that he could supply him with a sample of our products it would fill that very want. It is a most admirable practicable suggestion.

#### CREAMERIES FOR THE NORTH-WEST TERRITORIES.

The sum of \$15,000 was placed in the supplementary estimates by the Government and voted by Parliament at its last session, to promote the establishment and maintenance of creameries in the North-west Territories.

It is to be expected that this assistance to dairying in the North-west Territories will increase the value of the Dominion lands, and will promote the well-being of the population there by affording the farmers a favourable chance of producing and marketing those food products which can be carried to distant markets with the smallest proportion of their value being absorbed in transportation charges.

The creameries proposed to be maintained will furnish a means by which the farmers will be able to obtain full market values for their milk. They will thus be encouraged to increase the number of milch cows, to raise more cattle, to feed more swine, to keep larger flocks of poultry, and to enlarge their sources of steady income.

#### FOR NEW CREAMERIES.

The following is the plan proposed for districts where creameries are not already in existence:—

1. A loan of a sum sufficient to provide the equipment for a creamery, or creameries, or skimming stations, may be made to a joint stock company of farmers, or a butter and cheese manufacturing association.

(a) The company, or butter and cheese manufacturing association, shall be duly incorporated and registered.

(b) The company, or association, shall provide suitable buildings and premises and a sufficient water supply.

(c) The buildings shall be erected and equipped according to plans approved by the Department of Agriculture.

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(d) The milk from at least 400 cows shall be guaranteed by the company or association.

(e) The creamery shall be located on a site and at a place approved by the Department of Agriculture.

2. The Government shall take the management of the creameries, for the equipment of which these loans are made, and shall manufacture and market the butter, for the account of the patrons, at a charge of 4 cents per pound of butter.

3. The Government shall pay advances to the patrons, after the end of every month, of such sums as the Commissioner of Agriculture and Dairying may estimate to be about two-thirds of the net value of the milk and cream supplied by them severally.

The advance payments shall be made in even dollars, and no advance payment shall be made for less than two dollars (\$2).

4. The Government shall charge a rate of not less than 1 cent per pound of butter, in addition to the charge for manufacturing and marketing; and the revenue from that rate shall be placed to the credit of a loan fund, and applied, in such manner as the Minister of Agriculture may arrange, (1) to the repayment of the loan from the Government, and (2) to the payment of any debts which may be due on the buildings and premises.

5. The Government shall continue to control the manufacturing and marketing of the butter at each creamery for a period of at least three years, unless the loan be repaid sooner, and the joint stock company, or the butter and cheese manufacturing association, gives intimation that it desires to assume control.

6. The Government will pay annually, as rent for the use of the buildings and premises, a sum not exceeding 7 per cent of their value.

7. When the repayment of the loan in full is accomplished, the equipment of the creamery may be vested in the joint stock company, or the butter and cheese manufacturing association, in return for the issuing of paid-up shares to the patrons in the company, or association, in proportion to the amounts paid in by them severally to the credit of the loan fund.

### FOR CREAMERIES ALREADY BUILT.

In those districts where creameries are already established, and where the owners, or farmers who are patrons, desire to put them under the charge of the Government for a few years until the business is well established, modifications of the foregoing plan may be made to meet the conditions and requirements of each case.

In carrying out the foregoing plans, I visited the North-west Territories during the month of February of the current year, and made arrangements whereby the Department of Agriculture takes the management of 16 creameries and about 16 cream separating or cream collecting stations, tributary to the fully equipped creameries. Seven new creameries are being built; and nine old creameries, which were in inextricable financial difficulties, are being put on a sound basis and will be managed by the Department for a term of 3 years.

### AGREEMENTS TO MANAGE CREAMERIES.

The difficulties which the first creameries in the North-west Territories experienced were those common to nearly all pioneer efforts. The want of experience on the part of those who undertook the management, in some cases a lack of adequate capital, and also the absence of established and competent commercial agencies for the handling of the butter, resulted in unavoidable losses. These losses, which fell on the joint stock companies or individuals owning the creameries, caused fear among the patrons that the proceeds of the butter might somehow be in part diverted, or taken, to pay obligations of the owners of the creameries. The lack of confidence thus caused, hindered the creameries from receiving sufficient support or enough milk or cream to make their operations profitable.

In many cases there was an abundance of cattle feed in the localities. The settlers had a fair number of cows. Only the necessary manufacturing conveniences and com-

mercial agencies, that would command the confidence of the people, were necessary to enable them to obtain a good revenue from their farms and herds. The Department has undertaken to manage these creameries for a period of 3 years. The butter and cheese manufacturing associations agree to provide suitable buildings, premises, and a sufficient water supply, and they further agree to assure to the Department of Agriculture free and undisturbed possession of these buildings and premises for a term of not less than 3 years. The directors and shareholders also agree that they will use all reasonable means to promote the interests of the creamery and to secure patrons who will furnish a supply of milk or cream. The milk or cream in each case is to be delivered to the creamery free of charge to the Department of Agriculture. The only exception to this rule is, when the patrons supply milk or cream to a cream separating or cream gathering station which is tributary to one of the creameries, the Department will accept the delivery of the milk or cream at the cream gathering station and count it the same as being delivered at the fully-equipped creamery.

The Commissioner of Agriculture and Dairying, on behalf of the Department of Agriculture, has agreed to manufacture from the milk or cream which is received, a first class quality of butter, at the manufacturing rate or charge of 4 cents per pound of butter manufactured. For the rate of 4 cents per pound, the Department agrees to meet all the expenses for labour, fuel, ice, packages and other furnishings, between the delivery of the milk or cream at the creamery and the placing of the butter in packages on the railway cars.

For the season of 1897, after the end of each month, the Department is to advance to the patrons 10 cents per pound on the quantity of butter made from the milk or cream furnished by them severally. The butter and buttermilk are to be sold by the Commissioner of Agriculture and Dairying to the best of his judgment and ability, and the net proceeds, after deducting the manufacturing charge of 4 cents per pound plus the charge of one cent per pound for a loan fund, are to be paid to the several patrons in proportion to the quantity of butter made from the milk or cream furnished by them severally. It is expected that at least a portion of the butter made in these creameries will be sent to Great Britain to be used for the introduction of fresh-flavoured Canadian creamery butter into places where hitherto it has not been in demand or has not been known. Incidentally, the butter will be used to make known the resources of the North-west Territories and the opportunities which they offer for successful farming.

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Having examined the preceding transcript of my evidence, I find it correct.

JAS. W. ROBERTSON,

*Commissioner of Agriculture and Dairying.*

# Agriculture and Colonization.

COMMITTEE ROOM 46,  
HOUSE OF COMMONS, FRIDAY, 7th May, 1897.

The Select Standing Committee on Agriculture and Colonization met to-day at 10.30 a.m., Mr. Bain, Chairman, presiding.

Mr. WM. SAUNDERS, Director of the Dominion Experimental Farms, was present by invitation, and being called, addressed the committee as follows :—

MR. CHAIRMAN AND GENTLEMEN: It affords me very great pleasure to have the opportunity of coming before you again to give account of some of the work that has been done at the experimental farms during the past year.

Since the maintenance of the fertility of the land lies at the foundation of all successful farming, I think it desirable to bring first to your notice the experiments which have been carried on during the past year or two, bearing upon this very important matter. A succession of good crops entails constant watchfulness, in this respect, on the part of the farmer. He has not only to provide a judicious rotation for his land, but he has also to see that the soil is stored with these elements of fertility which the several crops require for their successful maintenance. I think there is no subject at the present time which is more important or which is commanding more attention among farmers than this. There are two classes of operations by which the fertility of the soil can be maintained. One is the ploughing under of green crops which are grown for that special purpose, the other is the addition to the soil of fertilizing materials in the form of barn-yard manure or artificial fertilizers.

## VALUE OF CLOVER AS A FERTILIZER.

The ploughing under of green crops, and especially clover, is a point to which I wish specially to call your attention. The reason why clover is preferred to other plants is that it has the power of taking from the atmosphere a store of nitrogen and laying it up in the tissues of the plants. These plants which I have here are samples of the Mammoth Red Clover. As you will observe they have a mass of fine branching rootlets, and if you examine the rootlets carefully you will notice many minute nodules or lumps on them. These little nodules or swellings on the root contain bacilli or microbes, which are the active agents in taking the nitrogen from the air, converting it into plant food and storing it up in the tissues. It has long been known that clover is more advantageous to plough under than almost any other crop, but it was not until recent times that the reason has been fully understood. The business of the clover plant during its growth is, in the first place, to convert a large quantity of unavailable plant food existing in the soil in insoluble forms into soluble and available forms. This power which it has in common with buckwheat and other plants makes it valuable, for soiling and ploughing under, but the power which it has of taking nitrogen from the air and storing it up adds greatly to its usefulness. Another advantage which the clover plant has over buckwheat and most other plants which have been used for soiling, is in its strong root system and the depth to which the roots penetrate the soil. Last year, in trying some experiments we took up clover plants on the 25th of May which had been sown the year previous and found the roots of the clover had grown four feet down in the soil. A box one foot square was sunk into the earth to the depth of four feet and some of the fine fibrous roots were found even below that. It is well known that the three important ingredients which plants take from the soil in large quantities are nitrogen, phosphoric acid and potash. These exist not only in the soil, but in the subsoil. Ordinary plants with a limited root system, such as barley and wheat, cannot bring these im-

portant elements from the lower strata of the soil, but the clover plant sends its roots deep down and brings up not only the nitrogen which exists there in unavailable forms, but the potash and phosphoric acid, and storing these in the leaves, stems and general roots of the plant, and when turned under presents these in a readily available form, to the crop which follows.

*By Mr. Hughes :*

Q. Do the leaves take anything out of the air ?

A. No, that is done by the little nodules on the roots, and a large quantity of nitrogen is taken up and stored in the plant by that means.

Q. Why is it that clover is killed by frost in winter time, so easily ?

A. I think that is largely due to severe variations in temperature when the plants are not well covered with snow. During the past year much clover has been killed, all through this district, and more of the grass both on pastures and lawns has been killed than in any previous year in my recollection. The reason, I think, is that we have had very severe weather this year when the ground was bare. We also had one very trying day some five or six weeks ago when the temperature in the morning was from 50 to 60, and at three o'clock in the afternoon it registered 18° of frost, and during the night it went still lower, so that next morning the ground was frozen to the depth of nearly four inches. There was no snow on the ground at that time, and that probably was the time when a large part of the clover was killed.

*By Mr. McGregor :*

Q. Is there not an insect that is troubling red clover very badly in some sections ?

A. There are several insects which injure clover.

Q. In Iowa and some other places in the west there is an insect that is destroying the red clover ?

A. There are insects which affect the leaves of the clover and there is one which is destructive to the seed. I wish to call the attention of the committee to the special advantages which the Mammoth Red Clover has over other varieties, as a plant for ploughing under. It is a stronger grower with us than any other clover, and forms a large mass of fibrous roots, almost filling the soil with fibres. The other sample here shown is Alfalfa which would come next to the Mammoth Red in value, but it is not quite so vigorous a grower, nor does it develop the amount of foliage or the proportion of fibrous roots which we find in the Mammoth Clover, but the roots run deeper.

*By the Chairman :*

Q. The Mammoth Red Clover does not root so deeply, I suppose ?

A. No, the Alfalfa has deeper roots, but these have comparatively few fibres, and for this reason the plant is not quite so useful for ploughing under.

*By Mr. Hughes :*

Q. What is Alfalfa ? Is it a Red Clover ?

A. It does not belong to the same genus as the Red Clover, but to a very closely related genus *Medicago*, and it is generally regarded as a clover.

*By Mr. McGregor :*

Q. It stands the drought well ?

A. Yes, because it has such deep roots.

Experiments carried on at the experimental farm here have shown that a crop of Mammoth Red Clover ploughed under about the 24th of May gave to the soil as much nitrogen as would be added to it from fifteen tons

## Agriculture and Colonization.

of good manure, and it also gave as much available potash, but the potash, of course, was gathered from the soil and subsoil by converting unavailible potash into available forms, part of it being brought up from depths which the roots of other plants could not reach. As much phosphoric acid also was made available, as would be found in about five tons of good manure.

*By Mr. McMillan :*

Q. From what area was the roots of the clover collected?

A. From one square foot carefully measured and the yield per acre ascertained from this.

*By Mr. Clancy :*

Q. Were these fertilizers all taken from the land?

A. All were taken from the land excepting a portion of the nitrogen. The potash was taken from the soil, but this substance so important to plant growth does not exist in the soil to any great extent in a soluble form. It requires the action of the living rootlets to change these insoluble compounds into soluble forms so that other plants can feed on them, but when once changed and brought into soluble forms the plant in its decay yields all the nutrition to the succeeding crop.

*By Mr. Hughes :*

Q. Does Alfalfa operate in the same way as Red Clover, in taking up nitrogen and potash?

A. Precisely; except as I have mentioned that the root system of the two plants is somewhat different. The roots of Alfalfa go down deeper, but have comparatively few fibres, and you will find by examining the fibres of these plants, here, the little nodules by which the nitrogen is chiefly collected are located mainly on the finer root fibres.

*By Mr. Pettet :*

Q. How does it stand the winter?

A. This winter, both Alfalfa and Mammoth Red Clover were winter killed, but as a rule, both stand the winter well.

*By Mr. Tyrechitt :*

Q. I suppose it is sometimes injured by ice forming on the clover?

A. Such a condition as you allude to, would, no doubt, if long continued, be very injurious to clover. Where the soil is full of water and it lies on the ground and ice forms over it, and the air is thus excluded from the plants, they frequently die. We have recently had large patches of both clover and grass entirely killed at the central experimental farm by having water lie on it for three or four days. We are sowing clover with grain this year on many of the fields at the central experimental farm, and it is a plan which we can safely recommend to farmers, for general adoption. We have found that ten pounds of Mammoth Red Clover to the acre will produce by the end of the season a mat of foliage from eight to twelve inches high, which can be ploughed under by the middle of October, and form a valuable addition to the fertilizing material in the soil. Nitrogen is the most expensive element of plant food which a farmer has to buy, and in its cheapest form will cost about 14 cents a pound. Taking the value of ten pounds of clover seed at 10 cents, it would cost \$1, while the quantity of nitrogen returned to the soil by the clover crop would amount to more than ten times that sum, so that the investment is a good one.

*By Mr. Hughes :*

Q. Would you pasture a field on the crop before it was ploughed down ?

A. That would be the better plan, as the farmer would then make a profit on the cattle and still retain about nine-tenths of its fertility, accumulated by the clover in the manure the cattle would give.

I was speaking more particularly of farmers who may not have cattle, and considering the question of profit and loss from this standpoint, it would pay any one well to make this investment in clover seed in the spring in order to get the additional fertility to plough under in the autumn, as the money spent will be returned to him tenfold. I feel sure the farmer who tries it once will try it again, because he will find the results so satisfactory.

*By Mr. Clancy :*

Q. Is the crop likely to be injured by a dry season ?

A. Clover sown in the way I have explained is only intended to live the summer through and to be ploughed under in October, to serve the purpose of fertilizing the next annual crop. There is usually sufficient rain to produce a good growth in such a clover crop in the eastern provinces of the Dominion, such a practice would not, however, be so successful in very dry districts. We have found, after many experiments, that the sowing of clover with barley, wheat, oats or rye, does not detract from the weight or value of the grain. You have just as good a grain crop where clover is sown as where it is not sown, and when the grain is cut the clover acts as a catch crop. During the summer, much ammonia which is rich in nitrogen, escapes from manure piles and decaying animal and vegetable matter, and rises and mixes with the air, and being soluble, every shower of rain brings down a portion of it. Where no crop is growing this soluble material, washed down by the rain, passes through the soil and is lost in the drainage waters ; but if you have a ground crop, this is taken up, and what would otherwise be waste is converted into food for the next crop. You have, by this arrangement, the best combination of circumstances for utilizing to advantage everything which nature has provided in this way.

*By Mr. McMillan :*

Q. You spoke of ploughing down on the 24th May. Would it not be the better plan to take the first crop off and plough down the second in the fall? My object in putting the question in this way is not to argue that it is best, although where many farmers can use the crop I think it would be best, but where a farmer has no stock he can plough his clover under on the 24th May, much to the advantage of his crop of corn or potatoes ?

A. I think that to take the first crop of clover off and cure it, and plough the second crop under would be the most economical plan, provided the clover was in good condition when spring opened, but if the farmer preferred to use his land for a corn or potato crop, he can plough the clover under to good advantage about the 24th of May. The farmer must use his own judgment in such matters.

*By Mr. Clancy :*

Q. But would not the plan referred to by Mr. McMillan exhaust the soil more than the plan you have suggested ?

A. If the first crop is cut and fed to cattle, there is still a large part of the nitrogen left in the roots, and as the plants grow stronger in summer, root growth increases, and larger stores of nitrogen are laid up. By feeding the first crop to cattle you have the manure, and the plants ploughed under later would benefit the land very much.

*By Mr. McMullen :*

Q. I would like to know if you have any suggestions for the best method of getting a catch of clover. In our section many farmers have sown frequently and have had

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great difficulty in getting it to catch. Sometimes it is owing to dry seasons, perhaps, and possibly sowing too deep may sometimes be the cause, or it may be due to sowing too late?

A. I would suggest that it may also be sometimes due to a lack of vitality in the seed. During this season we have tested quite a number of samples of clover seed and found many of them deficient in germinating power. The treatment of the crop may also have something to do with this. We have found it very advantageous to roll the land soon after clover is sown, and have observed the greatest difference in the catch of clover on land rolled alongside of that which was not rolled. In rolling land, the pressure of the roller on the soil induces a condition of moisture very favourable for the germination of the seed. A poor catch of clover may also occur where the soil is deficient in potash. We have not, however, found any difficulty at the central experimental farm in getting a good catch of clover.

*By Mr. McGregor :*

Q. Would you advise to sow early?

A. We sow it with the grain which we get in as early as we can.

*By Mr. Tyrwhitt :*

Q. Don't you think that the failure of the seed to catch arises from the fact that many farmers go on cropping the land until it is too poor to grow grain and that then they seed it down instead of putting their field in better condition before seeding down?

A. There may be something in that.

*By Mr. Hughes :*

Q. There are three or four farmers in my vicinity who grow clover in the spring as you suggest and fatten their hogs on it; is that a good plan?

A. It is a very good plan to allow young hogs to run in a field of clover. Where it forms a mat such as I have spoken of, from eight to ten inches high, it is a good way to put flesh on them, and they will leave on the ground in their excreta a large proportion of the fertilizers which were stored up in the crop.

*By Mr. McMullan :*

Q. I suppose the land must be thoroughly drained in order to get the best results?

A. That is a very important matter, and every farmer should see that his land is properly drained, because clover will not grow thriftily on land charged with water which keeps the air out and prevents healthy development.

*By Mr. McMullen :*

Q. Good rolling land does not require draining?

A. Not usually, but sometimes it is springy and wet in spots, and then it is the better for draining.

Q. Where there is a mixture of loam and some gravel there is usually no necessity for drainage?

A. Not often in such cases.

*Conclusions.*—The conclusions we have reached from experiments with clover, which have been carried on for two years past, may be thus briefly stated. That clover can be sown from year to year with cereals without lessening the crop. That the Mammoth Clover is the best variety to sow and that ten pounds to the acre should be sown. If that quantity is sown with the grain, you will usually get by the 15th of October, a heavy mat of foliage to plough under and will give to the land an amount of fertilizing material which will be equal to from ten to twelve tons of manure per acre, as far as the nitrogen is concerned.

*By Mr. Sproule :*

Q. You sow ten pounds of Mammoth Red Clover ; would you make it different if you sowed the Common Red Clover ?

A. No. I should use the same quantity, but we have found that the Mammoth usually gives better results than the Common Red Clover.

*By Mr. Calvert :*

Q. That is for fertilizing ; how much of the clover seed would you sow if seeding down with timothy, for hay ?

A. About eight pounds ; among the clover plots at the central experimental farm last year, was a series beginning with four pounds and increasing to six, eight, ten, twelve, fourteen and sixteen pounds. We could not detect any advantage in going beyond the ten pounds. From this point upwards there was a solid mat in each case and one plot seemed to be as good as another. When less than ten pounds of clover was sown the growth was patchy and uneven, and the ground insufficiently covered with plants.

*By Mr. Sproule :*

Q. For seeding down how much timothy and clover would you use ?

A. About ten pounds of timothy with eight pounds of clover.

*By Mr. McMillan :*

Q. Don't you find that the richer land makes a difference as to the seeding ?

A. I can hardly speak as to that. We have found clover to catch well on our poorest land. Many of the poorer soils are more deficient in nitrogen than in potash and phosphoric acid, and nitrogen can be gathered by the clover from the air.

*By Mr. Clancy :*

Q. How much Alsike do you sow ?

A. Alsike seed is so much smaller than that of Red Clover that about one-half the quantity should be sufficient. If the seed is good, six pounds per acre should be quite enough.

#### BARN-YARD MANURE.

In Canada, artificial fertilizers are not used to any very great extent, the main reliance of the farmer being on the barn-yard manure which he can make on his own place or draw from the city. In barn-yard manure we find all the constituents of a good fertilizer—nitrogen in available form with phosphoric acid and potash. Animals in consuming their food do not utilize much of these important ingredients, and they are voided with the excrement and urine, and if these are carefully preserved, you can return to the soil nearly nine-tenths of the fertility which has been taken from it in the growth of the crop.

*By Mr. McMillan :*

Q. Could you return that much from dairying cattle ?

A. Not quite. Where you make cheese, then I think it is about 80 per cent, but if butter is made it is estimated that from 95 to 98 per cent of these fertilizing constituents may thus be returned to the land.

Q. Young animals take more ?

A. Yes. Young animals take some phosphoric acid for their bones and some nitrogen for their flesh, but speaking generally, from eight-tenths to nine-tenths of all the important fertilizing ingredients taken from the soil by the crop, is returned to the land where the manure is properly husbanded and where no waste is allowed to take place.

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*By Mr. Wilson :*

Q. That is not done on the ordinary farm ?

A. Not always. There is, I regret to say, too often a great waste of fertilizing material from the careless handling of manure. You will often see in stables and barns great open cracks in the floor, through which the urine runs away and is lost. The farmer who is thus negligent is allowing a very important element in his profits, to escape him. If the floor is tight and the urine which contains the largest proportion of fertilizing material that the animal secretes is retained and saved, the manure will be rich, and if it is placed on the land as soon as possible, the greater advantage will be got from its use. If you compost it, you lose a large part of the nitrogen, as the urine of the animal is very easily decomposed. If you go into some stables where no absorbents are used, you will notice that the urine absorbed by the floor decomposes rapidly, and fills the stable with ammonia, giving it a very strong pungent odour. A similar escape takes place in the open air when manure is composted, but you do not notice it to the same extent. Of the ammonia given off in this way the farmer gets back, but a very small proportion in the rain, indeed he practically loses the whole of it, but if the liquid and solid constituents are composted together and put on the land without delay, the farmer then gets the full benefit from the fertilizers which his animals give him, and he will find himself, in the end, much the gainer if he follows that plan instead of composting the manure and using it after it is rotted.

*By Mr. Calvert :*

Q. Are you in favour of distributing manure on the land in the winter time ?

A. This is a matter which must be left to the common sense of every farmer to settle for himself. If a farmer has a field on a hill side and he places manure there in the winter he will loose a good deal of its strength from bleaching where the snow melts in the spring, but if he has ordinarily level land and can get the manure out in the winter time when there is not much snow—not more than four to six inches, he may put it out to advantage.—In such cases I would advise that the manure be put on the land in small heaps of half or one-third of a cart-load, distributing these small heaps over the ground at proper intervals, and allowing the manure to remain there all the winter. The cold will penetrate through these small heaps and there will be no fermentation to speak of, and the manure will be in much the same condition in the spring as when it was put out.

*By Mr. Sproule :*

Q. Would you not find it difficult to spread in the spring after it had been frozen.

A. We have not found much difficulty from that source. There will sometimes be lumps of ice under the heap for a day or two after it is spread, but it soon melts and if the farmer spreads his manure early, in two or three days he can begin to plough and there will be no drawback worth speaking of, on this account.

*By Mr. Douglas :*

Q. In the case of manure taken from the stables in winter what is the effect of burning the rough straw out of it in the spring in point of gain or loss ?

A. In burning straw you drive out all the nitrogen that is in it but you will have in the ash, the potash and phosphoric acid. There is a good deal of nitrogen in straw, and this method is wasteful, but in the North-west where Dr. Douglas lives, the amount of nitrogen in the soil is so large that the loss involved in the burning of the straw would not be much felt. In the East the straw in manure is of great advantage in improving the character of the soil in addition to the amount of nitrogen it gives to the land. It gives humus to the soil and in this way increases the power of the soil to retain moisture. As all plants feed by means of water, the amount of water in the soil—I do not

mean stagnant water—but the water retained in the soil and held by it in a porous condition, materially affects plant growth. The larger the amount of water that can thus be held by the soil the better it is for the crop growing on it.

*By Mr. McMillan :*

Q. You spoke of spreading the manure and ploughing it under? Is it wiser to plough it under than to leave it on the surface?

A. That is a disputed point. We have tried surface manuring, but we did not get the same results as when turned lightly under, and it is not quite so easy to get a crop in with the manure on the surface as it is when lightly buried. We never plough manure under, deeply, in the spring; not more than four or five inches, and this we find to work very well. When ploughing in the fall we usually turn over about eight inches. We take all our manure out in winter, and even if the snow is ten inches deep we spread it on the surface. You do not lose anything by this method unless the water washes the land off the surface and where the land is well drained this is not so liable to happen. We have found the best results by taking our manure out and spreading it on the land and leaving it on the surface when working it in the spring. You have a far better chance of getting a good catch of the crop in this way.

*By Mr. Wilson :*

Q. Your land is differently situated from other farms. It is so well drained.

A. Mr. McMillan has a first class farm and he is a first class farmer and to follow his example would be beneficial. In this connection I would like to call attention to the large amount that a farmer loses by adopting the method of composting his manure and waiting until it is thoroughly decayed before putting it out. Two years ago, we tried the following experiment. We took two tons of horse manure and two tons of cow manure, 8,000 pounds in all, and put it on a board floor and left it exposed to the air. It was turned once a month and weighed every time it was turned. Under this treatment the weight decreased very rapidly. In two months, the 8,000 lbs. was reduced to 4,278 lbs., in six months to 3,053 lbs., and in nine months to 2,600 lbs. A chemical analysis showed a stronger manure in the residue than you would find in the fresh manure, but not nearly as much stronger as you would expect from the amount of loss which had occurred. There was much loss of nitrogen from the escape of ammonia and some loss of potash from leeching. We tried this experiment again last year, under a shed the roof of which was not quite water tight but sufficiently so to keep the manure in good condition. This manure to all appearance was very rich but the treatment involved the loss of about two-thirds of the whole substance of the manure and of at least one-half of the fertilizing constituents, besides the work involved in turning and composting.

*By Mr. Clancy :*

Q. Many farmers put out the long manure where it is fed out from the straw stack. Would you advise putting it out in that condition? This practise is intended to promote greater convenience than to pile it and let it decay.

A. Yes, I would advise putting it out even if the straw is long. The long straw can be covered with a little extra labour on the part of the farmer and helps to improve the soil.

*By Mr. Calvert :*

Q. If the manure pile was not disturbed all summer, would it lose some of its substance.

A. Yes, it would lose much of its substance.

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*By Mr. McMillan :*

Q. Would not fermentation take place more rapidly if it were turned ?

A. I think it would, and the increased fermentation would cause it to lose weight more rapidly than if it were left undisturbed.

Q. My own opinion is that the fertilizing elements would not go so quickly if the manure is left undisturbed. Every time it is turned fermentation is increased.

A. I think, Mr. Chairman, the subject we have had under consideration to-day is one of the most important in connection with farming, and it is of the greatest importance that farmers should be thoroughly in earnest in their efforts to take proper care of their barn-yard manure, and also avail themselves of the great advantages arising from the ploughing under of green clover. In all parts of the Dominion where clover grows luxuriantly, there is no practice more advantageous to the farmer, than this.

*By Mr. Semple :*

Q. Have you conducted any experiments in growing rape and ploughing it under ?

A. We have not. Rape is one of the plants which when ploughed under improves the tilth of the soil very considerably, but we have not tried it to any extent for this purpose. Rape in common with clover and other plants converts a good deal of the insoluble fertilizing constituents of the land into soluble forms, but it has not the advantage that the clover has in taking nitrogen from the air, which is the chief reason why we recommend that plant in preference to others.

### ARTIFICIAL FERTILIZERS,—SALT.

*By Mr. Sproule :*

Q. Have you tried any artificial manures ?

A. We have tried various combinations of artificial fertilizers as well as the simple fertilizers, but we have not had the same results as those we have had from barn-yard manure. When a complete fertilizer is used, which contains a proper proportion of phosphoric acid, potash and nitrogen, we have had good results, but not quite as good as from barn-yard manure. It is important that the farmer should use a complete fertilizing if he is to get good results from the treatment. The use of sample fertilizers, is often disappointing. The application of phosphates, which when made from mineral phosphate, contain only phosphoric acid will only supply that element of plant food to the soil. The farmer might put phosphoric acid on land which is already well supplied with that element, and find no beneficial results. He may have similar results from the use of potash if his land already contains sufficient of that element. He can best find out what is needed by his land by experimenting in a small way which every farmer should do. But until he finds out in what his soil is deficient, it is safer to use a combination containing the whole of the three elements needed by growing plants, namely,—nitrogen, phosphoric acid and potash. If, however, you adopt the plan of making your clover collect nitrogen from the air, potash and phosphoric acid are all you need to add.

*By Mr. McGregor :*

Q. There is a great deal of salt and ashes used with us ; how do you value them ?

A. Salt is not a direct fertilizer, but has a beneficial action on the land. It liberates and makes available a considerable quantity of potash existing in the soil in unavailable form. Salt may be used to advantage to the extent of from 200 to 300 pounds to the acre, and it has also a beneficial effect in strengthening the straw of some varieties of grain, especially barely.

*By Mr. Wilson :*

Q. Would you recommend the use of salt extensively?

A. Yes; for most crops. I don't know any crop where salt could not be used to some advantage. We have not tried it for every crop; but with wheat, barley and oats it has done well.

*By Mr. McGregor :*

Q. What is the best time to apply it?

A. In the spring.

Q. With the grain?

A. I would sow and harrow just before the seeding.

Mr. McMILLAN.—Has it not a tendency to bake the land? I have found that it is very beneficial, and even on light sandy land; but on heavy land it bakes the soil.

*By Mr. Sproule :*

Q. Have you ever tried salt if it is good for meadows in dry seasons?

A. We have not tried it, but I should expect that such application would be beneficial.

AWNLESS BROME GRASS,—*Bromus inermis*.

I had intended next referring to another important consideration for farmers,—the providing of the very best kind of seed to put in the soil, when thoroughly prepared; but before I do that I wish to refer to an important grass of which I have brought samples.

This (producing a sample) is what is known as Awnless Brome Grass (*bromus inermis*), and first, I would say a few words on the history of its introduction.

When the experimental farms were established 10 years ago an order was sent to a seed dealer in Riga, Russia, for several pounds each of the seeds of all the grasses grown to advantage in Northern Europe, for hay and pasture, and especially those grown north of Riga. This Awnless Brome Grass seed was one of the varieties received and a portion was sent to each of the experimental farms. It succeeded well at Ottawa and remarkably well at Indian Head, and after two years the results of the experiments with this grass were so satisfactory as to establish its value for the north-west country, while a considerable quantity of northern grown seed was imported from Germany, and larger fields established, and the Awnless Brome Grass has increased in favour from year to year until the present, and now the demand for the seed is very large and very general. Last year two tons of seed were saved at Indian Head, and one ton at Brandon, and about two tons in all the year before, and it has been impossible to meet the demand. The seedsmen also have imported it in large quantities, and sold it readily.

*By Mr. McMillan :*

Q. Does it grow in a mat?

A. It starts in bunches and stools out to a limited extent. What is remarkable in this grass is its early growth in spring. These samples (handing them to the Committee) were dug this morning and there is no other grass half its height at the farm at the present time.

*By Mr. McMullen :*

Q. What is the cost?

A. The seed is now sold at from 15 to 18 cents a lb. It was held at 25 cents two years ago, and last year at 20 cents.

## Agriculture and Colonization.

*By the Chairman :*

Q. How much seed do you use per acre ?

A. From 14 to 16 lbs.

*By Mr. Douglas :*

Q. About 15 to 17 lbs. is what they sow in the North-west.

A. Mr. Angus McKay, superintendent of the Experimental Farm at Indian Head and Mr. S. A. Bedford, also of the Brandon farm, both advocate using from 14 to 16 lbs. We have tried it in different quantities from 8 lbs. up to 16 lbs. and the best results have been had from sowing the larger quantity.

*By Mr. McGregor :*

Q. Is it an advantage for the farmer, who can now produce his own hay ?

A. Yes, and further this grass soon establishes itself and grows with great rapidity.

A field was sown at Indian Head last year in May, and when I was there in September a band of cattle was pasturing on it and finding good feed. It is well adapted for dry districts, and no cold seasons to kill it or injure it. It has also been tested on irrigated lands in Alberta, with very favourable results. I saw a large field on the ranch of Mr. Hull, near Calgary, in September last, and the crop was remarkably strong and vigorous.

*By Mr. Wilson :*

Q. Does it make good hay ?

A. It makes excellent hay.

*By Mr. McGregor :*

Q. Is it coarse ?

A. It is not very coarse. All the cattle and horses at the Indian Head Farm were fed on Brome grass hay last winter, and they thrived well.

Q. Would you seed this with grain the same as other grasses ?

A. We have tried that plan here, but it does not produce as good results as have been had at Indian Head. There, they sow the grass separately without any nurse crops and advocate this method. We have not tried separate sowing here ; but we have an acre which was seeded last year with grain, which is now doing well.

*By Mr. McMillan :*

Q. Do you know whether such a strong growing grass would be easily subdued if ploughed under ?

A. We tried ploughing it under at Brandon, here, and also at Indian Head ; and have found no difficulty with it. As you see, the roots are nothing like couch grass ; no stolons are sent out ; I think this grass is a most valuable species for the North-west. Last year the Indian Department got two hundred pounds of seed from us to try at some of the Indian agencies. Reports have come in this year from about 200 miles north of the present settlements, and they are most favourable. We have usually had from two three tons of hay to the acre at Indian Head, where native hay would not usually give more than about half a ton. This grass gives the farmers hay at home and in large crops.

*By Mr. Wilson :*

Q. Is it good for horses ?

A. Yes.

*By Mr. Clancy :*

Q. Does it exhaust the soil ?

A. Not specially so. When sown at Indian Head late in May, we have had a crop of seed the next year, of from 300 to 400 lbs. per acre, so it is a profitable thing for farmers to grow at the present price of seed. This year, farmers who had seed for sale sold it readily at 15 cents per lb.

*By Mr. Pettet :*

Q. Would it be possible to secure any seed this spring ?

A. It is rather late now, but if these are samples left, I shall be glad to send you one. It is likely that it could still be had from the larger seedsmen who have been advertising it freely. We find that where this grass is cut for seed that it exhausts the plant to some extent and you do not have so luxuriant a growth the following year, as when it is cut for hay. There is no grass we know of that will stand the same severe conditions of climate and give to the farmer, so ready a means of feeding his stock, and of carrying stock through the winter, as this, and when generally grown it must have a very favourable influence on the dairying and cattle-raising interests of the country.

*By an hon. Member :*

Q. Where was this grass found ?

A. We brought the first which was introduced from Russia ten years ago. It was not known previously here as a hay or pasture grass, although it has been grown in Northern Europe for such purposes, for a long time past.

*By Mr. Douglas :*

Q. Is it not found native in the North-west ?

A. I think not. There are two or three other species of *Bromus* found there, which resemble this, but the Awless Brome grass is a native of Northern Europe.

*By Mr. McMullen :*

Q. Do you recommend this grass in preference to timothy and clover mixed, say for Ontario ?

A. It has not been sufficiently tested, here, to enable us to speak positively on that point, but my impression is that it is likely to supersede timothy to some extent, in time. It is much hardier and will stand pasturing.

Q. Will it kill out clover ?

A. You will find very little clover in a field after any of these strong growing grasses become well established.

#### THE FLAT PEA.

*By Mr. Sproule :*

Q. You brought a kind of flat pea here some years ago, and I wish to ask how it has succeeded ?

A. You no doubt refer the flat pea, *Lathyrus Sylvestris Wagneri*. That is not making much headway, and this year we have found quite a number of the plants killed out by the unfavourable winter. It is not such a wonderful thing as was at one time expected.

# Agriculture and Colonization.

COMMITTEE ROOM 46,  
HOUSE OF COMMONS, WEDNESDAY, 12th May, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10.30 a.m. Mr. Bain, Chairman, presiding. Mr. W. Saunders, Director of the Dominion Experimental Farms, was recalled, and addressed the Committee as follows:—

MR. CHAIRMAN AND GENTLEMEN: When I had the privilege of appearing before you last I discussed at some length the importance of maintaining the fertility of the soil, the proper care of barn-yard manure and the very great importance of green crops for ploughing under, especially clover.

## IMPORTANCE OF A CAREFUL SELECTION OF SEED GRAIN.

I propose this morning, first, to call your attention to the very great importance connected with the proper choice of seed. The land of the farmer may be ever so well prepared, yet if the seed which he sows is lacking in fertility or vigour he will have a very indifferent crop. Experiments to gain light on this very important subject have been carried on at all the Experimental Farms for some years past. The plan adopted has been to prepare what are called uniform test plots, selecting a piece of land large enough to take in all the varieties of oats, with a soil uniform in character. This is divided into smaller sections, usually a tenth of an acre each. These are all sown on the same day, so that all the varieties have the same chance as to soil preparation and growth. The seed sent to all the farms is the same in fertility and vigour, so that the experiments may be uniform. These plots having been all sown on the same day, are watched throughout their growth; the day on which they come up is noted, also the date they head; and the day of ripening is especially watched for and recorded, as it is very important to know which are the earliest varieties, for the reason that the earlier ripening cereals are of so much importance. All these conditions being equal, if there are any marked differences in the yield, they must be referred, either wholly or in part, to differences in the fertility and vigour of the sample. We know that in the breeding of stock, strains are developed which can be perpetuated by careful crossing and careful breeding, and it is precisely the same with grain. Every kernal has an individuality of its own, and every variety has some points of difference in regard to growth or degree of vigour and fertility which under favourable circumstances it will manifest.

## RESULTS FROM TEST GROWTH OF VARIETIES OF OATS.

At the central farm here, we tested last year 58 varieties of oats. The highest yield was 85 bushels and 10 pounds per acre, and the lowest yield 45 bushels and 10 pounds per acre, so that we had a difference of 40 bushels per acre between the highest and lowest yields, under—as far as we could see—precisely similar conditions. Certainly the same conditions as to weather and treatment, but soil will of course vary more or less even where it appears to be uniform. It is only fair to assume that this 40 bushels of difference is to a very large extent due to the difference in the inherent vigour and vitality of the special variety of grain referred to.

*Banner Oat.*—The Banner oat was the variety which gave the highest yield. Here is a sample of the Banner such as we have been distributing this year. It is part of a crop grown at Indian Head, where there were 20 acres which gave an average of over 97 bushels to the acre. That seed was preserved for distribution; it was shipped to the Experimental Farm here and thoroughly cleaned before being sent out. Ninety-seven bushels and 21 pounds was the actual yield per acre of that 20 acres, giving a total of 1,958 bushels.

This Banner oat has been under cultivation at the Central farm for a number of years, and from the outset, it has stood above most of the other varieties, and has given much the greatest yield for the last four or five years, so that it has become quite prominent as a vigorous variety and excellent yielder. I ventured to remark before this committee last year or the year before, that if it were possible to supplant all the other varieties of oats under cultivation in the Dominion, with the Banner, I had no doubt that it would raise the average yield from five to ten bushels to the acre all over the country even with the present methods of cultivation.

*The Ligowo Oat.*—Another variety of oats which we have found very good, is called the Ligowo, which was imported from France about six or seven years ago from the well known seedsmen, Vilmorin, Andrieux & Co., of Paris. This variety gave a yield of 71 bushels and 16 pounds per acre in a small plot, but in a field plot the yield was 70 bushels and 15 pounds.

*The Abundance Oat.*—The Abundance is another variety which was got from the same source and has also been under cultivation for some years. It is a good deal like the Ligowo, but the grain has a decidedly yellow tint and is distinct in its character. This was also amongst the high yielders, giving 72 bushels and 12 pounds per acre in plots, and in a field of  $4\frac{3}{4}$  acres, averaging 60 bushels per acre.

*Average return from all the tests of oats.*—The average yield of all the 58 varieties of oats tested at the all different farms, was 64 bushels and 28 pounds per acre, giving as you see a very high yield throughout, for the 58 varieties. These figures are a long way ahead of what is being done, on the average, by the farmers in the Dominion.

#### ACREAGE YIELD OF OATS BY PROVINCES, ACCORDING TO CENSUS.

In 1890 when the last census was taken we had only 16 varieties of oats under test, and our average yield at the Experimental Farm that year, was only 34 bushels per acre. But, according to the census of 1890-'91, the average of oats throughout the Dominion was not over 20 bushels to the acre, although the average yield for Ontario was considerably above that. That year, the Ontario average as given in the Dominion census, was 23 bushels. The average for Quebec was placed at 12 bushels; average for New Brunswick, 19 bushels; for Nova Scotia, 16 bushels, 19 pounds. The yield from Prince Edward Island is placed at 19 bushels; Manitoba, 32 bushels and 26 pounds; the Territories, 26 bushels and 4 pounds, and British Columbia, 39 bushels. These figures are all low, and it would seem as though that year was an unusually poor year for oats. Unfortunately the Census for Dominion purposes comes only once in 10 years, and that if that be a bad year it makes a poor showing for the whole time. There is nothing else for statisticians to draw upon, taking the country as a whole, but that one result every ten years.

#### VISIBLE INCREASE IN YIELD OF OATS.

As showing the improvement of this crop, we have to draw figures mainly from Ontario, because that is the only province where a yearly statistical record of the crops is given. In 1891 there were 2,053,105 acres of oats, yielding something over forty-seven millions of bushels of oats for that year. In 1896, there was an increase of about four hundred thousand acres, and instead of forty seven millions, the produce was eighty-two million bushels. This shows not only an increase in acreage, but also the effect of improved methods on the land, and other improvements derived from the introduction of new varieties of seed, which, as I have shown you, is a matter of great importance. But comparing these yields with what we got at the Experimental Farms you will see there is room for very much improvement, before the farmers will reach the full productive capacity of their lands.

#### TEST GROWING OF VARIETIES OF BARLEY.

We shall now refer to the subject of Barley. Tests were made last year of 17 varieties of two-rowed barley and 15 varieties of six-rowed barley.

## Agriculture and Colonization.

*Two-rowed.*—In two-rowed the highest yield was 51 bushels 2 pounds, and the lowest was 34 bushels 8 pounds, showing not so much difference in the extremes of yield as in oats, but still a difference of over 15 bushels. In the six-rowed varieties the highest was something over 69 bushels and the lowest about 41 bushels, a difference of 28 bushels. Among these 33 varieties, 17 were new hybrid sorts, most of which promise well. In two-rowed, "Bolton" stands at the head of the list, and in six-rowed, "Royal" stands second in the list. The average of all the varieties tested at all the farms was 39 bushels 2 pounds of the two-rowed, and 42 bushels 22 pounds of the six-rowed. While the "Odessa," which is a very good variety, does best on the farm here, "Mensury" stands at the head, taking the Dominion all over, as a large producer. In spring wheat thirty-nine varieties were tested on these uniform test plots which I have explained to you. The highest at Ottawa was 24 bushels 20 pounds and the lowest was 13 bushels 20 pounds, under what appeared to be precisely the same conditions as to treatment. Taking the average, "Preston," one of the new cross-bred wheats, stands at the head of the whole Dominion by several bushels. The average yield of this all over is 35 bushels 37 pounds, while "Red Fife" alongside of it produced only 30 bushels. The "Preston" is a cross between "Red Fife" and "Ladoga," and it has not only given the highest yield throughout the Dominion; but ripens from 3 to 4 days earlier than the Fife. This year the average was about 6 days, but last year it was only about 4 days, but it would average about 4 to 5 days.

*By Mr. McMillan :*

Q. What was the yield on the farm here. Thirty-five bushels is the average yield over the whole Dominion?

A. It stands second on the farm here, with a yield of 24 bushels. The variety which stands above it is a Hungarian wheat which was sent to the farm from a large wheat grower in Hungary; this gave 20 pounds more. The "Preston" gave 24 bushels, and the other 24 bushels 20 pounds.

*By Mr. Semple :*

Q. Is the Preston bearded or bald?

A. It is bearded.

We have another variety known as the "Stanley," which is from exactly the same parentage. This wheat came bearded from the first cross; but the next year there were beardless sports, and we separated these from the bearded form, and called the beardless sort "Stanley" and the bearded variety, "Preston."

*By Mr. Rogers :*

Q. What are its milling qualities?

A. We have not tested that yet, but judging from its appearance and its bright colour, it seems to have all the properties needed for a first-class milling wheat.

*By Mr. McMillan :*

Q. Will the varieties be permanent or will they continue to sport?

A. They sport very little. Just occasionally we have a plant sport; but it takes years of cultivation to eliminate all tendency in this direction.

This "Stanley" cross gave an average of 31 bushels, 50 lbs. over the Dominion against 35 bushels, 37 lbs. for the "Preston," showing that the bearded progeny of this cross is a little more vigorous than the beardless. I thought it might be interesting for me to explain to the Committee how these varieties are crossed, and I have some drawings with me of the flowers of wheat and oats which will perhaps make it a little clearer to the members. This (handing the drawings to the Chairman) is the flower of wheat, and the other is the flower of oats. The inner organs of the flower so closely resemble each other that they can scarcely be distinguished. These have been drawn from

nature on a magnified scale. When you wish to make a cross you take a head soon after it has shot out and open one of the sections of a spikelet by removing the outer chaff and pulling back the inner chaff, thus exposing the flower. This is examined carefully to see that the anthers which contain the fertilizing pollen, is not shed or ready to be shed, and that they are still green and the pollen immature. You then pull off the anther as shown in the other drawing, leaving the pistils, pollen is then brought from the other variety you wish to act as male, from anthers in the right condition of maturity. The anthers of one variety, with the pollen on them, is then applied to the pistils of the other sort, when the pollen sticks to the most feathery pistil. The floral chamber is then closed up, by turning back the chaff, so that no insect can get at it, and then after preparing a sufficient number of flowers, the head is wrapped carefully with a piece of tissue paper tied top and bottom, so that no other pollen can find its way in, and these are allowed to remain in that way until the grain is matured.

In operating on a head from five to ten flowers are usually found in fit condition to operate on. At harvest time, if you find any kernels in the head you may be sure they are the result of the cross you have been trying to make. These crosses are not easily made. With the most careful operation we have not had more than 10 per cent of successes at the Central Farm, here, using the most skilled hands and exercising the greatest care in the operation.

In regard to Preston, wheat I forgot to mention while on that subject, that some samples were sent at the request of the director of the Minnesota Station at Minneapolis, U.S., Prof. Hayes, to be tested there, and in a recent letter he tells me that the Preston has come out several bushels ahead of all the varieties they have been growing, showing that the fertility exhibited by this particular cross, is not confined to Canadian territory, but has been also manifested abroad.

*By Mr. McGregor :*

Q. Is it possible for farmers to get it ?

A. Not in large quantities. Most of what we have this year has been grown at the branch experimental farms. We have utilized all our spare seed. Last year it was distributed among farmers, in pound packages. This year in three pound packages, so that in a short time it will be available, because these varieties multiply very fast.

*Pease.*—At the Central Farm a great deal has been done in the way of crossing pease. Seventy-four varieties have been under test last year, of which 56 are cross bred. I have with me some samples which may be of interest to the Committee. Here is one cross between the Mummy and the Multiplier, and this other is a cross between the Mummy and the Black Eyed Marrowfat. The Marrowfat is a little larger than the Mummy. The Picton, a cross of the Mummy with the White Marrowfat, gave a yield of 46,20 pounds; while the Victoria, another of the same cross, yielded 44 bushels and 40 pounds. Agnes produced by crossing the White Marrowfat with the Pride gave 44 bushels 20 pounds; and another variety named Mackay, a cross of the Mummy with Black eyed Marrowfat, yielded 44 bushels. I give you these as examples.

The reason why we have been devoting more attention lately to pease, is on account of their growing importance. In Ontario alone, in 1896, 829,601 acres were occupied with pease, which is more than all the acreage of spring wheat and barley in that province put together, and we need, if we can get them, more prolific varieties. Carrying on this line of work we expect to produce new sorts better adapted to the climate and soils of this country.

*By Mr. Pettet :*

Q. Are you troubled with any fungus on the pease ?

A. No, not at all. That disease seems to be most prevalent in Prince Edward County, where it seems to especially affect pease which have been grown on the same land several times in succession at short intervals.

## Agriculture and Colonization.

Q. What has been the outcome of your investigation into this disease ?

A. Dr. Fletcher looked into this matter eight or nine years ago, visited the district and sent samples to some of the scientific experts in the United States. Professor Farlow, of Cambridge, who is regarded as one of the best informed men in this country on such diseases, said it was not a fungus but probably some obscure bacterial disease, the exact nature of which he could not determine. Mr. Craig and Mr. Shutt, of the Central Farm staff, have also both visited the district and made inquiries into this subject ; but have not been able to reach any very definite conclusions. It is possible that by the use of fertilizers such as potash, that increased vigour may be imparted to the plants, and that they may thus be better able to resist the attacks of this disease.

*Corn.*—Passing to the experiments with corn, 24 varieties have been grown at the Central and other farms during the past year, for ensilage. The large growing Dent varieties have, as usual, produced the largest weight of fodder, but it has not been sufficiently matured to make good ensilage. Among the best of the earlier ripening sorts were the Champion White Pearl, which gave a crop of 19 tons 338 pounds per acre. The White Cap Yellow Dent, 15 tons 1210 pounds ; the Angel of Midnight, 15 tons 328 pounds ; Long-fellow, 14 tons 615 pounds. The last three average, as you will see, about 15 tons to the acre. All these varieties mature sufficiently to make excellent ensilage at Ottawa. In Western Ontario, some of the other varieties will produce a crop sufficient to make good ensilage, but in the eastern parts of the Dominion, as well as in those parts of Manitoba and the territories where corn is grown, and also in British Columbia, it is of great advantage to get early ripening sorts, and none of the large growing Dent varieties will give profitable returns, notwithstanding the greater weight, because the feed is not so good.

*By Mr. Rogers :*

Q. What is the variety you named first ?

A. The Champion White Pearl. In the last few years new Dent varieties have been introduced by seedsmen, which are considerably earlier than what we have been growing heretofore, and not quite so strong or vigorous in growth as the southern varieties we have been accustomed to cultivate.

Q. The Hickory King is found to be very good in our section ?

A. Yes, we tried that some years ago, but have not found it to be as advantageous as some of the other sorts to which I have referred. At the Central Farm about 350 tons of ensilage is made each year, and we have found it a most valuable food for general purposes, and a most economical ingredient in the ration both for cows and steers.

*By Mr. McGregor :*

Q. How many pounds of ensilage do you feed to a cow or grown steer ?

A. We do not feed with ensilage alone. We put 50 pounds of ensilage with 25 pounds of roots, 5 pounds of cut hay and 5 pounds of cut straw. That forms the bulky fodder portion of the ration of which a steer will eat, about 60 pounds a day, more or less, in addition to the grain we give.

Q. How many pounds of grain would you feed per day ?

A. If you will allow me I will refer to that a little later on, as I have some experiments to report on that subject.

### ROOT CROPS.—TURNIPS.

With respect to turnips, we have found a very marked difference in respect to crop, in favour of early sowing ; but the early turnips, though they seem to keep as well, appear to be more woody and somewhat more bitter, when cooked, than those sown later, but whether this lessens their value for stock feeding, we have not been able to determine.

At the Central Farm, 14 varieties of turnips have been under test. Three sowings were made of each, one on the 8th May, one on the 22nd May and one on the 13th June, the whole 14 varieties have averaged 35 tons 572 pounds per acre; the crop of May 22nd gave 24 tons 338 pounds, and that of June 13 gave 20 tons, 294 pounds, giving 35 tons, 24 tons, and 20 tons, as the result of the average of 14 varieties at these different periods of sowing, showing that a great advantage in yield is had from early sowing. The practice with many farmers is to wait until June before sowing, so as to escape injury from the fly which is troublesome in some districts. Every farmer must be guided in such matters largely by the results of his own experience, but these tests indicate the importance of testing the advantages of early sowing more generally.

## MANGELS.

In mangels seventeen varieties were tested with two sowings, one on the 8th May and the other on the 22nd May. There is no doubt now in the minds of most farmers that the earlier mangels and carrots can be sown the better the crop will be. The result of these sowings was that the first gave an average of 35 tons 756 pounds, and the second, 27 tons 1,999 pounds. Taking the results of the seventeen varieties, some of which gave much larger yields than others.

*By Mr. Bostock :*

Q. Does that refer to the whole Dominion?

A. No; to the Central Farm only. In Bulletin No. 26, issued in January, the results were given for the whole Dominion, with all these varieties.

Q. Do you sow on the level?

A. We make drills and use a heavy roller on the drills before sowing, which flattens them down about one-half and we sow in the centre of the drill.

## CARROTS.

In carrots twenty varieties were tested. The first sowing, on May 8th, gave an average yield of 26 tons 458 pounds, and the second sowing, on May 22nd, an average of 21 tons 1,054 pounds; twenty-one tons and a half as against 26, showing that the early sowing of these roots is a matter of considerable importance to the farmer as to the crop he may expect to get.

## SUGAR BEETS.

Experiments were carried on with sugar beets, three varieties of which were sown, averaging only about ten and a half tons to the acre. We have not found any great advantage in sowing sugar beets for feed. Mangels and field carrots surpass them altogether in regard to weight of crop, although the sugar beet, on account of containing more sugar, is somewhat more nutritive.

*By Mr. Rogers :*

Q. Have you the name of the most productive mangel?

A. The Mammoth Long Red is one of the most productive.

*By Mr. McMillan :*

Q. Do you not find sowing on the level a good plan?

A. Yes, in Manitoba and the North-west, but not so useful here.

Mr. McMILLAN—We have tried it on the level and found that it gave good returns.

Mr. MCGREGOR—We found that the drills were dried out by the sun.

Mr. SAUNDERS (to Mr. McMILLAN)—Do you get over 40 tons to the acre?

Mr. McMILLAN—About that.

Mr. SAUNDERS—We have got that quantity in plots of some varieties at the Central Farm.

## Agriculture and Colonization.

*By Mr. McGregor :*

Q. Do you flatten the drills before or after sowing?

A. Before sowing, and that makes a firm seed-bed for the seed.

### POTATOES.

In potatoes we have tested 96 varieties, and the yield of the best has gone as high as 455 bushels, and the poorest as low as 160 bushels per acre. Among the best yielders were the Late Puritan, the Holborn Abundance, the Standard, Carman No. 1, Clay Rose, Everett, and Empire State—these are among the varieties near the top of the list, and a good many of these are in very general cultivation. Some of the older sorts are not yielding so well as formerly. The newer sorts seem to have greater vigour and are more productive and will, no doubt, gradually replace the older sorts.

### FLAX.

Experiments have also been carried on at the farms last year with flax to determine the best time for sowing, the best quantity of seed to sow per acre to obtain a good yield of seed, and the best quantity to sow per acre where the crop is grown for its fibre.

These experiments were planned to be carried on, on all the farms in the same way. Four successive sowings were made a week apart. In two of these we sowed 40 pounds to the acre and in the others 80 pounds, samples of the fibre being sent to one of the flax mills in the East, to be tested as to the value of the fibre as grown in different parts of the Dominion. The yield per acre of seed will appear in the forthcoming annual report. The largest weight of straw has been obtained, in almost every instance, from the plots sown with 80 pounds of seed, whereas the heaviest yield of seed was obtained from the plots sown with 40 pounds per acre. As to the time of sowing, the sowing, in Ottawa, of May 14th gave the best results, indicating that about the middle of May is the best time to sow flax in Ontario.

*By Mr. McMillan :*

Q. Does the flax not exhaust the soil?

A. It is more exhaustive than other crops, but I think the difference is not so much as is commonly believed. In a bulletin issued on flax last year, I gave particulars as to what this crop takes from the soil, and while it showed that flax was a more exhaustive crop than wheat, barley or oats, it is not so much more as to deter the farmer from growing it.

Q. There is nothing returned to the soil from this crop except in cases where the oil cake is fed to stock?

A. In Manitoba and the North-west, where there seems to be an unusual amount of fertility in the soil, farmers may perhaps afford to be a little extravagant in this way, and there, flax is grown quite largely, and the area of this crop is increasing.

### DISTRIBUTION OF SEED GRAIN.

With reference to the distribution of samples of grain from the experimental farms, the object in view from the outset has been to place in the hands of the farmers good, pure samples of the very best strains of seed, so that they may make a fair start with good, pure seed, from which they can soon get sufficient for their own sowing, and eventually assist their neighbours with good varieties. Here is a sample bag of the Banner Oat, which I have brought for the inspection of the Committee,—one of the varieties which has been largely distributed during the past season. Every effort has been made in distributing these samples, to prevent waste, and only one sample is sent to each applicant. Many farmers value these samples highly, and in some districts the useful and prolific sorts which have been sent out for several years past, have already become the

leading varieties in cultivation. This year, since the 4th of January, the number of samples sent out is 35,945, weighing in all, about fifty-three tons, which have been distributed as follows :—

Provinces.	No. of Samples.
Ontario.....	9,416
Quebec.....	13,904
New Brunswick.....	2,892
Nova Scotia.....	4,754
Prince Edward Island.....	2,008
Manitoba.....	1,502
North-west Territories.....	874
British Columbia.....	485
Total.....	35,945

In Manitoba, the North-west and British Columbia the number has been smaller, for the reason that an active distribution has been going on from each of the branch experimental farms. We expect to finish the distribution, here, by the end of this week, by which time every applicant who has applied in good season will have been supplied, as well as those on the lists sent from members of Parliament. Every effort has been made to have the seed reach the farmers in time for sowing and in good condition.

In regard to the usefulness of this seed distribution, we have had many letters from farmers. It has been a great advantage to them in supplying good strains of seed for their own farms, and some of them who received samples four or five years ago have had considerable quantities of seed, to sell to their neighbours. If properly cared for, the yield from one of those sample bags of oats will be three or four bushels. That gives enough for two acres of land, so that at the end of the second year the farmer has sufficient seed for a large area, and can soon supply some of his less careful neighbours. This distribution of seed has been criticized to some extent, in some of the agricultural papers, as partaking of the nature of the distribution carried on in the United States where an extravagant and wasteful system has been in vogue. These criticisms are made by persons who do not seem to understand the nature of the work carried on here. In the United States, Congress has voted each year, for many years past, \$100,000 for seed distribution, and about \$20,000 additional for the expense of putting up many millions of packets of the seeds of vegetables and flowers, but very little grain has been sent out. Congressmen have the privilege of sending these seeds to their constituents, and they are nearly all distributed in that way. In Canada, the distribution is confined to useful sorts of grain, and the farmer can get the seed himself, if he writes for it, without reference to the member for his district and regardless of his politics. A very large proportion of the samples of grain sent from the experimental farms is in response to applications from individual farmers, who gladly avail themselves of this opportunity to replace the poorer varieties they have been growing in the past, by the newer and more prolific sorts. In view of these criticisms, I thought it best to explain the difference between our system and that which obtains in the United States. The whole cost of the distribution of these samples in connection with all the Experimental Farms in Canada, including the correspondence connected therewith and the computing of the returns received of the grain afterwards, is not over \$4,000 a year, which I think is money very well spent, because this seed grain is gradually replacing, throughout the Dominion, many of the older and more or less worn out varieties with strains of higher excellence and of the best quality. I may say the increase of a single pound in the bushel on our oat crop throughout Canada would add to the receipts of the farmers in the Dominion over a million dollars. I am sure that the farmers who get these samples believe the Government is making a good use of the small amount of money it takes to supply them, and I think there is good reason to believe that before many years this distribution of seed grain will do much to improve the quality and yield of cereals, throughout the Dominion.

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## TESTING THE VITALITY OF SEED GRAIN.

During the past year a large number of samples of grain have been sent to the central farm to be tested. Those who happen to have unfavourable harvest weather, where it is sometimes stored in a damp condition and liable to be mouldy, or those who have it slightly touched with frost are all anxious to find out if their seed is good. Samples are sent to us and tested as to vitality. In 1896 we tested 1,793 samples, and in 1897 2,173, showing that the interest in this work is well maintained. These samples have all been tested and reports sent to each individual farmer who forwarded them.

*By Mr. McGregor :*

Q. Could not the farmers test the grain themselves ?

A. They can, but they cannot get quite the same accurate results, and it is not always convenient, whereas he can send the seed through the mail to the Experimental Farm and get the information he requires promptly and without cost. We test the samples in duplicate, and sometimes, in doubtful cases, repeat the test a second time before it is reported on.

*By Mr. Semple :*

Q. Have you any experience in testing very light oats ?

A. Yes, we have had occasional samples of very light oats which were very low in vitality, especially in samples of frozen oats. I received a letter from a farmer a few days ago thanking me for the results of test of several samples he had sent. He said that if he had sent samples of his seed for test, last year, it would have saved him half his crop, as he had used seed deficient in vitality.

## FRUITS FOR THE NORTH-WEST.

The next thing I wish to refer to is the efforts we are making to produce hardy varieties of fruits for the North-west country. It is probably known to most of you, that none of the apples, pears, or plums, grown in the East will grow and produce fruit in Manitoba or the North-west and this difficulty we are trying in some measure to remedy.

Mr. DOUGLAS.—You have a hard task before you.

Mr. SAUNDERS.—We are trying to do it, and hope sooner or later to be successful.

We have a crab on the experimental farms, from the northern part of Europe, Siberia, which have been known as *Pyrus Baccata*, or the berried *Pyrus* which has been tested at Indian Head and Brandon for several years, and it has come through the winters without injury. Last year some of the trees fruited a little at Brandon and also at Indian Head, and we hope this year to have a larger crop. The fruit is, in its present condition, about the size of a cherry but a perfect apple in form. We are experimenting by crossing this small wild crab with the larger apples of Ontario, such as *Duchess*, *Yellow Transparent*, *Fameuse* and many others of the varieties, and we have young trees now two years old from which we expect to have fruit in two or three years more. A large number of additional crosses were made last year, and this year the work is being planned on a still larger scale, and in a few years we hope to have several thousands of these seedlings, each of which will be a distinct variety. Among these we shall certainly have a good chance of finding some of good size and quality, which will stand the climate and conditions of that North-west country. I have brought with me a drawing illustrating how the blossom is operated on in order to cross fertilize. (Mr. Saunders, pointing to the drawings explained the operations to the Committee and showed photographs of the way the tree blossoms and fruits). These trees are very fruitful. A small tree will bear a bushel or two of these very small apples, and, although they are so small, thousands of farmers in the North-west would be glad to have them as they are, because they make excellent jelly, better in quality than can be made from the wild fruits now collected for that purpose.

The tree also is very ornamental and growing right from the ground like a large shrub ; it is eminently adapted to stand the wind and the weather which prevails in the North-west country.

*By Mr. McGregor :*

Q. Would it not be better to have a little protection for the trees, and plant on one side of that ?

A. Yes, it would. We have squares inclosed by hedges of poplars and willows, on the branch farms in the North-west, and we find greater success in growing trees in in these inclosures ; but we hope that the varieties we are trying to produce will be hardy enough to grow and fruit without such protection. This year we are preparing plots at Indian Head and Brandon to receive these trees when ready.

*By Mr. Pettet :*

Q. What name did you give them ?

A. This crab is known as *Pyrus Baccata*. This tree grows very far north both in Europe and Asia. I had a visit a few weeks ago from a gentleman from Russia, Mr. Krukoff, who has charge of the agriculture in the Amoor District in Russia, and he tells me that the *Pyrus Baccata* grows very commonly throughout a large part of his district, and stands the climate perfectly, showing that the tree will endure very severe climate conditions, and will, in all probability, succeed over all of our North-west country.

*By Mr. Wilson :*

Q. What about the size of the fruit there ?

A. It is much the same as it is here.

We have also another variety from northern Europe, known as *Pyrus Prunifolia*, which has stood at Indian Head for two winters without injury, and at Brandon about the same time, and this is a large fruit, nearly as large as a Montreal Beauty crab. I may say that Mr. Krukoff was sent by the Department of Agriculture in St. Petersburg, to investigate the Canadian system of experimental farms, and he visited our five farms and is making a report on the value of these institutions to the country, to the Russian Government. He told me that the Russian Government had already established in the Amoor District, two experimental farms on a similar plan to ours, showing that the work done here is attracting attention over a very considerable area.

In regard to other varieties of fruit, we have in Manitoba a wild plum which grows in many parts of that province, and bears fruit freely, but the fruit is small and not of high quality. We have had trees sent down from Manitoba which are being crossed here with better varieties. We are also working on the Sand Cherry, a native of Manitoba, the fruit of which we find varies much even in the wild state. Last year, I saw one or two bushes at Brandon which produced cherries nearly as large as the English Morello cherry. By selection and cross fertilizing in all these instances we hope to improve these products and eventually to supply the people in the North-west with some reasonably good sorts of large fruits which will stand the climate. We have given up all hopes of being able to grow there any of the varieties which are grown in the East. We have tested more than 200 of the hardiest sorts obtainable in Europe and America, and have failed with every one of them.

#### FOREST SHELTER BELTS.

With regard to shelter, that is important, in connection with our work in the North-west. We are trying to determine the value and growth of the different varieties of trees which are hardy there, and are carrying on experiments of a similar character here. At the Experimental Farm we have a forest belt extending across the west and north boundaries of the farm, containing in all about 20,000 timber trees, which have been selected from the more valuable sorts for commercial purposes. These are

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grown in groups of one sort, in some cases, and in others, all mixed together. They are also grown at different distances apart in order to find out under what conditions they will succeed the best, so that we will be able to give to future tree planters such information as will be a guide to them in the selection of varieties, and also information as to the best methods to adopt in planting. We have also gained a large amount of information in reference to this subject, and every year will add to its value and usefulness.

*By Sir Henry Joly :*

Q. Do you see any difficulties in the way of growing different varieties ?

A. I was just about to speak of that. I have here a photograph of a shelter belt planted, eight years ago, at the Indian Head Farm, in the North-west Territories. It shows that the trees have made excellent growth. The variety used in this belt is what is known as Manitoba maple.

Q. That is the ash leaf maple ?

A. Yes. The green ash is also mixed with it in this belt, and some Russian poplars, with a few of the native poplars. Here are other views of sections of clumps and wood belts on this farm, and here is a view of the superintendent's residence, showing a forest clump at the right, with some hedges which have been planted for protection for fruits and vegetables. There is a belt, 100 feet wide, extending one and three-quarter miles, on this farm, the whole length of the western side and nearly the whole length of the northern side. I have here also a photograph of an avenue of trees taken last year at Brandon Farm.

Q. They look to be 10 or 12 feet high ?

A. They are about 8 or 9 feet. This work of tree growing on the western plains is a matter of great importance for the shelter it gives, and from the fact that such plantations assist in collecting snow, thus giving more advantageous conditions of moisture in the spring.

### SUMMARY OF WORK ACCOMPLISHED IN TREE PLANTING.

At Indian Head there are now about 120,000 trees growing in shelter belts, hedges and plots. At Brandon there are about 70,000, and the whole aspect of these farms is being changed by this planting. The advantages resulting from the shelter thus afforded, is so plain that the farmers, thousands of whom visit these farms from neighbouring districts, are thoroughly impressed with the importance of this work, and a great demand has arisen for young trees, especially Manitoba maple and other natives, such as green ash. To assist the farmers in establishing such shelter, we have had collected by the Indians, Half-breeds and others, during the past seven years, more than six tons of such tree seeds, and have distributed these in small quantities all over the territory, and in every district there may now be found plantations of trees which have been grown from these seeds. This good work is going on all the time and is interesting the people very much, and at the same time improving their condition. It also adds to the comforts surrounding their homesteads and makes the people fonder of their homes and more attached to the country.

### EXPERIMENTAL ARBORETUMS,—A LARGE SAVING.

At each of the Experimental Farms, an arboretum has been established, where many varieties of trees and shrubs from different countries are under test, to find out how far they are suited to the conditions of climate in Canada. At the Central Farm 65 acres has been set apart for this purpose, and there are now more than 2,500 varieties and species of trees and shrubs growing in that inclosure. At Indian Head we have about 200 species and varieties, and about 300 at Brandon ; while at Agassiz and Nappan the opportunities are almost unlimited, because the climates are so favourable. The object of these collections at each place is that we may have reliable data as to what species

are hardy and what we can recommend. So much money is thrown away by farmers and others in trying to grow varieties which are too tender to stand this climate, that the more we can prevent money being wasted in this way the better for the farmers and the country. From our experiments in fruit growing, I think we have stopped the large waste of money which occurred every year in the North-west country, in buying and planting eastern fruit and ornamental trees of a tender character. Many thousands of dollars were formerly wasted in this way. Thorough tests have been made of all such varieties at the Experimental Farms, and the results made widely known, and most of the settlers now confine their efforts in this line, to such things as they are likely to be successful with.

THE FORTY ACRE LOT.

I wish to make a few references to the experiments which have been conducted on the 40 acre lot at the Central Experimental Farm, begun by Prof. Robertson four or five years ago, and continued until recently. These experiments were begun in the spring of 1891, the object being to show that a much larger number of cattle could be kept on the small farms in Canada than the farmers now keep. The aim was to feed 30 head of cattle on 40 acres of land. That, however, was not fully accomplished. The first year the land was in very poor condition, and the crops small and 14 cows were fed for the whole year on the crops produced. In the second year, we fed 23, in the third year 25, and in the fourth year 24. In each case all the feed required for these animals for the whole year was raised on the 40 acres. The straw for bedding was drawn from the general stock of the farm; otherwise everything needed was grown on the area named, showing a considerable degree of success in the experiment, and giving valuable information to the country, encouraging to farmers who desire to increase their stock.

*By Mr. Featherston :*

Q. Was any manure added not produced by these cows?

A. The 40 acres were manured entirely from the cows fed on the food there and no other fertilizers were put on it.

*By Mr. Wilson :*

Q. You had a little pasture?

A. We had about 2 acres, out of the 40 acres, set apart more as an exercise ground than a pasture. They were fed on this pasture and during the summer green food raised on other parts of the 40 acres was thrown over the fence to them, from day to day. They were left in this inclosure at night and in the morning driven in to be milked; kept in all day and fed on ensilage raised on the 40 acres.

Q. What sorts of green food was given them?

A. Rye sown in the fall and ready for cutting green about the end of May. Another kind of fodder which we used was a mixture of oats, barley and pease, all sown together, and portions of that cut from the time it began to bloom until it got too old and woody for such use. We had also Hungarian grass, but the fodder used in summer was, mostly, mixtures of grain.

*By Mr. McMillan :*

Q. Did you put in any second crop?

A. I think we have sown a crop of corn twice after fall rye, it did not quite mature, but got sufficiently advanced to make good ensilage and feed.

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*By Mr. Wilson :*

Q. What kind of stuff did you raise to feed them with during the winter?

A. The grain we raised was mostly mixed, pease, oats, and barley, ripened together. We found we got a larger weight of ripened grain from such mixtures than from any single crop.

Q. Did you use either hay or straw besides?

A. We fed them mostly on ensilage, and gave comparatively little hay.

*By Mr. McGregor :*

Q. Did the cows do well on such food?

A. They seemed to. The straw was nearly all utilized for food as well as the grain on the forty acre plot.

*By Mr. Stenson :*

Q. You did not cut any of your ensilage corn for green food in summer?

A. I cannot recall any instance of so doing.

Q. You don't approve of it as a summer food?

A. Not while it is in a very young state. I think it is a very good fodder if you grow it long enough to bring it into that state when it contains a large proportion of nutriment. We have used corn cut early in September with the ensilage cutter, and found it very useful; but I do not think there is any advantage in growing corn broadcast, the way some people do, sowing about two bushels to the acre with the idea of getting good fodder for the cattle. There is so much water in such immature food that it is of little value.

Q. Have you the particulars of the milk given by those cows?

A. Every cow's milk was recorded and that could easily be got, but it has not yet been published.

Mr. McMILLAN.—I think it should be published.

Mr. SAUNDERS.—Yes, it might be better to do so.

Mr. McMILLAN.—The farmers say: Here there are the best conditions for obtaining results from a herd of cows and we get no account of it. I have heard that frequently.

Mr. SAUNDERS.—I do not think the cows here would be under the best conditions, because they were limited in the range of feed, and there was practically no pasture. However, we have all the results and they can easily be made up. Sometimes members of the Committee ask, why we do not condense our reports more, and make them smaller? There may be errors of judgment occasionally in what we publish, but we endeavour to give what we think is of most importance to the farmers. I am glad to get these hints.

*By Mr. Wilson :*

Q. If it did not bring the best results in the way of dairying, what use was the experiment?

A. This effort to feed 30 head of cattle on 40 acres was made to show that most farmers could feed more animals on their farms than they had been in the habit of doing, and the main object of the experiment was to encourage farmers to keep more stock.

Q. There is no object unless the results are given?

A. I have already given the results as to the number of cattle which were fed on the 40 acres.

Q. When Professor Robertson had this matter up before, he stated that he hoped to be able to feed a cow on each acre?

A. I believe that was his aim, and he began with thirty.

Mr. WILSON.—He did not succeed very well.

Mr. SAUNDERS.—I think he did very well. To feed an average of 24 cows for three years on 40 acres is, I think, a very good showing.

*By Mr. McGregor :*

Q. Have you reached any conclusion as to the value of sunflowers in ensilage?

A. Yes, we find them to be very useful.

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COMMITTEE ROOM No. 46,

HOUSE OF COMMONS, TUESDAY, 18th May, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10 o'clock a.m., Mr. Bain, Chairman, presiding.

Mr. W. Saunders, Director of the Dominion Experimental Farms, was recalled, and addressed the Committee as follows :—

Mr. CHAIRMAN AND GENTLEMEN,—When I had the pleasure of appearing before you last, I called your attention to a variety of wheat which had been produced at the Central Experimental Farm and which had done exceptionally well in different parts of the Dominion as well as in the Western States. I forgot at that time to show you a specimen of the wheat, and if you pardon me for introducing this matter again for a moment I will call your attention to the character of the specimen. This is the Preston wheat, a bearded variety which has done so well, and here is a beardless form of the same cross called the Stanley. I thought possibly some of the members of the Committee might like to see these. There was also another point to which I forgot to call the attention of the Committee at the last session, that was the results of the testing of grain as to the best time for sowing.

TEST GROWING OF GRAIN BY DATES OF SOWING.

I have here a summary of the results of the early, medium and late sowings of grain, which have been continued at the Central Experimental Farm for seven years. The average results, taking the whole period of seven years, show that in regard to oats, the crop from the first sowing, which is made just as early as the seed can be got into the ground, and that from the second sowing, which is made a week later, are about the same. Very often the second is a little better than the first but not much.

*Oats.*—The average yield per acre for the seven years in oats for the first sowing has been 54 bushels and 28 pounds; that of the second sowing, a week later, 58 bushels, showing that there is no advantage in the very earliest sowing, but as the sequel will show, there is a great advantage in getting the seed in the ground within a week of the earliest time that the ground may be cultivated.

The average yield per acre of seven years' tests of the third sowing of oats has been 48 bushels and 14 pounds; of the fourth sowing, 42 bushels and 15 pounds; of the fifth sowing, 38 bushels and 12 pounds, and of the sixth sowing, 28 bushels and 7 pounds.

*By Mr. Wilson :*

Q. These sowings were just a week apart?

A. Yes; just one week apart. The latest sowing has given about one-half the crop that was got from the two earliest sowings.

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*By Mr. Dugas :*

Q. On the same soil?

A. Yes ; on the same soil and with the same seed. The latest sowing was not much later than some few careless farmers in some parts of the Dominion get in their last seeding of oats. I believe that farmers do not realize what they lose by such delay.

*Barley.*—In regard to barley, it is much the same. The first sowing averaged in seven years' tests 40 bushels and 7 pounds per acre ; the second, 40 bushels and 19 pounds, showing a little gain from the second sowing over the first. The third sowing dropped to 31 bushels and 38 pounds. The fourth gave a yield of 28 bushels and 8 pounds, the fifth of 24 bushels and 47 pounds, and the sixth of 22 bushels and 21 pounds.

This shows nearly as large a decrease between the average of the first two sowings and the last two sowings as we had in the case of oats.

*By Mr. Wilson :*

Q. Can you give us the dates of the sowings?

A. The first sowing at the central farm is usually made from the 15th to the 25th of April, varying with the season, just as soon as it is possible to get the seed into the ground. The subsequent sowings are just one week apart. The farmer in the Eastern provinces should begin putting his grain in as early as possible.

*By Mr. McGregor :*

Q. Do you sow while the frost is in the ground?

A. No, but as soon as the frost is out of the ground and the land can be cultivated.

Q. In the North-west they frequently sow on the frost?

A. I am speaking of Ontario. These remarks do not apply to the North-west. There is not the same advantage in early sowing there as in the East. Early sowing is very important in Ontario, Quebec and the Maritime Provinces.

*By Mr. Sproule :*

Q. You do not plough the land in the spring?

A. Not usually. Our practice is to use the disc harrow upon it.

*Spring wheat.*—With spring wheat the average yield per acre during the period of seven years was for the first sowing 18 bushels and 26 pounds ; the second, 19 bushels and 13 pounds ; the third, 13 bushels and 47 pounds ; the fourth, 12 bushels and 8 pounds ; the fifth, 10 bushels and 46 pounds ; and the sixth, 9 bushels and 15 pounds.

*Pease.*—The following are the results of similar tests continued for two years with pease ; the first sowing gave an average yield of 31 bushels and 39 pounds, second 34 bushels 37 pounds, third 37 bushels 10 pounds, the fourth 30 bushels 31 pounds, the fifth 27 bushels 47 pounds, and the sixth 25 bushels 39 pounds.

It will be observed that there was an increase in the third sowing over that of the second and the first, the indications being that in the case of pease you may sow them a week later to advantage. These figures show how very important it is to get the seed of cereal crops in the ground at the earliest period practicable. The following summary puts the results in a convenient form for comparison.

SUMMARY OF RESULTS OF EARLY, MEDIUM AND LATE SOWING.

The following are the averages for the whole of the tests which have been continued or seven years with oats, barley and spring wheat ; and two years with pease :—

TESTS CONTINUED FOR SEVEN YEARS.						TESTS CONTINUED FOR TWO YEARS.	
Oats.	Average yield per acre.	Barley.	Average yield per acre.	Spring Wheat.	Average yield per acre.	Pease.	Average yield per acre.
Bush. lbs.		Bush. lbs.		Bush. lbs.		Bush. lbs.	
1st Sowing....	54 28	1st sowing....	40 7	1st sowing.....	18 26	1st sowing....	31 39
2nd “ .....	58 ..	2nd “ .....	40 19	2nd “ .....	19 13	2nd “ .....	34 37
3rd “ .....	48 14	3rd “ .....	31 38	3rd “ .....	13 47	3rd “ .....	37 10
4th “ .....	42 15	4th “ .....	28 8	4th “ .....	12 8	4th “ .....	30 41
5th “ .....	38 12	5th “ .....	24 47	5th “ .....	10 46	5th “ .....	27 47
6th “ .....	28 7	6th “ .....	22 21	6th “ .....	9 15	6th “ .....	25 39

BUGS IN PEAS.

*By Mr. Featherston :*

Q. Have you any bugs in your pease here ?

A. We are seldom troubled much here from that cause ; occasionally we find a few, but they are not as bad as in Western Ontario where we have found it difficult to get seed free from bugs.

Q. The early sown pease are always full of bugs, and that is the reason why they sow late there ?

A. In regard to bugs, if the seed were well treated with bisulphide of carbon, and the bugs destroyed before the seed was sown, they would soon become scarce.

Q. Do you mean to say that the bugs are in the seed ?

A. Yes, and they come out when the pease are sown, crawl up through the soil and are ready to deposit their eggs on the pea pods as soon as the blossoms are dropped.

Q. Do you mean to say that the old bug in the pea comes out ?

A. In a great many cases it is still in the pea, when the pea is sown. In some instances, the bugs come out earlier and hide themselves in places where they can find shelter until the pea is ready for operation.

Q. You will sow pease in which there are no bugs and still you will find bugs in the crop ?

A. Yes, and mainly for the reason that some of your neighbours have sown buggy pease, and the bugs have escaped after the pease are sown. If seed can be sown free from bugs the proportion of pease injured by this pest will soon be very much reduced.

THE FEEDING OF STEERS.

The next subject to which I desire to call the attention of the Committee is the results of experiments in the feeding of steers at the Central Experimental Farm.

In the spring of 1896, a series of experiments which has not yet been reported upon was begun, to gain information relative to the cost of fattening steers, first on the ensilage combination known as the Robertson mixture, ten tons of corn, two and one half tons of horse beans, and one ton of sunflower heads.

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*Rations.*—This was used, first, with half its weight of turnips and one-tenth its weight of hay; second, with a bulky fodder ration consisting of an equal weight of corn fodder and turnips, with one quarter its weights of hay; and third, with a bulky fodder ration of hay 20 pounds, and turnips 50 pounds.

For the first six weeks no grain was given to group No. 1; for the next eight weeks 2 pounds of grain per animal per day, and for the remaining six weeks 4 pounds of grain per animal per day.

To group No. 2 there was given for the first six weeks, four pounds of grain per animal per day, and for the next fourteen weeks 6 pounds per day. To group No. 3, for the first six weeks, four poundsof grain per animal per per day; and for the next fourteen weeks six pounds per day.

*Cost.*—The results showed that group No. 1, cost for feed, 9·53 cents per day; group No. 2, 12·18 cents per day; and group No. 3, 13·53 cents per day.

Group No. 1, also made the larger increase. The result showed a considerable advantage in feeding with the ensilage combination of corn, beans and sunflowers over that of the other rations.

*By Mr. Stenson :*

Q. What kind of grain did you feed to these cattle?

A. The grain we use for feeding steers varies. We use just what we have on hand, as any ordinary farmer would do. It generally consists of barley, pease and oats, and if we have any wheat screenings they are put into the mixture and all ground up together. We do not find very much difference in the results, as to the kinds of grain used, one sort does almost as well as another, but I think that a mixture will usually give better results than any one sort of grain.

Q. You do not feed corn?

A. Not usually. We cannot often ripen corn at the Experimental Farm, and we usually feed the stock with such grain as we can grow.

*By Mr. McMillan :*

Q. Do you consider dry fodder as good as ensilage?

A. No, I do not. I think the dry fodder corn is a substitute that some farmers who have no silo may be justified in using; but in converting corn into ensilage, the fermentation makes the material more easily digestible, and the feed is all eaten up clean. This is not the case with corn fodder.

*By Mr. McGregor :*

Q. What do you use in the shape of beans?

A. We have been using horse-beans and have grown them with success in Ottawa. They are also grown with advantage in some parts of Quebec and in the Maritime Provinces. They seem to do well wherever the climate is moist enough to give them rapid and vigorous growth; but in Western Ontario they have not been a success. We are now trying some experiments with Soga beans which are said to succeed well in drier and warmer climates.

Q. In making the ration do you cut the hay?

A. Yes; we always cut the hay. I consider that it is a point of great economy in farm management, to cut all hay, not only for cattle but for horses, also as far as we can judge from some experiments which we have made, there is a saving of about twenty per cent, effected by using cut hay.

*By Mr. Featherston :*

Q. Don't you think that those people who feed fodder corn in the dry state, generally put it in with roots and let it soak for 24 hours?

A. I have known some farmers do that.

Q. It is common with us, and I find in buying cattle that those fed that way are much stronger and stand shipment better than ensilage fed?

A. I doubt if the ensilage affects them injuriously for shipment. The idea that hard dry feed makes animals stronger and hardier, is not I think always based on careful observation.

Mr. McMILLAN.—I have been 18 years shipping cattle fed on ensilage, and they stand shipping just as well as those fed on roots, grain, and hay.

Mr. FEATHERSTON.—But your cattle go to grass afterwards.

Mr. McMILLAN.—For the last two years; but before that I shipped from the stables and they did as well.

Prof. SAUNDERS.—There is no doubt that Indian corn when made into ensilage does contain a large proportion of nutritive matter in a form easily digested.

*By Mr. McMillan :*

Q. Have you tried common ensilage made from corn alone?

A. We have and with good results. This was reported on in the annual report for 1893.

*By Mr. McNeill :*

Q. Have you tried common ensilage as against roots?

A. Yes. We tried common ensilage against roots and against hay. This also was reported on in 1893.

During the past year we fed three groups of steers, four in each, with the object of ascertaining how far it is economical for farmers to withhold grain, during the first part of the fattening period. All were fed on the same bulky fodder mixture of 50 pounds plain corn ensilage, 25 pounds of roots, 5 pounds of hay and 5 pounds of straw, and the 12 animals were divided into three very even groups.

Group one had no grain for the first 8 weeks; then for 4 weeks they had 2 pounds of grain per animal per day, and for the closing period of 4 weeks they got 6 pounds of grain each per day; the period of test being 16 weeks.

Group two for the first 8 weeks had 2 pounds of grain per animal per day; for the next 4 weeks they had 4 pounds, and during the closing 4 weeks they had each 6 pounds of grain per day.

Group three were fed 4 pounds of grain per animal per day for the first 8 weeks, and 6 pounds each per day for the remaining 8 weeks.

The results show that the withholding of the grain for the first 8 weeks was the more economical method. The first group cost on an average 10.12 cents per day for the whole period; the second group cost 11.40 cents; and the third group cost 12.59 cents. That is a cost of  $1\frac{1}{2}$  cents per day more for the second group than for the first; and 2.47 cents, or nearly  $2\frac{1}{2}$  cents per day more for the third group than for the first, for the whole period of 111 days. This makes the cost per animal \$1.42 each for those in the second group, over those in the first, while the difference in weight was only  $2\frac{1}{2}$  pounds per animal, or 10 pounds on the group. The animals composing the third group cost \$2.74 each more than those of the first, while the difference in gain was  $7\frac{1}{2}$  pounds. Deducting the value of the  $7\frac{1}{2}$  pounds of grain there would still be a loss of more than \$2 per animal for the group which had the larger ration of grain—thus showing that it is economical to withhold the grain during the first half of the feeding period.

*By Mr. McGregor :*

Q. Could you give any results of the weight coming out?

A. The gain of the first group per animal at the end of the period over and above what they weighed at the beginning, was  $200\frac{1}{2}$  pounds, and they averaged about 1,100 pounds when the feeding test was begun.

*By Mr. Talbot :*

Q. How long were they fed?

A. For a period of 16 weeks.

## Agriculture and Colonization.

*By Mr. McGregor :*

Q. But I want the weight when you disposed of them ?

A. They ranged between 1,300 and 1,400 pounds each. The gain in the second group during the feeding period was  $202\frac{1}{4}$  pounds and in the third group it was  $209\frac{3}{4}$  pounds. They were a very even lot at the start, and they were so grouped that there was not 30 pounds difference in weight between the groups.

*By Mr. Talbot :*

Q. What difference was made in feeding the bulky fodder ration ?

A. These groups were all fed on the same bulky fodder ration which consisted of 50 pounds of plain corn ensilage, 25 pounds of roots, 5 pounds of hay, 5 pounds of straw. That formed the basis of the feed of the whole 12, and each animal was given all it would eat, and in the estimate of cost each one is charged with the quantity of food eaten.

*By Mr. McGregor :*

Q. Did you try the experiment any longer ?

A. No, we sold the steers at the end of the sixteen weeks.

*By Mr. Sproule :*

Q. What age were they when they came in ?

A. Eight of them were two year olds, and four three year olds picked up on the farms about Ottawa.

*By Mr. Talbot :*

Q. Were they in good condition ?

A. Not very. We fed them all for 30 days before beginning the test, on a good uniform ration, in order to bring them into a suitable and even condition for the experiment.

*By Mr. Featherston :*

Q. What condition were they in when weighed ? I suppose they were just from the country and fasting ?

A. They were not in very good condition and weighed between 1,000 and 1,100 each.

*By Mr. Talbot :*

Q. Your figures show a gain of about 2 lbs. a day ?

A. Very nearly that.

Q. Your average cost for food is 11 cents ?

A. It was rather more than that for the whole period.

### COST OF RATIONS.

Group No. 1 cost an average of 10·12 cents per day ; group 2, 11·40 cents, and group 3 an average of 12·59 per day.

Group No. 1 cost 8·40 cents per day for food for the first eight weeks ; for the second period of 4 weeks, the cost per day was 10·15 cents, and for the last 4 weeks 13·53 cents.

With group 2 the average cost for the first 8 weeks was 10·15 cents, per day ; for the next four weeks 11·90 cents, and the remaining 4 weeks 13·41 cents.

The cost of group 3, for the first 8 weeks, averaged 11·90 cents per day, and for the remainder of the time 13·28 cents per day ; but group 3 had 4 pounds of grain each per day for the first 8 weeks, and 6 pounds for the second 8 weeks.

## GAIN IN WEIGHT.

Group No. 1, gained an average of  $96\frac{1}{4}$  pounds in that period, during the first 8 weeks without grain, while group 2, which had 2 pounds of grain per day during the same period, gained  $101\frac{1}{4}$  pounds, a difference of only 5 pounds.

Group 3, which received 4 pounds, of grain per day per animal, during the first 8 weeks, made a gain of  $108\frac{3}{4}$  pounds. But when it came to the closing period, when the first group got a fair proportion of grain, they gained  $104\frac{1}{4}$  pounds each, whereas the animals belonging to groups 2 and 3, gained 101 pounds each.

*By Mr. Stenson :*

Q. You made no distinction of breeds in your selection of animals for the experiments ?

A. They were all grades and contained more or less Durham blood.

*By Mr. McMillan :*

Q. What did you say the mixture consisted of ?

A. The bulky fodder ration was made up of 50 pounds ensilage and 25 pounds roots, 5 pounds of cut hay and 5 pounds of cut straw.

## EXPERIMENTS WITH FATTENING SWINE.

Passing next to the subject of experiments in the feeding of swine, these have been carried on for the past two years, but have not been reported on until now.

Lot No. 1. In this experiment five pigs were fed on equal parts of ground barley, wheat, rye and bran soaked in cold water for 30 hours, and six pounds of skim milk given to each pig per day. They were fed twelve weeks and the quantity of food consumed per pound of increase was 3.10 pounds of meal and 4.35 pounds of skim milk. Taking the meal at  $\frac{3}{4}$  of a cent per pound, which is about the average market rate, and skim milk at 20 cents a hundred pounds in value, this would cost about  $3\frac{1}{4}$  cents for each pound of increase, live weight. This is the average cost per pound of increase up to a weight of 180 pounds to 200 pounds.

Lot No. 2 was fed on the same grain and milk ration with all the sunflower heads they would consume in addition. The quantity of meal used per pound of increase was 1.92 pounds ; of milk 5.40 pounds, and of sunflower heads 2.11 pounds. The cost, taking the sunflowers at \$6.66 per ton (\$6.50 was the actual cost one year when we made a computation) of producing the live weight was about 3 cents a pound, or about  $\frac{1}{4}$  cent less than in the first lot.

*By Mr. Cargill :*

Q. Without taking into consideration the cost of the animal when you commenced ?

A. Yes.

*By Mr. McMillan :*

Q. What did they weigh then ?

A. About 55 or 60 pounds.

Q. When making your calculation did you deduct that ?

A. No. The cost per pound of increase in weight is given only after the experimental feeding was begun. It is scarcely practicable to give the exact cost of raising the young pigs to the period of weaning.

## Agriculture and Colonization.

*By Mr. Cargill :*

Q. Is that as good pork as the other ?

A. Yes ; I think so. The proportion of sunflower seed fed was not large. It is not safe to draw conclusions from one experiment, but it seems to have produced flesh at a low cost.

*By Mr. Stenson :*

Q. In what way did you feed the sunflower heads ?

A. We put them in whole.

*By Mr. Talbot :*

Q. You did not soak them ?

A. No. We fed them without any treatment or preparation.

Lot 3 consisted of three pigs, which were fed for the first five weeks on all the raw potatoes they would eat. They got nothing else. They weighed in all 167 pounds at the start, and they consumed 400 pounds of raw potatoes and 315 pounds of skim milk, and they weighed only 169 pounds at the end of the five weeks, just two pounds more than when the feeding began. Seeing that no satisfactory progress was made, we then put them on the same grain ration as Lot No. 1, and they increased in weight rapidly. At the end of 20 weeks they had reached a saleable size, and had used per pound of increase 3.72 pounds of meal, 1.37 pounds of potatoes and 1.08 pounds of milk, and the cost for each pound of increase, live weight, was about 3 $\frac{3}{4}$  cents.

Lot 4 consisted of four pigs fed from the 18th December, 1895, to the 1st of April, 1896, with cooked potatoes—all they would eat—with three pounds of skim milk per day for each pig. During this time, 15 weeks, they consumed 2,493 pounds of potatoes and 945 pounds of milk, and made a total gain of 185 pounds, or about 46 pounds per pig.

The progress on cooked potatoes was not satisfactory and it was given up at the end of the 15 weeks, and for the remaining five weeks these pigs were fed on meal. They consumed 530 pounds of meal during the last four weeks, and made 153 pounds of increase, as against 185 pounds of increase in the former 15 weeks. They consumed for each pound of increase—meal, 1.52 pounds ; potatoes, 7.18 pounds ; milk, 2.72 pounds.

*By Mr. Stenson :*

Q. What kind of meal did you feed ?

A. A mixture of ground barley, pease, oats and bran.

Q. You make it a rule to feed your stock from the farm produce ?

A. As much as possible. We sometimes have to buy oats, but we usually have enough barley and pease and other produce of the farm.

Q. You do not use Indian corn ?

A. Not usually. Some special experiments were conducted with Indian corn, to which I will refer later on.

The cost of feeding this lot 4, where cooked potatoes were used, was about 4 cents per pound of increase, taking potatoes at a value of 20 cents per bushel.

Lot 5 consisted of four pigs fed for the first five weeks on raw potatoes pulped, with 3 pounds of meal per day to the pen. They made little progress, and for the next five weeks we fed them entirely on boiled potatoes. They still made poor progress and consumed 35 $\frac{1}{2}$  pounds of cooked potatoes for each pound of increase. After this we fed them meal and milk for ten weeks, when they made satisfactory progress, and at the end of the period it was found that the food consumed per pound of increase was 2.28 pounds of meal, .71 pounds of raw potatoes, 2.41 pounds of cooked potatoes, and 1.52 pounds of milk, involving a cost per pound of increase of about 3 $\frac{1}{4}$  cents.

*By Mr. McNeill :*

Q. You fed potatoes principally ?

A. During the second period they were given cooked potatoes only. One of the main objects in conducting these experiments was to gain information as to the value of potatoes, raw and cooked, as food for hogs.

Lot No. 6 consisted of 3 pigs fed for the first 15 weeks on all they would eat of cooked potatoes with 3 pounds of meal per day to the pen, that is 1 pound of meal per animal. The progress made was not satisfactory, and at the end of 15 weeks the diet was changed to meal and milk, for the last five weeks. The pen of 3 pigs gained 222 pounds in the first 15 weeks, and in the last five weeks, after the change was made to meal and milk, they gained 200 pounds. The average consumption for each pound of increase was meal 205 pound, potatoes, 5.05 pounds, and milk, 74 pounds.

*By Mr. Clancy :*

Q. Did you limit them as to the quantity of meal ?

A. We gave them all they would eat up clean.

*By Mr. McMillan :*

Q. When feeding potatoes did they grow in size as well as in flesh ?

A. We did not take measurements but weighed them regularly. Those fed on raw potatoes looked very thin and miserable until their ration was changed.

Lot No. 7 consisted of three pigs fed for 20 weeks on cooked potatoes, with three pounds of meal per pen and 9 pounds of skim milk per pen per day. The results at the close of the experiment showed that each pound of increase had taken .98 of meal, or nearly one pound, 7.29 pounds of potatoes and 2.96 pounds of milk, which involved about the same cost as the previous lot, viz. 3½ cents per pound live weight.

Lot No. 8 consisted of four pigs, which were fed entirely on oats and milk—the oats were ground and soaked for 30 hours before being fed, and each animal had 6 pounds of skim milk per day—24 pounds per day to the pen with all the ground oats they would eat up clean. They were fed for 20 weeks. The results showed that 3.26 pounds of oats had been consumed and 5.81 pounds of skim milk for each pound of increase.

The cost per pound of increase was about 3½ cents, taking oats at 25 cents per bushel, and 20 cents per 100 pounds, as the average cost for the skim milk.

Lot No. 9 consisted of four pigs which were fed entirely on ground pease with 8 pounds of skim milk per day to each animal. The consumption of pease for each pound of increase averaged 2.76 pounds and the consumption of milk was 4.68 pounds, making the average cost of lot 9 the same as lot 8, viz. : 3½ cents per pound, pease being valued at 50 cents a bushel

Lot No. 10 consisted of 3 pigs and they were fed on equal parts, by weight, of ground oats and pease with 6 pounds of skimmed milk per animal per day. They consumed an average of 3 pounds of the mixed grain and 4.51 pounds of the skimmed milk, per pound of increase and the cost of that lot was practically the same,—3½ cents per pound of increase, live weight.

*By Mr. McNeill :*

Q. Did the pigs do equally well on pure pease ?

A. They matured more rapidly when fed entirely on pease. I took some pains to carefully test the quality of the bacon from the pigs that had been fed entirely on pease as compared with those which had been fed entirely on oats and those fed on the mixture of pease and oats. There seemed to be a better distribution of the lean with the fat, where the pigs were fed entirely on oats, and the fat of the bacon from those fed on pease alone appeared to be a little less firm and to fry out more in cooking. I think it is important that the farmers generally should be aware of the value of oats for this purpose, so that where oats are very cheap and do not meet with a ready sale, they may be advantageously converted into pork which usually commands a good price.

## Agriculture and Colonization.

Lot No. 11 was fed on barley alone. There were 4 pigs. The barley was ground and soaked the same as the other grain for 30 hours, and no milk was fed. The pigs were fed for 16 weeks and the quantity of barley consumed per pound of increase, was 4.35 pounds. Taking barley at 36 cents per bushel, this would cost  $3\frac{1}{2}$  cents for each pound of increase.

Lot No. 12 was fed entirely on shorts soaked in cold water for 30 hours, no milk, and they were fed for 16 weeks. The quantity of shorts used per pound of increase was 4.41 pounds. Taking shorts at \$15.00 per ton, this would give  $3\frac{1}{2}$  cents, as the cost per pound of increase.

Lot No. 13, four pigs which were fed entirely on ground Indian corn soaked in cold water for 30 hours, without milk, the feeding period lasted 16 weeks. Taking the corn at 45 cents a bushel, which is what we paid here, but would be a high figure for some other localities, that would put the cost at  $3\frac{1}{2}$  cents for each pound, live weight. Pork could be produced cheaper than this, if corn could be got at the low prices now paid for it in the west.

*By Mr. Stenson :*

Q. Did you test that pork made from corn? Do you think it was equal to the pork made out of pease?

A. I gave instructions to the butcher to save me some of the bacon from this lot, but he forgot to do so, and I am unable to offer any opinion on this subject from actual test.

*By Mr. McGregor :*

Q. It sells for just as much in the market?

A. There might not be very much difference, but I think the fat would be softer and would fry out more when cooked.

Lot 14 was fed on a mixture of one-third barley, one-third corn and one-third shorts, by weight. These were all soaked for 30 hours, and no milk was given. The feeding was carried on for 16 weeks, and the quantity consumed was 3.99 pounds of the mixture for each pound of increase. The cost of the increase was about 3c. per pound, showing a little advantage in using the mixture, over that of either of the ingredients simply.

*By Mr. Cargill :*

Q. What is your own opinion as to the value of corn feed for pork?

A. Swine fed entirely on Indian corn usually have a larger proportion of fat, and the fat is softer in texture than when the pigs are fed on a mixture, of grains. I think the pork will be of better quality where it is fed with a mixture, such as pease, barley and oats, using some skim milk also. On such a mixed diet the animals will thrive better than they do on any one sort of grain, and there will be a better mixture of lean and fat in the bacon.

*By Mr. Featherston :*

Q. Was there any difference in the breeds of those pigs?

A. Most of them were crosses between the Berkshire and Tamworth, and the Berkshire and Yorkshire. There were a few crosses of the Berkshire and Essex. They did not grow quite so rapidly.

*By Mr. Talbot :*

Q. Which of these 14 tests gave you the most rapid growth?

A. I think the pigs fed entirely on pease made the most rapid growth. The exact figures in regard to this will be found in the annual report for 1896, now in the press.

*By Mr. McGregor :*

Q. Did you try feeding with dry corn or pea meal?

A. We have not done so recently.

Q. Would you advise feeding with ground meal?

A. Yes I would.

*By Mr. McMillan :*

Q. Have you ever tried feeding mangels, because we feed pigs largely on mangels. We sold over 100 last summer and we had another lot of 50 lately. We feed our mangels largely?

A. We have tried sugar beets, but not mangels for pigs. That is one of the experiments we have yet to undertake.

*By Mr. McGregor :*

Q. We grow a quantity a clover in my district, and that is fed to a considerable extent?

A. Yes, that makes very good food.

*By Mr. Clancy :*

Q. Have you had any tests as to the relative gain on the same feed during winter months as compared with summer months?

A. Yes. We have had some experience in this during the past winter. We found that they did not make the gain in the winter that they do in summer, and I do not think it pays any farmer to carry swine through the winter except for breeding purposes. Where two litters are had in the year, the first should be very early so that the second may be up to a fair size before very cold weather comes, so that they can be sold early in the winter.

*By Mr. McNeill :*

Q. Are we to understand that the cost of a pound of pork put on the live animal is 3 to 3½ cents, while the cost of a pound of beef is about 8 cents?

A. In the case of a steer of 1,100 pounds weight, in feeding we put on an extra 200 pounds, but that adds much to the value of the whole carcase, and its cost must be considered in that light. In the feeding of pigs this is different, and it is scarcely practicable to make a fair comparison between the two.

*By Mr. Featherston :*

Q. In other words, Professor, you put in a steer costing 3 cents a pound and send it out at 4 cents a pound and gain a cent a pound on all these 1,100 pounds.

A. Certainly.

*By Mr. Bostock :*

Q. According to your experiment, potatoes are hardly any good?

A. They are no doubt useful as a change of diet, and when used in moderation would be valuable; but they are more valuable cooked than raw. But to undertake to feed swine with potatoes alone is not profitable.

*By Mr. Talbot :*

Q. They are used on small farms down our way.

A. If grain is used with potatoes it is not easy to determine the result from each. The only way to find out that is to feed with grain or potatoes separately.

## Agriculture and Colonization.

*By Mr. Meigs :*

Q. Did you ever keep them till they were six or eight months old and then fatten them?

A. We did try that several years ago and published the results of the experiments. We found that after the pigs reached 200 pounds, live weight, it cost more to put the added weight on them than the farmer got for it. That is, whereas it takes from 3 to 4 cents to put each pound live weight up to about 200 pounds; the additional weight beyond this will cost 5, 6 and sometimes 7 cents per pound.

Q. Our farmers take what they call shoats in the spring and fatten them.

A. It is doubtful if they pay for their board.

Mr. MEIGS—Well, they don't get much for them.

*By Mr. Wilson :*

Q. Have you ever tried pumkins?

A. No; we have never tried pumpkins.

*By Mr. Cargill :*

Q. What is the reason that Canadian hams and bacon are worth more per pound in the British markets than the American?

A. The reason I have heard assigned is that corn fed pork has too large a proportion of fat, and that the fat is softer and fries out more, and that it pays the Englishman who wants to use the meat, to pay a little more for Canadian bacon which contains more lean and the fat of which is harder and firmer in texture than that of animals which have been fed on corn.

Mr. McMILLAN—I think there are other reasons, among which is this one, that American hogs and cattle are often fed together; the cattle are fed on the corn and the hogs only eat the excrement, and that is not the same as the grain.

Mr. FEATHERSTON—You won't find as heavy hogs in Chicago now as formerly.

Prof. SAUNDERS—I think that in the last two or three years there has been a great change in this respect, and that most of the swine brought to the market do not now exceed 200 pounds each in live weight.

### RESULTS OF CURATIVE EXPERIMENTS ON TUBERCULOUS CATTLE.

I desire now to give you the results of some curative experiments on tuberculosis in cattle.

Three years ago I explained to this Committee that we had at the Central Farm five young heifers which were tested at the time that the slaughter took place of cattle for tuberculosis, and which, when tested with tuberculin, were found to be affected by this disease. As these were young it was thought best to try some experiments in treatment to see what chance there might be of curing this disease. After consultation with physicians, it was decided to try sulphurous acid which was then being used to some extent in cases of consumption of human beings, and accordingly we gave two teaspoonsful of the acid per day, put in the drinking water, to each animal for a year. When tested again at the end of this period with tuberculin the animals showed just about the same reaction, indicating that they had not improved to any material extent. Then it was suggested that as tuberculin itself was held to have curative properties, when injected into the system, we should try a series of injections of tuberculin in these cases. This we did, injecting five drops once a week for four weeks. For the following four weeks 10 drops per week, then 15 drops per week for four weeks, and finally 20 drops per week for four weeks, and after each of these injections, 16 in all, every animal had its temperature taken every two hours for twenty hours, to see if there was any reaction. Tables giving the results of all these tests will be found in the Annual Report. After four months, this treatment was discontinued, and the animals were allowed to remain without

treatment for six months, when they were tested again and showed by the reaction, that they were still affected with the disease. Then, under authority of the Minister, they were slaughtered and the viscera examined. Three we found badly and two slightly affected. The remedies used did not appear to have had any effect on the progress of the disease, as there were large quantities of thin pus and some thick and creamy, with hard, limy concretions about the glands of the throat, giving evidence of the disease in different stages of active progress. Particulars of the condition of each, on *post mortem* examination, are given in the Annual Report. The first two animals were slaughtered in presence of Dr. McEachren, who conducted the *post mortem*, and Dr. Smith, head of the Veterinary College at Toronto, was present and conducted the *post mortem* of the other three. The results indicated that the remedies used had produced no curative effects.

*By Mr. McHugh :*

Q. Did the animals keep in good condition ?

A. Yes. We did not feed them highly, but they remained throughout in very fair condition, and from appearance would hardly have been suspected of disease.

*By the Chairman :*

Q. Were there any external symptoms ?

A. None except one case where there was a slight cough. The others had no cough and seemed to all appearance as well as other cattle.

*By Mr. Featherston :*

Q. Where did you find the disease located ?

A. In different parts of the body. Some were affected in the lungs, others in the liver, or in the glands about the throat.

Q. What breeds were the cattle ?

A. There were two grade Short Horns, one Jersey grade and one grade Devon.

Q. What were the symptoms ? Were there large gatherings inside ?

A. Yes, in some cases. In one of the cattle the lungs were very full of tubercle, and when cut into, pus oozed out. In another the liver was badly diseased, and in another the bronchial glands were enlarged and filled with calcareous tubercle.

Q. Do you think that lumps outside are a symptom ?

A. Yes. Veterinary surgeons can sometimes detect the presence of tubercle by the enlargement of these glands.

*By Mr. McGregor :*

Q. Had the liver grown to the side ?

A. Not in any of these cases.

The CHAIRMAN—I may say to the Committee that we hope to have Dr. McEachran with us by the end of this week, and I was going to suggest to the friends that these technical matters might be dealt with by him. It is not quite fair to a man who is not a professional man, to ask him for such information.

*By Mr. McNeill :*

Q. You said that one animal was not so much affected. Is there much difference in the symptoms between those which are only slightly affected ?

A. In this particular instance, the animal did not show so high a temperature after the injection of the tuberculin. The figures will be found in the annual report.

## Agriculture and Colonization.

*By the Chairman :*

Q. What is the general opinion as to the effect on the flesh, is it safe to use it in such slight cases ?

A. Where the disease is local and the organs but slightly involved, the flesh is considered to be quite safe to use, but where the disease is general it is not considered safe. In the large abattoirs in Europe, where there are the best experts, they pronounce the flesh of animals which are but slightly affected by tubercle, as fit for food. Even where animals are more seriously affected it is held to be safe to use the meat, provided it is well cooked. In Denmark, where the government are taking measures to try to remove tuberculosis altogether from their dairy herds, they compel the people to fatten and kill those animals found to be affected, and in such cases the meat is branded, so that the people who buy it know that the animals have been so affected. The people buy such meat there quite readily, and understand that it must be well cooked. The fact that the government authorizes the sale of this meat gives the people confidence that it is not injurious.

*By Mr. Talbot :*

Q. But the milk is bad :

A. Yes. It is not possible until a cow is slaughtered to tell whether the udder is affected or not. If it is affected with tubercle, then the milk is almost always unsafe to use. When the disease occurs in the glands of the throat or other parts of the body, it is not often that you can detect the germs of tubercle in the milk of such animals. It is, however, always best to be on the safe side, and to boil suspected milk before using it.

### PROGRESSIVE WORK ON THE BRANCH EXPERIMENTAL FARMS.

I desire next to call the attention of the committee for the short time now remaining, to the progress of the work on the branch experimental farms.

Coming now to the work of the branch farms, this is so arranged as to provide for the early investigation of those questions which are of immediate importance to the farmers of the province in which the experimental farm is situated. In Nappan, in the maritime provinces, the crops during the past year have been very good. Spring wheat gave exceptionally large returns. It was so also with oats, and there were reasonably good crops of barley. There, the testing of different varieties of grain such as I have referred to as carried on at the Central Farm, is repeated, and this is done at all the branch farms, so that we have results of uniform tests of the more important farm crops under all the different climatic conditions prevailing in the Dominion. In Nappan we have also carried on a great many experiments in regard to the draining of land, showing that this question is of much importance there, as drained land can be sown early in the spring, thereby increasing the yield. Experiments have also been carried on in the feeding of cattle for the production of milk and beef; and in the fattening of swine on similar lines to those I have been explaining. Large orchards have been established there in which many varieties of fruits are being tested, both large and small. A large number of vegetables have also been tried; and there have been more or less experiments conducted in reference to the growth of trees, both from the standpoint of forestry and the ornamentation of farms and homes.

At Brandon, in Manitoba, we have 670 acres of land. A large number of experiments have been carried on during the past two or three years in reference to the treatment of land to prepare it for crop, showing the results of sowing in fallow land, on fall ploughing, and spring ploughing; also the results of sowing the seed on the surface of the ground in stubble land without ploughing it at all, but simply harrowing to cover the seed. All these have been tested and results given. In every case the advantage of good farming is shown, and where the land is properly prepared by summer-fallowing, the crops are very much larger than where a less careful system is adopted. With a reasonable rainfall, good crops can sometimes be had from their very rich lands, even with less careful methods; but as a rule, good farming pays there as elsewhere.

Many experiments have been carried on for the province of Manitoba for the prevention of smut, which is troublesome there.

With regard to the bunt, or stinking smut, which injures grain in the North-west, it is easily controlled by using bluestone, or sulphate of copper, dissolved in water, in the proportion of 1-pound to 1½ pails full, and this solution sprinkled over 10 bushels of grain. The grain should be turned over and over with a shovel while being sprinkled, so that every kernel may be wet. After that the grain is spread out to dry, and in a short time it will be ready for sowing. That treatment destroys the smut. Comparisons of plots sown with smutty untreated, show a large number of smutty heads. Those sown with treated grain give none or very few.

Smut in oats is more difficult to treat; but we have found a remedy which is effectual for this also, though rather troublesome to use. Sulphate of copper lessens but does not eradicate this form of smut. A much better remedy is found in sulphide of potassium, or sulphuret of potash, as it is sometimes called. This is dissolved in water, in the proportion of 1½ pounds to 25 gallons, and the oats steeped in that solution for 24 hours, and by this treatment, smut in oats may be practically destroyed in the very worst cases. In plots sown in the spring, last year, at the Central Farm where the grain was thus treated, all the varieties came out clean and free from smut, notwithstanding that the seed had been more or less smutty, and the crops of the previous year were considerably affected by smut. Some varieties of oats treated in this way and some that was not treated, was sown in other plots, to compare the one with the other, and the number of smutty heads recorded, which showed that smutty seeds, untreated, gave a smutty crop, while the treated seed gave a clean crop.

Experiments in flax have been carried on at the Brandon Farm—as at all the farms—to ascertain how to produce the largest crop of seed also the best quality of fibre. Experiments have also been carried on with dairy cattle and beef breeds of cattle, which are reported from year to year in the annual reports of the farm.

#### BROME GRASS.

With reference to the subject of Brome grass, which I brought before the Committee at a previous session, I have here photographs of a field grown at Brandon, showing that the Brome grass grows to a good height, a large quantity of seed was saved from that field, all of which has been disposed of to farmers, for sowing. I have here also two photographs, one showing the house of the Superintendent before any trees were planted around it, and the other giving the appearance of the place after three years planting, showing that the decoration of one's home with a few trees makes all the difference between bare and bleak surroundings, and an appearance of comfort and elegance.

*By Mr. McNeill:*

Q. Is there any difficulty in eradicating the Brome grass?

A. We have not found any difficulty in this particular, and I do not apprehend that there will be any difficulty. The root system of this grass is such that I think it will be easy to eradicate it when desired.

Q. Do the roots grow deep?

A. Yes, moderately so, and it seems to succeed in almost any kind of soil, it endures conditions of drought, wonderfully well, and in irrigated land it grows amazingly fast. I saw a large field at Mr. Hull's ranch near Calgary, last year, some of which was four and five feet high. He has both Timothy and Brome growing on his ranch. He feeds a large number of cattle and prefers the Brome grass to the Timothy.

The results of the crops last year at the branch experimental farm at Indian Head were exceptionally good. The rainfall, although heavier than usual, was not sufficient to cause undue growth, and the climate being otherwise somewhat drier than that of Brandon, the crops bore this additional rain very much better than the Brandon soil did.

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There, we had a good deal of lodging and rusting, especially in the oats, and the crops, while well up to the average of the district were not as good as usual. At Indian Head they were much above the average in yield and of excellent quality. The lowest yield of wheat at the farm was about 30 bushels to the acre, and the highest 46 bushels. The average on summer-fallowed land in that district was about 40 bushels to the acre. I think that is not an over-estimate. On land not summer-fallowed, but fall ploughed, or sown on stubble in the manner I have spoken of, the crop has not exceeded an average of 25 bushels to the acre.

The Brome grass of that district has also succeeded remarkably well and is being extensively sown by the most intelligent farmers. We have now 70 acres of Brome grass at the Indian Head Farm and are expecting to seed a considerable additional acreage this year. Many farmers in that district have now from five to ten acres and others smaller plots, so that the extension of the cultivation of that important and useful grass is going on at a very rapid rate, and in a few years it is expected there will be pasture fields and hay fields of this grass, on nearly every farm in the North-west country. Before the Experimental Farms were established this grass was not known in cultivation anywhere, in this country.

*By Mr. Bell (Pictou):*

Q. Where is that grass native of?

A. We secured the first lot of seed of this variety in 1887, the first year the Experimental Farms were established, from a seed dealer in Riga, Russia. It grows throughout Northern Europe, but it is not confined to Russia, but is cultivated also in Northern Germany, Austria and Hungary. It is grown more or less as a fodder grass, and is much more used there than among English-speaking people. But now, that the reports of the success which we have had at the Experimental Farms here have been published it is being used in all parts of the Western States. We have had many applications for the Experimental Farm Reports from the Western States.

Q. Is this grass perennial?

A. Yes.

Q. Is it to be got in Canada?

A. Yes. The seedsmen have been importing it, and there is a constantly increasing demand for it. We grew nearly two tons of seed last year at Indian Head and half a ton or more at Brandon, and that has all been disposed of. We have given away samples about one pound each to every one who has applied for it. This quantity is about enough to sow one-twelfth of an acre. If sown this year, it would produce seed next year, and as seed is produced at the rate of from 300 to 500 pounds per acre, it does not take long for a farmer, from a small plot, to get seed enough for a large acreage. There must have been about two thousand farmers supplied with samples of this seed during the past season, not only in the North-west, but also in different parts of Ontario, Quebec and the Maritime Provinces. This grass will soon be thoroughly tested in all the different climates of the Dominion.

*By Mr. McNeill:*

Q. I suppose it can be sown in the fall as well as in the spring?

A. Yes; but it is better sown in the spring. In the North-west it is usually sown without grain. We have not yet tested that plan here; we have sown it with grain, and it does very well. It starts very early in the spring and grows very rapidly.

Q. I have always had better success on heavy land, sowing timothy in the fall than in the spring. When the fine weather in the spring comes on, it is already well established?

A. We have tried that plan with timothy one or two seasons at the Central Farm with very good results.

*By Mr. Stenson :*

Q. In order to obtain seed will the fodder part of the grass be sacrificed, the same as with timothy?

A. Yes, to some extent. If you raise a crop of seed the hay is not as good in quality, but still it is useful and the crop of the following year will not be quite so vigorous as if it had been cut for hay. The ripening of the seed is a most exhausting operation on all plants.

*By Mr. Semple :*

Q. Have you estimated the yield per acre of Brome grass?

A. It runs from 2 to 3½ tons to the acre. You will find the particulars of yield in the Reports of the Experimental Farms.

*By Mr. McNeill :*

Q. Under high cultivation I suppose in the North-west?

A. Not especially so, but just the same cultivation as is given other crops sown there. In regard to Timothy, in the North-west, we have not been able to grow it successfully at the Indian Head farm. We have tried it at Brandon also with very poor success. There are limited protected areas in Manitoba where Timothy is grown fairly well. At Calgary, also in Alberta, along the foothills of the Rocky Mountains it will grow very well.

#### YIELDS OF CEREALS AT INDIAN HEAD.

The following results in the production of farm crops were obtained at the Indian Head Farm. Spring wheat 36 to 46 bushels per acre, and oats 90 to 100 bushels per acre. Twenty acres of Banner gave 1,958 bushels, or an average of 97 bushels and 21 pounds per acre. Barley also did well, giving from 48 to 73 bushels per acre.

Mixed grain crops have been grown at the Indian Head Farm to a considerable extent, sowing wheat, barley and oats in mixture together, putting them in after the other seeding was done and cutting the crop green before wheat harvest commenced, and curing this as hay. This has been done with great success during the past year as in former years, showing that there is no difficulty in the way of the average farmer in the North-west country, obtaining all the feed he wants for his stock by growing mixed crops curing them for hay or raising Brome grass hay. The great difficulty that seemed to stand in the way when the experimental farms were first established has been removed. When I first went to the North-west and urged farmers to keep more stock and to produce increased quantities of beef and dairy products, I met this objection, that it was no use going into the dairying or raising cattle everywhere on a large scale because the country was poorly supplied with native hay; Timothy and Clover would not grow outside of a few favoured localities, and unless something else was found that would furnish the necessary food for stock, the dairying and cattle industries could not be much extended. The way has now been prepared for the increase of that industry to an unlimited extent, and those who have been through the country and know something of its vast areas of fertile lands, will realize that this is a matter of great importance to the Dominion.

At the most westerly farm at Agassiz, B.C., we have about 1,100 acres,—300 acres of valley land and 800 acres of mountain land. Similar experiments have been carried on there, with grain, as roots and fodder plants at the other farms, but last year was an exceptional one at Agassiz, and the crops were below the average. Cold rains prevailed from about the middle of May to the middle of June, and subsequent to that extremely hot weather until harvest time. The grain was sluggish in its growth during the cold damp weather, and then it was forced on at a tremendous rate when the hot weather came. It ripened prematurely and the result was comparatively short crops. The heaviest yields of oats, at Agassiz, ranged from 50 to 60 bushels as against 70 to 100

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bushels in other seasons. The land at Agassiz is well adapted for fruit growing, and the experiments being carried on in the testing of fruits have now reached that extent that we have at that farm the largest and most complete test orchard to be found in the world, containing more than 2,000 varieties of fruit. It is not expected that any very large proportion will be found specially useful, but every obtainable sort is being tried, so the fullest information may be available to the settler as to their relative usefulness in that climate, and that information may be had from the Experimental Farm, as to the best and most profitable trees to plant. In this large collection there is not usually more than two trees of a kind. This limitation is necessary in order to find room for growing all the obtainable varieties side by side.

A large number of vegetables are also being tested at Agassiz, and the growing of hardwood timber trees has been carried on to a considerable extent, with the object of finding out what sorts are likely to prove valuable in British Columbia. These trees are making very satisfactory growth, where they do not get overgrown with the large ferns so common everywhere. Where we can manage to keep the young trees free from the overshadowing influence of these ferns their growth is quite rapid, and I think there is no doubt that we shall be able to show in a comparatively short time, that valuable Eastern timber trees can be grown in British Columbia with considerable success. That would be a matter of great importance to that country, because they have no native hardwood trees there, except the large-leaved Oregon maple, the crab apple and the hazel, and these are not large enough or sufficiently abundant to furnish a large supply. We are trying oaks, elms, hickory, walnut, butternut, wild cherry and other trees, and have planted them in sufficient quantities to admit in time of some commercial tests being made, which will be of much value to the people living in that country. I have with me two or three photographs of that farm, which I will pass around to the members of the Committee. One shows a view of the farm and plantations at Agassiz looking down on the valley land from the mountain; another is a view of the Superintendent's residence which, three years ago, was quite bare of shrubs or trees. Now it will be seen that it is tastefully planted with a large number of ornamental varieties.

*By Mr. McGregor :*

Q. You spoke on a former occasion of Ladoga wheat doing well at Prince Albert; is it still grown in that region?

A. Ladoga wheat is still grown by a number of settlers through that district, and it gives satisfaction. It ripens a week earlier than Red Fife. It is not grown for export, but it serves a good purpose for home use and rarely fails to ripen. It is also grown to some extent on the Indian reservations.

Q. Do you advise the growing of the Preston or Stanley?

A. We are not yet in a position to supply any large quantities for test. We began with a single kernel of each, seven or eight years ago, and although we have a considerable quantity of seed now, every year we can only supply it in small lots, as the demand is very large.

If any other gentleman has any questions to ask, I shall be happy to answer them to the best of my ability.

*By Mr. Talbot :*

Q. I wish to ask you whether the French correspondence is greatly delayed?

A. In answer I would say that the French correspondence is replied to very promptly. We have two French correspondents always available for this work and, as a rule, there is less delay in replying to French letters than to English letters. All correspondents are replied to as promptly as possible.

Q. In regard to the notices sent out to farmers, in reference to the distribution of seeds, are you aware if they are distributed in Quebec as early as elsewhere?

A. It does not seem practicable to distribute the French printed matter quite as promptly as the English, as they are usually set up and printed first in English and then translated. The translations are then set up as soon as practicable, but their issue is usually a few days later than that of the English.

Q. Then there is delay?

A. Not to such an extent as to give reasonable ground for complaint. Lately, we have adopted the plan of translating the manuscript and sending both copies to the printer at the same time; and then the printers usually get them both out about the same time.

Q. We have heard complaints of delay sometimes of five and six weeks.

A. I cannot recall any instance of such delay in issuing circulars, and I am sure that Quebec gets its fair share of samples. The number sent to the farmers of that province, during the past two years has been much larger than the number which has been supplied to the farmers of Ontario.

Q. Complaints have been sent to me about the matter. There is no complaint on my part, because when I ask for seeds I get them; but some of my constituents have complained to me.

A. I should be glad to receive full particulars in such cases, so that I might have the opportunity of investigating them. It has been a matter of regret to me for several years past that it seems impossible to get our annual report out in French as early as I should like to do.

Q. Many say that they got the circulars, but when they wrote they found that the seed was out.

A. When the announcement of the distribution was made in the press, farmers were informed that applications would be received up to the 1st of March, but as the available stock was not then quite exhausted, we continued to send out and we were able to supply all who applied on or before the 20th of March, but by that time the stock available was exhausted. Every effort has been made to meet the wishes of farmers in all the different provinces of the Dominion as far as it has been possible to do so.

Having examined the preceding transcript of my evidence, I find it correct.

WM. SAUNDERS,  
*Director of Dominion Experimental Farms.*

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COMMITTEE ROOM 46,  
HOUSE OF COMMONS, Friday 28th May, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10.45 a.m., Mr. Bain, Chairman, presiding.

Mr. JAMES FLETCHER, Entomologist and Botanist, to the Dominion Experimental Farms, was called and addressed the Committee as follows :—

MR. CHAIRMAN AND GENTLEMEN,—I am sure you will thank the Chairman for asking Mr. McKay to address the Committee to-day because he has given such an interesting account of the work in the North-west, and has shown particularly what is of great importance, the advantage of summer-fallowing to conserve the moisture of the soil, because in the west this is a matter of the utmost importance.\*

*By Mr. Wilson :*

Q. Does the same thing apply to Ontario ?

A. Yes, but not to the same extent because there is a greater rainfall in Ontario.

*By Mr. Semple :*

Q. It is the practice in some parts of Ontario, to kill off the weeds ?

A. Yes. It is a very efficacious means of eradicating weeds, but the most important thing in the West, and what makes it essentially necessary there, is, that it holds the moisture in the land. The whole theory of cultivation of crops is to keep the moisture in by stirring up a thin layer on the surface so that it may dry up and being of a different texture to the soil below it check evaporation.

*Awnless Brome Grass—Origin of in Canada.*—I wish to draw the attention of the Committee to two samples of grass of which I have brought fresh specimens.

### VALUABLE FODDER GRASSES.

We have been experimenting for about nine years with Brome grass. I might mention that it was our own Canadian farms which introduced this valuable grass into American agriculture. Several samples were imported from Russia at the beginning of the Experimental Farm work. Since then it has been distributed in small packages all over the country, wherever we thought it would be useful. It is to-day the best grass of all that we have imported and has given good results wherever it has been tried. The quality as ascertained by chemical analysis is certainly good. It has the advantage of giving a large crop where very few other varieties will grow. It is extremely early and continues growing late into the fall. More than that it is not only suited to low-lying lands but has given excellent results in the high dry lands of the North-west and British Columbia. Mr. Cornwall, of Ashcroft, which is in one of the dry sections of British Columbia, writes to me in a letter received only yesterday, and tells me that he has cultivated it there, and that it is doing particularly well. Down the Okanagan valley which is a also dry section, this grass is also being grown. A small packet containing a few ounces of the seed was sent to Messrs. Rose Brothers, and when I visited them, it was a conspicuous object on their farm, and was doing better than any other grass grown there. Similar reports on its qualities come in constantly from all over Canada. One of the chief characteristics of this grass, and one which makes it valuable in the North-west, is its root growth. Mr. McKay did not lay as much stress on this point, perhaps, as he intended, because when speaking of it he was drawn off by a question. The Brome grass makes a sod which will prevent the soil from blowing.

\*For Mr. McKay's evidence here referred to, *Vide* p. 130.

In Manitoba, Timothy is now grown to a large extent in some sections, and by forming a sod much improves the conditions of the soil and prevents blowing which gives it a special value. Brome grass has this quality and to a larger degree. It has, too, another characteristic, I should like to mention, indeed, it has so many good qualities that one is apt to think we may be exaggerating when describing them. This characteristic, is that unlike Timothy and nearly all other grasses, there is little decrease in the value of the hay for feed even when it is left standing until the seed is ripe. This is owing to a peculiar habit of growth by which after the flowering stem has been produced, several other supplementary barren shoots which do not flower, spring up from the root. These shoots are very leafy and add much to the value of the hay. Mr. Shutt, our chemist, has found that the hay from which the ripe seed has been threshed, is almost of the same value as that cut at the proper time just after flowering, and the grower has besides a large supply of valuable seed for which he can always get a ready sale. The hay is of fairly good quality and smells sweet like English hay. Mr. McKay speaks of from one and a half to two and a half tons as an average crop. Here, we have had at the rate of four and a half tons of hay. I have a letter from Mr. Wm. Hull who has an irrigated farm near Calgary, in which he tells me that he got 900 tons, from off 200 acres from which he would have got nothing without irrigation.

Mr. MCGREGOR.—With the native grasses one ton of hay is good growing.

Mr. FLETCHER.—Yes, but that is without irrigation.

*By Mr. McMillan :*

Q. Have you reference to a small plot ?

A. One-twentieth of an acre.

Mr. McMILLAN.—As farmers we would rather see an acre.

Mr. FLETCHER.—Yes, we have that this year.

*By Mr. Douglas :*

Q. Has any experiment been made with this grass on alkaline land ?

A. Not on land classed as alkaline, but at the same time it has been grown on lands containing a great deal of alkali, and has given good returns. Mr. McKay, is now testing it on "alkaline" spots at Indian Head.

Mr. DOUGLAS.—That is an important point because so much land is now going to waste and it would be important if a success was made in this respect.

Mr. MCKAY.—We have some alkali on a very low part of the farm and it is growing there as well, if not better, than on other parts. I believe it is a great success on alkaline land.

Mr. FLETCHER.—With regard to the hay from it, it is particularly sweet and palatable. Any one going into Mr. McKay's barn notices the sweet smell like English hay and moreover the cattle are very fond of it. It holds its leaf which gives a peculiar value. Most grasses after they flower deteriorate rapidly, but as soon as this is in flower it begins to increase in value from the numbers of supplementary shoots which are produced, so that when it is threshed for seed you have a valuable fodder in the straw.

*By Mr. Rogers :*

Q. When and how should it be sown ?

A. In the west, it requires to be sown alone because the young plants dry out in August, when sown with a mother crop.

*By Mr. McMillan :*

Q. As it grows from the bottom, would it not be too troublesome ?

A. It may probably be some trouble to get rid of it again, from the stray running root-stocks ; but if you examine the root I have here, you will see that it is near the surface, and for the same reason, it, like couch grass or "Quack," can be taken out of the land by ploughing shallow,

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Mr. McMILLAN.—It takes a great deal of labour to take it out, we have tried it all ways.

Mr. TALBÔT.—We can only do it by summer fallowing.

Mr. FLETCHER.—Well, you can get at it a great deal better by ploughing shallow than by ploughing deep.

*Northern Blue Joint,—Origin.*—And now, Mr. Chairman, before the meeting closes, I have one more sample, I wish to show, as I have it here. On the grass plots on the experimental farm we have growing about 300 different grasses every year. This (showing sample) is one of the native grasses called Northern Blue Joint. I collected the seed originally on the North Shore of Lake Superior. It is a close relative of the ordinary Blue Joint which grows in this part of the country, but having a decided difference of habit, inasmuch as it is very much more leafy. It will grow on wet land and also on rather drier land under proper methods. This is a grass which it would pay seedsmen to sell and farmers to grow. These two grasses, the Brome grass and the Northern Blue Joint are the grasses that catch the eye of every one who visits the experimental farm at this time of the year. They are very early, being as you see considerably over 2 feet high, and give excellent hay. They are leafy from the bottom up to the very top, have a large quantity of leaves and are good in quality.

*By Mr. Semple :*

Q. That is certainly an excellent growth for the 28th of May?

A. Yes, it is a very good growth, and particularly this year.

*By Mr. Rogers :*

Q. Does it become sodded?

A. This is the fifth year for the plot from which this was taken, and that is too long to leave any grass on land, to give the best results.

*By Mr. McGregor :*

Q. How is it as a feeding grass?

A. It is a very good one indeed, both for meadow and pasture. The value of Brome grass also is very great as a pasture grass after 2 or 3 years as meadow.

*By Mr. Cargill :*

Q. In order to get a crop of that for hay for the first season you would prepare your land and sow it alone?

A. All grasses do better I think when sown alone, but you have the trouble of keeping down the weeds, and it is necessary to mow the weeds to give the grass a chance. All grasses would do better if they were sown alone, but it does not with us, here, pay quite as well. If you sow some grain with the grass you can cut that at the same time as you would the weeds; but you must sow a very small quantity of grain,—one bushel or even less, of barley, rye or wheat.

*By Mr. Martin :*

Q. Did you ever try Brome grass on low ground?

A. Yes, it has been tried on low ground. It cannot stand as much water as the Blue Joint grass, but it will stand more than Timothy under irrigation, but, of course, any of these grasses can be drowned out. There is one thing that we must not lose sight of in speaking of irrigation at Calgary and other places in the West near the Rocky Mountains, which is, that the water of the Bow River is very near to the freezing point all through the summer, so that the grass cannot stand as much water here as in other districts.

*By Mr. McMillan :*

Q. Would it not be better where it is cut, to leave it for a good covering of the soil in the field? Would you have anything off it, next year?

A. It is a very hardy grass. I think it is hardier than most grasses we have tried, and is killed out less, so that it would not require that protection.

*By Mr. Calvert :*

Q. Does it mature about the same time as Timothy?

A. Yes, about the same time. It can be left a little later.

*By Mr. Rogers :*

Q. We have heard about all the good qualities; are there any bad qualities?

A. Really I do not know of any, or I should have mentioned them, so as to give a little variation. For the West it is a most valuable introduction. It is not going to be quite so valuable in the East, where we use the whole of our farms for crop; but in the West it will be especially valuable. In the East, too, the running root-stocks will be considered troublesome by a certain class of farmers.

*By Mr. Cargill :*

Q. For Ontario, would you recommend it ahead of Timothy or Clover?

A. No, Clover and Timothy have a special value in Ontario. In addition to their intrinsic value, they have an artificial value, from this hay always having a good market. Wherever a man can get more money for Timothy and Clover than for anything else, by all means let him grow them.

*By Mr. Rogers :*

Q. It would not do to mix clover with Brome grass, would it?

A. It grows too heavily.

Mr. McMILLAN—Having visited the Indian Head Farm, and having gone over it with Mr. MacKay, it has given me very great pleasure to hear him to-day. I can assure all the gentlemen who have never been to Indian Head, if they go there, they will find the farm in capital condition. I was much pleased with everything I saw on the farm and everything in connection with it. There is no doubt but that Mr. MacKay is doing good work. I have also visited the farm at Agassiz. Both of these farms are doing excellent work for the farmers in those parts of the country.

Mr. MCGREGOR—I was at Moosejaw for several years, and they had the difficulty there, that Mr. MacKay has spoken of. It was so dry that the farmers could not get a crop and were moving away from the district. I had an interest in the Bell farm. We had difficulty in getting enough grain to gather a crop. I am pleased beyond measure to know that they have introduced this system of summer-fallowing, and that it has been attended with such satisfactory results. I have not the least doubt that this is going to be a great country. Qu'Appelle and Indian Head were troubled with the drought, but with the experience of ten years they have largely overcome the disadvantages. Summer-fallowing is largely overcoming the drought.

## Agriculture and Colonization.

COMMITTEE ROOM 46,  
HOUSE OF COMMONS, TUESDAY 8th June, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10.45 a.m., Mr. Bain, Chairman, presiding.

BY THE CHAIRMAN,—I may say for the information of the committee before we proceed that it was deemed desirable to call this meeting for this morning instead of Wednesday. You are aware that the House proposes to adopt morning sittings, and that except by special permission, it is not allowed to us to meet during the sittings of the House. We have with us this morning, by re-call, Mr. James Fletcher, Entomologist and Botanist to the Dominion Experimental Farms, who will make a short statement to us of the range of his observations and duties during the past year.

MR. FLETCHER,—Mr. Chairman and Gentlemen: The work in my department during the past year has been in connection with injurious insects, the eradication and control of weeds and the carrying on of some experiments upon which I have reported somewhat on several occasions in regard to native and imported grasses. I spoke at the last meeting to which I had the honour of appearing before the committee of the success which had attended the introduction of Brome grass into Canada and how the reports received nine years ago of the satisfactory nature of this grass had all been confirmed. As a matter of fact, I think it is not saying too much when it is stated that this grass has solved to a very large degree the question of providing fodder and hay in the North-west Territories and Manitoba, even in the arid districts. Its value in the eastern provinces will not be so great, because there is not the same demand for a useful, succulent grass. In the east we have many grasses which will give us good returns if proper mixtures are made and they are treated properly and the meadows are not left too long in the grass. But in the North-west and Manitoba the success of Brome grass has been very great indeed. During last summer in Manitoba I saw many large fields of it; on one particular farm there were about fifty acres of this grass which were producing a very heavy crop of hay, far heavier than any other crop that had been grown there. In the dry regions of British Columbia where it has been tried, and upon land with some alkali, it has shown itself to possess special value. It also succeeds well on low rich lands where, of course, almost everything will grow, but the fact that it will succeed better than any native grass and better than any crops which have been sown there for fodder purposes, is additional proof of its importance. As long ago as nine years, Mr. Routledge wrote me from Virden that from his own experience of one year, if it continued to succeed as it did then, it would entirely settle the question of providing a large supply of succulent feed for hay when it was required. During the present year, our collection at the Experimental Farm has been very much reduced in number on account of the severe winter that we have passed through. During the last winter we have lost more kinds of grass fodder plants and other plants than in any other winter that we have had. Plants which have been in the beds for eight or nine years were entirely killed. One plant known as Wagner's Wood Vetch that had stood for nine years giving us good crops, was killed out, the roots being entirely destroyed for two feet down. Some other plants of less value were not able to stand the winter, but they could not be compared with others because these other plants were also killed. The beds have been refilled, and now we have in them over 200 kinds of fodder plants either newly sown or newly planted or received from botanical gardeners and other students in different parts of America. We have now at the Experimental Farm, either growing or which have been grown and records kept of nearly all the varieties of fodder plants which have been advertised and others which have not been advertised, being our native grasses. The one perhaps of the greatest value amongst the native grasses is that

to which I referred at the last meeting. It is called the Northern Blue Joint. It is not quite the same as the ordinary Blue Joint and other grasses common to the lowlands and swampy marshes, and grown along the streams and rivers. This is the northern variety of that. It has a greater value as a fodder plant. It has a larger leaf and the stems are rather finer, and I believe it will prove a very valuable grass. One of the problems which has to be considered is to find a grass that will grow in the flooded meadows particularly along the banks of the St. Lawrence, where there are a great many acres which are flooded in the spring. The question is as to what kind of grass can be sown profitably to take the place of the coarse sedges and marsh grass which grow there. This grass will be valuable for use in this way and also the common Blue Joint grass. A variety known as the Canary Reed grass will also be a valuable grass for this purpose. This is one of the problems we are considering now.

*Weeds.*—The next subject which has been studied in the Botanical Department at the Experimental Farm particularly during the last two years is that relating to weeds, and a deep interest has been shown in the subject by the large number of letters received from farmers in all parts of Canada and particularly in Manitoba. Weeds in Manitoba had increased and the farmers saw that they had to take some very decided measures to eradicate them or they would become a source of very serious loss. The Minister of Agriculture, the Hon. Mr. Greenway, published a very excellent bulletin, decidedly the very best bulletin that has ever been published for the purpose for which it was required and one which has done a very great deal of good in the country. During the last two summers for a short time with the permission of our Minister of Agriculture. I have been in Manitoba lecturing upon weeds, and in that way a great deal of interest has been stirred up in the subject enabling a large number of farmers to become acquainted with the habits of plants and to identify them. I think there is no more important information about weeds looking to their eradication than to understand the nature of their growth, and although there are a large number of plants which are sometimes aggressive enemies to farmers, the principles upon which they are to be fought are simple indeed, and really all depend on the nature of the plant and on one or two very important characteristics only.

#### CLASSIFICATION OF PLANTS.

The division of all plants into three classes is, of course, very important, namely Those plants which live for one year, those plants which have a life of two years, and all others which live for many years. For those which live for one year, it is simply a matter of preventing their seeding and that again simply applies to those that live for two years. If seeds are not produced the plants, of course, must die out. The most difficult of all is that class of perennials or plants which live for many years, and then again we find that we can divide these up again for purposes of considering how to get rid of them into those which root near the surface of the ground and those which root deeply. To get rid of those which root near the surface of the ground, we have only to prevent their seeding by ploughing and throwing them up to the air to dry out, but with those which root deeply, it is a more difficult matter because they are covered up to preserve their vitality and so be reproduced. With regard to deep rooted weeds, we want to plough deeply, so that the plant is thrown up to the surface of the ground, that there it may starve out, the leaves having no means to absorb food from the air. That covers the whole of weed eradication; but we know that in different sections of the country the one plant may develop different characteristics. As an illustration of this, I need only refer to the Canada thistle. The Canada thistle about Winnipeg and for a few miles beyond is very troublesome, and as aggressive to farmers as here. But go west to the high lands and the Canada thistle is not a weed, is not aggressive, does not produce many seeds and is no trouble to keep down. That is a matter of climate, largely. There are many plants which are true plants here; but which under different climatic conditions will be weeds. Here to prevent the Canada thistle coming into flower, we find that mowing early and mowing again to prevent the leaves growing is the best treatment we can give it. But then in the West with this, as well as with the wild sunflower, we find that if summer following be done early in June, or late in May, there is no trouble with these plants. These plants have a great deal of sappy succulent

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roots, and if the land is broken up in May or June they can be eradicated easily; but if you delay summer-fallowing for only a fortnight, leaving it until late in June or July, the fallows of the land ploughed will be full of these by the end of the season. That can only be explained by supposing that its succulent roots renders it more susceptible to injury and decay sets in and the weed rots out. It would not do with us here where the greatest injury exists after flowering by reason of the nutriment in the root stalks. So it is not such a simple matter as at first seems. Not only every plant needs to be studied according to its growth and district: but plants may be pests in some places, and in other cases not be weeds at all. The farmers of Manitoba seem to have recognized this, and are now finding out all they can learn about weeds, and working according to the experience of others. This they get from the publications of specialists who have studied them.

*Nomenclature.*—An important matter I have referred to before, is the calling of weeds by their right names. It is not the unimportant matter it seems at first sight. It is important, and important for this reason, that there is a great deal of published information in regard to noxious weeds, and any one who requires information is referred to one of these, and if he does not know the right name of the weed he has to deal with, he will get the wrong information. I will give you an illustration. In the West, the grass generally called quack or couch grass is generally what is called "Holy" grass, which is the native hay from which the Indians make baskets. This is a very deep rooted grass and almost always called quack grass in the West. In the East we have another quack grass, too well known to us. The treatment of these is diametrically different. To get the best results, however, here we plough as near the surface as possible, getting to the roots, and throwing them to the top to dry out. On the other hand, in the West, they would not be reached by that shallow ploughing, but simply pruned and helped in their growth, just as a worn out meadow will give good results if you don't want to plough it until next year.

Quack grass in the prairie provinces is far more abundant than in Ontario—and yet the Manitoba quack grass is not a weed—because their method of ploughing is shallow and here we plough a little deeper each time, than before, and as a consequence quack grass is ploughed under and grows with them. The statement has been made that if you throw quack grass on a fence and leave it for a week it will grow. That is not so. It has not much vitality, if you take it out of the soil. But our experience shows it does grow covered up, owing to its underground succulent roots which dry up, if thrown on the surface. It is very often disseminated in a field by ploughing deep and being dragged by a harrow across the field, lying more in the head-rows and around the fields than through the crop. It is not an easy grass to get rid of, but it is not as difficult as some of the farmers in the country think.

The different characteristics of weeds are sometimes hard to recognize, but it is well to have some knowledge of their bad points. One is that where a weed is prevalent and occurs in large numbers that it is difficult to get rid of. That fact will make it a source of danger and loss to the farmer, particularly in the West, absorbing the moisture from the soil, but the fact of its being in large numbers does not prove that it is difficult to eradicate. I am reminded of a little weed—the small Rag Weed of Ontario—not the giant Rag Weed of the West. In the Southern States the farmers consider the Rag Weed as their manure. It grows there to a height of six and eight feet, and farmers would think a man foolish who told them that the Rag Weed, with which their fields are covered, should be eradicated. They say that is their manure and they plough it in. It is a disadvantageous notion for any farmer to entertain, that it will make an addition to the soil by ploughing in this weed. There is no weed, except perhaps clover, which does not take more from the soil than is got in return. It is a dangerous thing to mention, because farmers, and indeed everybody, is apt to choose the easy course, if two courses are open to him. It is easier to plough it down if you know that there is any good in doing it. The question depends on the mode of growth, character and vitality, in which plants vary very much.

Some plants produce an enormous quantity of seed. Here is a seed I have with me, called the Tumbling Mustard, and one seed of that is capable of producing half a million seeds, and you will see it is a very small seed. The point in regard to this is the

large number it produces first, and the large development of the plant which comes from it. Millers do not mind this, because it is easily cleaned. It has some bad characteristics and some good ones. The distribution of seed is an important point. The Canada Thistle, for instance, is distributed largely by winds, and some seeds which have rough hooks on them are distributed by reason of that fact, through animals, and are very troublesome if they get into wool. Some of them are called Devil's Weed, Blue Devil, White Devil and similar names. There are some weeds which have great vitality to resist all ordinary methods of eradication, and then we must use some special means of cleaning the land, which have to be modified according to the species.

*Rape.*—Some good work has been done in Western Ontario by efforts to grow rape. It has to be cultivated and covers the ground very heavily, and I think it would be a useful plant in cleaning land as well as producing feed for stock.

*Clover.*—To seed down heavily with clover is an excellent plan, and clover adds so much to the fertility of the soil, that I think it would be wise if the principle was established that clover should be sown with all crops. It can be sown in that way, if only for the value it adds to the fertility of the soil as well as for its usefulness in the cleaning of the land. Certain seeds are introduced with clover seeds, and we have to be on the watch for these. None of these are very noxious weeds, and although a good many weeds have been introduced through clover, it has been more by seedsmen selling dirty seeds.

#### POISONOUS PLANTS.

Some few plants are obnoxious from their poisoning qualities, and we should be particularly careful with these. They are not many in number, but some of our native plants are very poisonous, and on our western prairies and in British Columbia I have known some instances of cattle and horses being poisoned from them. There is one, the Wild Parsnip, which has a white flower, that grows in wet lands all through the prairie regions. This is one of the common species, and farmers should carefully clean the land of these poisonous and injurious plants. There is one obnoxious thing about these seeds, that it is difficult to separate them from grain. Millers have now a special invention for cleaning the grains of seeds that are injurious. The cockling machines have been found very good in bringing down the number of injurious seeds which were very troublesome in the mills, through their similarity to grains of wheat.

Another seed which is very troublesome and most hated by western millers, is the Giant Rag Weed, and is most troublesome to and detested by millers because it is about the same size and colour of a grain of wheat, and they can neither sift nor blow it. It is very desirable that millers should, if possible, get clean grain, and I am glad to say that more care is being taken to clean grain, and the indications are much better in this respect. If farmers do not give their attention to this, then, very soon, the millers will refuse to buy from them altogether. The grain has been much cleaner this year than last. The recognition of seed is very important, because if a farmer finds foul seeds in his grain these should be recognized, so that he may not sow his grain in that condition.

The percentage of weed seeds in a sample of grass seed may be very high and will be hardly noticeable without careful examination with magnifying glass. In that way many weeds are introduced into the country, and that only shows what great care should be exercised by seedsmen in purchasing and distributing seeds, and also by farmers in buying it. If the farmers would demand that they should have clean seed from the seedsmen, the seedsmen naturally will take special pains to have their seed well cleaned. Some of the weeds in Manitoba which have proved of considerable trouble would not have been recognized as very bad in the Eastern provinces.

*False flax.*—There is one called False Flax which was introduced largely in flax, which we have known in Ontario for many years and which has not been a very troublesome weed here, has shown in Manitoba that it is a bad weed. It has spread from Manitoba to the Rocky Mountains. It is an aggressive weed which belongs to the mustard family, and having spread very fast over hundreds and thousands of acres it has to be recognized and dealt with. It ripens early in the same way as mustard does.

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*Ball Mustard.*—Another one of the same nature has been called, Ball Mustard, because the seeds are contained in a little round pod like shot, which does not open at all, and this is spread all through the country. I saw one area of 200 acres, orange in colour, with this new weed. A farmer said to me "it does not do much harm," but when he came to thrash his wheat he found that he got many less bushels of grain off that land than he would have got had that weed not grown there.

*Pepper Grass.*—Weeds apparently not injurious, under special conditions, develop into bad weeds. One of these weeds most inquired about in Manitoba is what is known as Pepper Grass belonging to the same family as Mustard grass. The seeds are small but produce in enormous numbers. It is a slender plant growing 6 inches high with one or two branches. It is what is called a Winter Annual. Plants are either one or two years in duration. There are some plants which ripen their seeds in the first year and these germinate in the autumn, and instead of being killed by the first frost, live through the winter in the shape of a flat rosette of leaves on the ground, in the same way that two year plants do and are ready next year to throw up their stems and produce seeds quickly. In wet seasons this plant instead of being a small plant with large branches develops into a large tree-like plant which overtops the wheat and prevents the proper development of the grain. In wet seasons, this weed gets ahead of the wheat and produces a large bunchy growth which crowds out the wheat. This calls attention to the fact that it is not wise to continue the practice which some have followed in Manitoba and the North-west Territories, of sowing their grain on stubble, instead of ploughing their stubble land and then sowing, they sow with a press drill on the stubble. If their happens to come a wet spring, there is a risk that these biennial weeds or these winter annuals will develop ahead of the grain and a large loss will occur therefrom. There are several plants belonging to this same class. The value of the method of summer-fallowing in the Western country where there is sometimes not quite enough rain, was shown very vividly by Mr. MacKay at the meeting at which he addressed the Committee, and I also referred to the subject at that time so that it is not necessary for me to add anything at this time. But the idea generally held in regard to summer-fallowing in this part of the country is that we are not making the best use of our land, and that by higher cultivation utilizing the labour which we have available, we will produce better results. It is considered that more moisture is not necessary. This is probably the case in many parts of Ontario but in the West it has been shown that summer-fallowing is an essential necessity. Mr. McKay told us that the farmers who summer-fallowed got good crops, and those that did not summer-fallow, did not get good crops. The greatest advantage is in the moisture which is imparted to the land by this method. Summer-fallowing is sometimes done in Manitoba too late on account of the large amount of work to be done by each individual farmer. It should be done before the 12th of July, after which most of the weeds which grow on summer-fallows have ripened their seeds, and there are only one or two which have not ripened their seeds by that time, but these are better described as weedy plants than as weeds, and there is a difference. Some weeds are aggressive, and there are some few plants which have a weedy appearance and which have a mode of growth which renders them less injurious or destructive than, other plants.

*The Biennial Wormwood.*—Another weed is called the Biennial Wormwood or False Tansy from its resemblance to that well know plant. It produces a larger number of seeds but it does not flower as easily, so that by the use of spring ploughing or summer-fallowing it can be kept down. In Manitoba, Timothy is now being very much more grown than it was in the past. I need not go very fully into that as Mr. McKay has made a statement upon it. I saw many excellent Timothy fields in Manitoba, of, sometimes, 150 and 200 acres. The farmers that were growing that Timothy wanted it for the hay that it would produce, but the chief object they had in view was to turn the sod into the ground to give it fibre, so that if there were heavy winds in the spring it would hold the land, and more than that, the best wheat that is produced is on sodded land which has been ploughed down.

*By Mr. McMillan :*

Q. What do you do to exterminate the ox-eyed daisy? It is spreading rapidly.

A. The ox-eyed daisy is spreading rapidly in Ontario. It has spread to a marvellous degree all over the Maritime Provinces, and the best treatment that I have tried for that is to seed to clover, and cut it early. The ox-eyed daisy belongs to the perennial class of plants with running roots or off-sets growing near the surface, and if you seed down to Clover, and then after cutting one or two crops of Clover, plough up the leaves. By this all the plants are killed, and you only have to fight new seeds brought in. It is a curious thing that the spread of such a weed as the ox-eyed daisy is largely owing to the beauty of the flowers, so many ladies picking them as they go along and wearing them. And like many off-set plants like the sunflower, there is sap enough in the stalk to ripen the plants after they have opened, so that if you root up ox-eyed daisies and throw them on the ground, there is enough sap left to ripen the flower, and if picked when they first open, and they remain for a week or so, there is enough vitality to ripen the flower. A great many people pull it for ornament, and thus the seeds are scattered, and we have to take that into consideration. I persuaded three people in Manitoba to root up plants of ox-eyed daisy which they had grown for ornament, for they have not got it in Manitoba yet. But it is a plant able to thrive there if it gets a footing, and it will do so unless they take steps to prevent it. For over 20 years it has been one of the greatest pests in the East, particularly in New Brunswick, and efforts are being made to get farmers to eradicate it by seeding down.

*A Model Farm.*—Mr. Fisher is my minister now, and it may be thought bad taste to refer to him, but I cannot help remarking upon the fact that on his farm, which is in the middle of a district infested with ox-eyed daisy, you cannot find a plant. That is simply the result of turning out every year with his men, on one day—their daisy day—and seeing if there is a daisy to be found; and they look for every plant and cut it out and destroy it. To-day there is not a plant of daisy to be found on his farm. It is a most troublesome weed, and one which is shown by its power of spreading to be very dangerous. I have seen it stated in some books that it was a good food for animals. It is nothing of the kind. For cattle won't eat it, and though they may eat it in hay, they won't eat it in a pasture; they will leave it, and sheep won't eat it either. I saw in one book that a man said it was better than even worn-out lands, but I do not remember just what he said, and it is dangerous to repeat a thing unless one is sure of it. No one would think the ox-eyed daisy is a good plant, after seeing its results in Canada.

Mr. McMILLAN.—I bought a farm and on it was a spot covered by ox-eyed daisies, four rods long and two rods wide, where a fence had been set. I took up the fence, summer-fallowed the land for two years and kept the surface clean. The first year I got no plants but the second year they were as bad as ever. I took salt and used it with very fair effect; but its plants were soon as bad as ever. The only remedy is to sow the seed down with clover.

*By Mr. Sproule :*

Q. Does it propagate by seed?

A. By seeds and off-sets, not roots.

*By Mr. McGregor :*

Q. Do you not think that mustard might be dealt with in the same way?

A. I think, undoubtedly, it is the method for mustard. I am working a garden now, which I have worked for 10 years. I am certain that never a spear of the plant went to seed, but I have mustard every spring and it keeps me going.

*The Paint Brush.*—Speaking about what Mr. McMillan, said of salt, in the Eastern Townships there is an extremely aggressive weed which is one of the hawk-weeds, and is known as the Paint Brush, or the Devil's paint brush, as Mr. Parmelee, will know. That has been studied by the Vermont Experimental Station and they found that the most practical treatment was using one and one-half tons, of salt broadcast, to the acre. They found it did affect the grass, but rather improved it, and it destroyed the weed. The trouble in the Eastern Townships and in the mountains of Vermont, is, that on

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many upland mountain pastures it is impossible to break the land, and the only other way is to brush harrow the surface, and even then that is little good. This is the only way to get rid of the weed. There were some small experiments some years ago ; but too much salt was used on those occasions. However, after some years, Professor Jones, of the Vermont Experimental Station, says that one and one-half tons are sufficient. I think this is an important discovery, because it makes it possible for the farmers of the Eastern Townships and Vermont to use the remedy, for though it is rather expensive, it well repays its use. Some of our farmers have tried it, and have had equally good results.

*The Cow Cockle.*—I will show one other specimen which I have here. That is the Cow Cockle, which belongs to the pink family, and is a pretty plant, which is grown in gardens also, and which was introduced into Manitoba by the Mennonites. Many of them were poor and they bought cheap seeds, among which they introduced many plants, and among them the Cow Cockle, a pretty pink-like plant and with a pink flower, which is shown in the illustration which will be published in the report. It grows to two feet high and its seeds are one-twelfth inch in diameter and perfectly round as a pea. It is troublesome in hay and grain, and is very difficult to separate from the latter. It has spread in Manitoba, and in South Manitoba covers large areas, crowding out wheat. It is a large succulent plant, two feet high and two feet across. In going through the Mennonite settlements, last year, I was pleased to see the industrious way they were fighting against the weeds which they had undoubtedly introduced by purchasing poor seed from Russia and elsewhere. They are doing their best to eradicate the weeds. All speak German ; but when the Manitoba government sent out a man to tell them what to do, they set to work with German pertinaciousness, to stamp out the pest. In driving around the country, you would see whole families taking a plot of ground, walking abreast through the crop until the whole field has been covered. They don't do as our farmers do with mustard ; pull in up and throw it down on the ground where it smothers the crop. But the father of the family carries a flax sack and all the others walk over to him and put in their hands full of weeds as they gather them. When the sack is full it is carried to the side of the field, and the weeds piled up. As you probably are aware, the method of life among these people is to live in villages, driving out to their farms in the morning, and taking their dinners with them. They leave their waggons at the side of the field, have dinner around them in the middle of the day, and go back to their villages at night. Every night they carry back in their waggons a load of weeds, and in front of every house in the Mennonite villages there is a big charred spot where they burn their weeds. This shows what these people are doing and it cannot help but have a remarkable result on the condition of that country in the future. When I met the farmers in Manitoba three years ago and told them I was studying weeds, they said to me, you want to go down to the Mennonite country ; it is there you will see the weeds. All I can say is, that the Mennonites can set an example in methodical work to some of our farmers in the better parts of Canada. The result is, that millers tell me they are getting very much cleaner grain, and many weeds which used to be common in southern Manitoba, they are not getting there now. They have learned that it will pay them to get rid of these weeds, showing what was undoubtedly the case, that with care every weed can be eradicated.

*By Mr. McMillan :*

*The Morning Glory.*—Q. We have a creeping weed with a little pink flower, do you know what it is ?

A. Is it about an inch across like this little sketch I have made of it.

Mr. ERB.—It is a wild Morning-Glory. We have it in our neighbourhood and it is a very bad one.

Mr. FLETCHER.—It is one of the worst pests, and one of the most persistent. I am trying some treatment this year with salt to see if I can find a means of eradicating it. It does not produce very many seeds or flowers, but it has an enormous development of underground stems. I have a specimen in my office. The roots throw up shoots.

We have a patch on the farm which we have been fighting for three years. It is one of the most persistent weeds and none of the treatment in the way of salt or chemicals have succeeded so far, but we hope soon to get a remedy.

*The Field Canada Thistle*.—There is another weed, the Field Canada Thistle. This generally begins in a patch and will throw out fifteen or twenty shoots with flowers about the size of an ordinary dandelion, which also develop large quantities of seeds. These will be blown in every direction. It is an extremely persistent weed and very hard to fight. I know one instance where a straw patch was piled right on top of this patch. We sometimes put a pile of manure and that will crowd out anything.

*By Mr. Parmalee :*

*Hard Hock Weed*.—Q. Have you any treatment for the Hard Hock weed?

A. None except that of pulling it out and burning it. The idea of mowing seems impossible. It would be just about like mowing wire. Luckily it grows with the roots close to the surface and with gloves it can be pulled out by the handful. We get a tremendous lot of letters about it. It is a serious matter to pull out a big patch by hand and the stock does not seem to eat it, except when it is very young.

Q. Do they occur elsewhere?

A. It is like your ferns, it is the only place where there is any trouble.

#### DESTRUCTIVE INSECT PESTS.

*San Jose Scale*.—I will now refer to one or two insects which are very destructive. I have a specimen here of the celebrated San Jose Scale. Probably one of the most injurious insects known on fruit trees. You would think there was nothing on it and that is one of the great dangers. The piece of limb I have here is encrusted all over with this scale. You, Gentlemen, will go out among your constituents and you may be asked about this, and it is just as well if you are in a position to answer. The scale is exceedingly difficult to fight and very hard to detect, and the best remedy we have been able to find is to wash the trees with a strong solution of whale oil soap. There is some agitation in the West to have prohibitive legislation by Parliament, to prevent nursery stock through which this scale is introduced from being brought into the country. After watching the matter carefully in the United States, and the way it is developing here, I have not seen my way to advise the Minister to recommend that legislation. All I can say is, I have watched it very carefully before I came here, and I think I know of the three instances in which it has been introduced into Canada, to find if possible a remedy without interfering with the fruit-growers and the nurserymen. If our fruit-growers and nurserymen could grow all their stock, and would grow it then legislation of this kind might be considered more seriously. We know that our Canadian nurserymen have not got this insect but we know that they cannot supply fruit to their customers. They have to get it from the United States nurseries, and if we enact prohibitive legislation before it is possible for them to do without the importations we are going to interfere with both of these businesses at once, and I did not see my way to advise the Minister to propose this legislation, but he wants the matter thoroughly investigated, and I have instructions from him that directly my work will allow of my getting away I am to go west again and examine these occurrences of this scale. There is one at Niagara, one at Chatham, and another in British Columbia which is of course too far off and it is not necessary that I should go there. I was there three years ago, and besides Mr. Palmer the British Columbia Entomologist and Fruit Inspector is watching it very carefully. The one at Niagara and the one at Chatham have been there for two or three years and have not spread, or very little indeed. I have received letters from both the owners of these orchards, who are naturally very much concerned saying that they have not spread very far in their orchards. They are on the original trees, and they have traced them back to New Jersey nursery stock, and they are not afraid of their spreading.

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*The Faunal Zone.*—It is depending on the natural law which we call the Faunal Zones.

*Life Zones.*—By examining animals where they grow and develop there are well defined zones of life in North America. The greater part of Canada is included in the Boreal Zone. Then we come to what is known as the Transition Zone, of which we have the outliers running into our country. Along the northern portion of the United States and north of Lake Erie, including our best peach country, there is a little strip of what is called the Austral Zone where this insect may increase rapidly if once introduced.

It is a serious danger, I will not deny, but up to the present, by the fruit growers exercising the ordinary care that men of common sense should exercise, they have not introduced to any extent this injurious insect, though it is in the country. We cannot prevent its introduction because it is here, but we only need common sense to see that it does not spread very widely. In case I may be wrong in this, the Minister of Agriculture has instructed me to go to Niagara and consult with the fruit-growers of the St. Catharines and Grimsby district. We will go to this orchard, make an examination and ascertain what is the exact state of affairs and see if we can find any more insects of the same kind. I said that the San Jose Scale was one of the worst insects that has ever been discovered on a tree. It showed that it was so in California many years ago, and it was also found in the Eastern States and on our Southern borders, where it did a great deal of harm, but those who have studied it most, and particularly the United States Entomologist, say that we can never get it down any more than the oyster shell bark louse, because there will never be concerted action on the part of the fruit-growers; still, at the same time, by the methods that are recommended, that insect can be kept down, within reasonable limits. Of course, it has not done any injury in this country as yet.

*By Mr. Calvert :*

Q. What effect has it on the trees?

A. Judging by the long experience in California, the tree once affected by the insect, dies in from one to three years.

*By Mr. Sproule :*

Q. What species of trees is it most natural to?

A. It is most noticed on fruit trees, but it grows on every one of the deciduous trees, all those trees that drop their leaves in the winter. It has most wonderful powers of increase. I do not know quite how the figures are arrived at, because the numbers are so enormous, but it has been calculated that one female would produce three trillions of young in a year. How that was ever computed I do not know, but I know that one female will keep on producing young at the rate of ten a day for six weeks. One female will produce about 400 young in 30 days. These are ready again to produce young, and these continue growing all that season. This is the foundation upon which this calculation is made. Some years ago this insect did an enormous amount of harm to the fruit industry, there, and it was named the Pernicious or the Pernicious Scale. Like many scale insects it increases very rapidly for a year or two. Then it gives place to other parasites.

The trees here are being eaten by the ordinary tent caterpillar. The people said, "there is a new caterpillar on the lover's walk destroying the trees." I went and examined the trees and found that it was the ordinary tent caterpillar. The gardener asked, "how can I get rid of them?" and I replied, "spray them." He only used Paris green with a syringe. I told him a syringe would not do it; to go and ask the Minister of Public Works for a large spray pump. In this case, as in others, the wrong remedy is applied instead of finding out the right one, and so saving money and property.

*By Mr. Sproule :*

Q. Is this the same as this on this piece of bark?

A. No; that is the ordinary oyster shell bark louse. They remain every year a serious loss to garden and field crops. We treated them by poison traps in vegetation or grass, tied in bundles and mixed with Paris green and water, and put 10 feet apart in

rows all through the field crops. Another remedy is, instead of taking this succulent vegetation—often in Calgary and the West they have no vegetation to get. They have no rain; they had only five hours' rain this spring, and one correspondent wrote and asked where he could get vegetation. We found by mixing bran with Paris green in the proportion of one pound of Paris green to fifty pounds of bran and mixing dry, and distributing about a teaspoonful along the rows infected, we could obtain the same results with great effect. The insects prefer it to the vegetation and eat it and are killed. It is applied to large areas, and is only practical when you try it, and it is more impracticable to say that it cannot be tried in a large area than to try it on a small area. In Canada, the United States, and to a large extent in California, lately, this was used in large quantities with excellent effect, and they also stopped an invasion of grasshoppers by this method.

*By Mr. McMillan:*

Q. I saw a field this year where they found last year this little grey worm. What do you do for that?

A. You could not do anything in a ground crop. I should sow that to millet or later, to even rape. When sown that would develop and bear, but it is too late to sow rape or millet; they would have passed maturity by the middle of June.

Having examined the preceding transcript of my evidence, I find it correct.

JAMES FLETCHER,

*Entomologist and Botanist to the Dominion Experimental Farms*

## Agriculture and Colonization.

COMMITTEE ROOM, 46,  
HOUSE OF COMMONS,  
WEDNESDAY, 9th June, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10.15 o'clock a.m., Mr. Bain, chairman, presiding.

The CHAIRMAN.—We have with us this morning Mr. Craig, Horticulturist of the Experimental Farm, who will speak to us on the subject he has in charge.

Mr. John Craig, Horticulturist of the Dominion Experimental Farms, called, addressed the committee as follows :—

Mr. CHAIRMAN AND GENTLEMEN,—I intend to touch very briefly on some of the salient features of the work I have had in hand during the past year. I have had the opportunity and privilege of appearing before you from year to year, and of bringing to your notice some features of the work in hand, and I think, therefore, that most of you are familiar with the lines of work undertaken by the division of horticulture. I do not wish to repeat what I have said on previous occasions regarding the scope of the work, because it will be found in the reports of the Committee of previous years : but I desire to present the results of some experiments which if put into practice by the fruit growers of the country, would add to the amount of their incomes.

### FRUIT YIELD OF 1896.

We all know the extraordinary fruit yield that characterized the year 1896. The production of apples in every part of the country was extraordinary. This led to a good many complications when it came to marketing the fruit, because growers and dealers did not realize until the apples were harvested, the actual amount of apples to be disposed of, and the fullest returns were, therefore, not secured on account of faulty distribution. There was an extraordinary yield of apples and also of plums. I might cite you some startling instances of large returns secured from comparatively small areas of plums. One which is in my mind at this moment, occurred in the Niagara district near St. David's. From an orchard having four hundred Lombard trees planted eight years ago, the owner harvested ten baskets of plums to the tree, or four thousand baskets, these sold for twenty-five cents a basket, giving a return of about one thousand dollars per acre ; so you can see that even at the low price of last year when such extraordinary yields were secured there was money in the business for the fruit-grower. Each basket holds 20 pounds. With a view of collecting some statistics, I made a study last year of some of the fruit districts of Canada together with the yield of different varieties, and gathered in this way some notes together with which I shall publish shortly, in order that they may be made use of in the interests of the trade of the country.

### DISTRICT CHANGES IN HORTICULTURAL PRODUCTIONS.

We notice in certain sections a considerable number of changes going on, in fact, a sort of evolution in classes and methods of fruit-growing. Sections of Southern Ontario, which a few years ago were given up entirely to the growing of apples are finding now that other fruits are more profitable, and apples are giving way to these. In the county of Essex, Ontario, for instance, when I was going through there about a month ago, I noticed large apple orchards being cut down to make room for orchards of peach trees. This is quite a common occurrence, and peaches are the coming fruit of that region, as they believe there is more money in them than in apples. In other areas again, apple culture is extending. In sections where apples reach their highest point of

perfection the industry is being extended. This is as it ought to be. It arises from a careful study of the conditions surrounding each fruit and the product secured. Fruit-growers are not only studying the reports of the Experimental Farm but they are studying their own conditions, and bettering themselves by applying the result of these observations to their own practices.

*By Mr. Talbot :*

Q. Can you account for the large yield last year ?

A. I can in a general way. We have had comparatively small yields for a number of years. Trees have been affected for some time by fungus disease. This culminated in better attention being given to the cultivation of orchards, more attention being paid to the destruction of injurious insects and fungus diseases. The result of better culture was the extraordinary yield of last year. Although we had such an immense yield last year I am surprised to find Greenings and Spys again in some districts bearing a crop of fruit, showing that the trees were not only vitalized last year to bear fruit and blossoms, but are sufficiently vigorous to bear fruit again this year.

*By Mr. McGregor :*

Q. Was this yield the result of spraying ?

A. I may say that spraying is becoming very generally practiced, owing to our recommendations and the energetic efforts of the Ontario Government to urge upon farmers its adoption. In Prince Edward County it is becoming a general and established custom, in the Niagara district it is well established, and in the western district it is also a common practice. We have not now to convince, but only need to point the way and the recommendation is carried out,

*By Mr. Pettit :*

Q. Last year was the first year I sprayed my orchard. I grow the early harvest apple and never had it perfect until last year ?

A. The instance Mr. Pettit cites is very valuable. What the farmer says, that is the common idea, is accepted as proof positive and the work is done. Our efforts are now in the line of making the applications easier ; and find how many are actually necessary. We find that three sprayings is the lowest number we can expect good results from. This will cost from four dollars to seven dollars an acre, depending on the size of the trees. You may think that this is a wide margin but it depends on the different conditions. You will understand that a tree planted ten years ago will take much less liquid than a tree planted twenty years ago and the cost of work is in proportion to the amount of the material used and time occupied, and this again depends on the size of the tree. I do not know any feature of horticultural work more gratifying than the rapidity with which the farmers have taken up spraying and put it into practice, the country over.

*Publications.*—In connection with my work at the Experimental Farm at Ottawa in the way of publications, I have during the past year issued two bulletins, one giving notes of a disease affecting the native Plum. The native plum is not of great value in Western Ontario but there are large portions of Quebec and of Eastern and Northern Ontario where it is and will be of considerable value. Two years ago, I found all through Quebec a disease affecting these plums and having investigated the matter and conducted some experiments, I was able to publish a bulletin which will give fruit growers something of its life history and the best methods of preventing it.

*Pear Blight.*—The subject of pear blight was also treated in a bulletin. I am sorry to say that this disease is one so obscure in its origin and so difficult in its treatment, that it is almost impossible to outline any course of treatment which I can say will definitely and decisively prevent it. We know certain things ; we know that it may be transmitted from tree to tree. A single diseased specimen standing in a healthy orchard will conta-

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minate its neighbours. It may also be transmitted by inoculation, and further than that we know that certain orchard cultural methods favour the growth of this disease, while certain other cultural conditions retard its growth. These facts have been gained by sending out circulars to fruit growers all over the country, by finding out to what extent their orchards are affected by pear blight, under varying conditions, and by collating the answers. This information has been put into a bulletin and has been sent out to fruit growers. Briefly, our results show that orchards in sod well treated with wood ashes and not heavily manured with barnyard manure or such manure as will cause a luxuriant growth of wood, are less affected by pear blight than other pear orchards cultivated and making a very vigorous growth. This blight is bacterial and it grows most rapidly in wood which is possessed of a large amount of sappy tissue. If then, we can get a stocky, well ripened kind of wood with small amount of sappy tissue, that wood is most likely to be more or less immune from the disease, so that very frequently by putting an orchard into sod and thus checking the wood growth, in that way the disease is consequently checked. One of the most successful pear growers I know in the Province of Ontario has practiced the system of keeping his orchard in clover sod, year by year, not taking off the clover and depleting the ground of its fertilizing material in that way, but cutting the clover and allowing it to lie on the ground, and supplementing this fertilizer with wood ashes and phosphoric acid in the form of phosphates. He is growing pears under this system with great success.

*By Mr. McMillan :*

Q. Is there any relation between the disease that affects the tree and that which affects the fruit?

A. There is another disease, which in one form affects the leaf and in another the fruit. One form causes the cracking of the fruit and the other the spotting of the leaf. That disease (*Entomosporium*) may be very satisfactorily treated with Bordeaux mixture. Flemish Beauty pears have in the past been seriously affected by that cracking of the fruit and the spotting of the leaf.

We also issued a calendar this spring, putting in a succinct and clear form the methods of spraying, the material with which to spray and the time to spray. This has been sent to each member of the House. I dare say it was mentioned by Mr. Fletcher, as we got it up together. But I may state that I shall be glad to send to the constituents of any member copies of this calendar if desired. I have already sent it to a large number of districts in Ontario and Quebec, and we have extra copies which we would be glad to send out.

I have in course of preparation at the present time a bulletin giving the results of five years' experiments and experience with strawberries. I do not think it is wise in work of this kind to issue a bulletin based upon the experience of one year only. I have collected the results for five years, and these will, I think, be much more reliable and useful. This bulletin will be issued in a short time. I have also in course of preparation a bulletin on Peaches, which will be of service to growers in the peach districts of Canada.

### SEEDLING FRUITS.

During the year I have given a good deal of time to the examination of seedling fruits, and I am glad to know that fruit growers are interested in this matter. We have in many portions of the country valuable fruits unknown to the trade and undescribed. Samples may be sent to me free of charge by mail and I will examine them. During the past year I have examined over 100 samples sent in from various portions of the country, and out of these I have selected about 25 varieties of which I have secured the scions, and they are now being propagated at the Central Farm. If they prove sufficiently valuable, with the permission of the owner, they will be given to the public. These seedling fruits include apples, pears, plums and peaches. One of the most notable apples received, and being a seedling of an old favourite—Early Harvest—

I may draw your attention to it, is called the Harvest Pippin. Here is a photograph of it, but it does not do it justice. This apple was received while I was away from the farm and was not photographed until I came back. It is better in quality than the original Early Harvest. It is always more symmetrical and less liable to crack and spot, and the tree is more vigorous than the parent. I show this as an example of what we may expect to secure by looking into the seedlings of our country. This originated at Milton, Ontario.

At the request of some members of the Committee I wish to draw your attention to a matter about which Mr. Fletcher spoke yesterday, namely, the introduction into this country of injurious insects and diseases. In the past year we have discovered within our borders, in two or three places, an insect which is much dreaded in the United States, more, I may say, than all the other insects put together. I refer to the San José Scale. Most insects have their particular plants upon which they will feed and live exclusively, while this, on the contrary, is an omnivorous feeder. It attacks nearly all deciduous fruits and appears to flourish on all kinds of trees. I cannot say it flourishes "everywhere," because we do not know as yet that it will flourish in our northern climates. It has been found on trees at three points in Canada in the southern fruit districts, so that it is well, I think, that we should give some attention to this matter promptly in order to institute preventive methods. I have a simple proposition to make; I do not say that it would be entirely effective, but I would like to have you consider it. Nearly all the States of the Union have already passed laws prohibiting the interchange of fruit between States without examination. No nursery is allowed to ship fruit from one State to another without a certificate made out by the State Entomologist, stating that he has examined the nursery from which the trees came, and that he finds it free from this particular insect. It seems to me that it would not be a difficult matter for us to arrange through our Customs House officers, to stop any package of fruit trees coming into this country unaccompanied by a certificate from the State Entomologist, saying that the nursery from which these trees came was free from San José Scale. There may be some difficulties in the way, but it does not seem to me that they would be serious. We have the machinery of government in operation, and it is just the adding of something additional to that which we have. Customs officials are placed all along the line, who could stop packages unprovided with proper certificates, and while I do not say that this would be absolutely protective it would be an additional safeguard.

*By Mr. Rogers :*

Q. What is the nature of this insect?

A. It is a scale insect, much of the same character as the Oyster Shell Bark Louse which attacks apple and other trees, and multiplies with great rapidity, and it has spread in the States to the south, with great rapidity.

We can easily furnish to the customs' officials, a list of the officials in each State, who are qualified to issue certificates, because we have a list of them at the farm. And I think, therefore, if the customs officials were authorized not to pass any fruit trees unaccompanied by a certificate, it would keep out doubtful trees and in a large measure protect our fruit-growers

*By Mr. McGregor :*

Q. Would you advise cutting the trees down when it is found that they are affected by this insect?

A. Most decidedly so. In one or two cases found on this side, the trees were promptly treated where suspected and were as promptly destroyed where the insect was found. I visited one case near Chatham, a month ago, and found two trees infested with the San Jose Scale, where the owner was quite willing to root them up and destroy them.

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*By Mr. Martin :*

Q. Is it like the Bark Louse ?

A. It is very much smaller than the common Bark Louse ; not more than one-tenth to one-twentieth of an inch in diameter. It has been well described in reports and bulletins, and growers realize the danger of allowing it to get a foothold. A rough description which will perhaps enable you to obtain an idea of its appearances is that if you take a handful of ashes and sprinkle them over the branches of a tree when it is covered with dew, it will leave a general appearance similar to that which the tree will have if badly infested with the San Jose Scale. It will be covered with a gray coating, but looking carefully you will see the separate scales.

*By Mr. McMillan :*

Q. Has it spread much in the States where it has been found ?

A. In the States it has spread to an alarming extent.

Q. But not in Canada ?

A. In Canada thus far it has not. It was only discovered this spring. We do not know how long it has lived ; but we know that it has lived over one winter. It was said at first that it would not stand our Canadian winter, but this does not seem to be correct.

*By Mr. Clancy :*

Q. Have any successful attempts been made at destroying this insect ?

A. Yes ; but the only remedy which is really effective is one which is applied in winter. This remedy cannot be applied in summer without injury to the trees. Winter application is the most effective. In California the trees to be treated are inclosed in a large tent and then under this cover they treat them with hydro-cyanic gas. I hope it will be a long time before we have to go to such extreme measures in Canada.

### INSPECTION OF FRUIT FOR EXPORT.

Another matter I wish to refer to is the inspection of fruit going out of the country. I do not know that I am in a position to offer any effective means to carry this out ; but having been in correspondence with a number of growers for some time, I would like to make this suggestion offered to me by Mr. A. H. Pettit, of Grimsby. It may be possible to appoint an inspector at the port of Montreal—that inspector to be paid by the Government—to inspect such apples as he is requested by shippers, the cost of inspection to be paid by the shipper and charged ahead with the transportation in the same way as insurance is managed. That is merely a suggestion, but I think it will be workable. If the shippers get into the habit of having their fruit inspected, and if the dealers on the other side recognize the Government inspector's brand, it would give the inspected fruit a larger value, put it on a better basis, than non-inspected articles, in the British market.

Q. Would that inspection apply to only a standard of fruit, and not to the methods of packing, seeing that the fruit was free from defects, and so on ?

A. Yes. A standard of fruit only, you see we have already, under the Adulteration of Foods after the Act, a clause which defines what a first class apple should be. I assisted the department some years ago in making up the definition as to what constitutes a first class and second class apple, and a third class apple, and so the inspector could be guided by this definition in branding. What he finds to be a second class apple, would be branded second class, first class would be branded first class, and so on. But the great advantage would be in having it go out under the brand of a Government inspector.

Q. Would it not be possible that apples might be branded wrongly without being opened?

A. The barrels would have to be opened.

Q. And be repacked?

A. If we had a consignment of, say, 100 barrels, and the inspector opened 5 or 10, it would necessitate some shrinkage and loss of weight, and that would have to be made up to the shipper. If the inspector opened 10 barrels, indiscriminately, he would probably get a correct idea of the character of the whole shipment.

Mr. CLANCY.—There would be a danger of putting a government stamp on fruit when it was inferior to the class stamped. It would be hard to define the different classes.

Mr. McMILLAN.—It would depend upon the number of varieties. Each variety would have to be examined, and I would be afraid the fruit would suffer in places where it is improperly packed.

Mr. CRAIG.—Some would, but if proper arrangements were made for taking out the samples, under the eye of a packer, there should be no danger, I quite understand that it is necessary, in order to carry it over there safely, to have fruit tightly packed in the first instance.

*By Mr. McMiltan :*

Q. A large amount of fruit is lost on account of improper packing?

A. And there is great loss to the fruit industry as a whole, from one or two bad shipments, but if we establish a good opinion of our fruit, by branding, all shippers would have to adopt it, and it would lead to a better system of packing.

#### SPECIAL INVESTIGATIONS IN FRUIT GROWING DISTRICTS

Among the special investigations of the year, I wish to refer to some operations outside the farm. I may say that my work is of two distinct characters, that carried on at the farm at Ottawa, and that carried on with the co-operation of fruit-growers throughout the country.

In regard to outside work, a trouble affecting grapes is one I have studied particularly. This affects grapes along the line of Lake Ontario between Hamilton and Niagara Falls. There, growing under the base of the limestone rock, the vines are affected by the yellowing of the leaf. First there is a shrivelling, then a yellowing and finally a falling of leaf and the crop is destroyed for that year. I have an impression I know the cause for that, but I think further experiments are necessary to substantiate my opinion. With that in view and with the permission of the Minister, I have taken under control two or three small areas in the Niagara district. Those have been divided into plots and I am treating them with different kinds of fertilizers. I hope next time I am before this committee to be able to give some of the results of the work of this year. I mention this because it is an important departure in our work. Hitherto we have been unable to undertake work of this kind with the fruit-growers, of this character. Now we are able to give the fruit-growers a small remuneration in view of the facilities they give us. The work is also being carried on in connection with spraying experiments. In Lincoln County, Ontario, we have a fair field for the study of fruits which we cannot grow at Ottawa.

#### MONILIA.

Among the diseases I am particularly investigating in that section are those affecting peaches. One is very serious. It causes the destruction of the fruit first, and the destruction of the tree by attacking the buds. At first there comes a soft rot of the fruit in the fall, and it is usual to allow the rotten fruit to hang on the tree during the winter. This is a bad practice because that diseased fruit is the centre from which

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the disease will spread next year. The disease not only attacks the fruit but the wood. If an insect bores into the wood of a peach, the tree attempts to heal the wound by exuding a gummy secretion. Now what is the remedy? Fruit-growers have not done much, in the past, in the way of spraying, but this *Monilia* or Fruit Rot as we call it may be satisfactorily prevented by using a weaker mixture of the Bordeaux Mixture than that previously recommended as applicable to apples. Every opportunity I have had when in the West I have impressed on the fruit-growers the necessity of removing all diseased fruit from the trees in the autumn. It takes a little time but it pays and gives health and vigour to the trees.

### ROOT KILLING.

One of our observations on our home farm which will be of particular value to orchardists in the province of Quebec, and to some extent in Eastern Ontario is the effect of frost upon fruit trees. The effect of frost on vegetable tissues is an interesting study. We wonder why one tree is uninjured and another killed by a difference of ten degrees of frost. Each tree is made up of cells and a cell of a tree has a certain individuality. A tree, as a whole, is therefore possessed of a certain quality which enables it to stand a special temperature. If the temperature goes below that point the cell is killed. Why? Because frost acting on vegetable tissues withdraws the moisture, and the more the moisture is drawn away from the protoplasm or life matter of the cells the greater the danger when the amount of moisture withdrawn passes a certain point, the protoplasm dies. We have the tops of the trees killed like the roots although the top, are usually able to stand a severe temperature. Two years ago there was a period of low temperatures, and a large number of trees on the farm were killed. Our orchard is not situated on the most favourable soil, because the top soil is very shallow, we have also to try, and grow a great many varieties, many of which are not suited to this locality. We have at present, over four hundred varieties, not more than twenty of them are well suited to this locality, so under the circumstances it is difficult to secure an orchard uniform and even in appearance.

To return to root-killing, the most of the trees propagated on seedlings of varying degrees of hardiness. These seedlings are grown more and selected indiscriminately by the nurserymen, and are used as grafting stock for our orchards, so that frequently in cold climates we may have the top quite uninjured, and the root killed, because the root is tenderer than the top. That is the fact, what is the remedy? The best remedy is the growing on the surface of the orchard soil, some crop which would protect the soil and prevent the frost from entering to such a great depth. It is well known that frost will not penetrate as deeply into sod as unprotected ground. For the past two or three years we have been trying different kinds of what we call "cover crops," that is a crop which will give something to the land in the way of fertility, at the same time, protect the surface of the soil from the action of severe frost. I have tried different kinds of clover in combination with grasses. I find the common Mammoth Red Clover is the first for value for this purpose in this locality. Alfalfa, or Lucerne is the second. The Mammoth Red Clover, if sown about the fifteenth of July, at the end of the season gives a fine solid mat of green vegetable tissue over the ground, from twelve to fifteen inches high, before stopped by cold weather. Alfalfa grows taller but is a slender plant and does not afford the same protection. On the other hand the roots penetrate to a greater depth than Mammoth Red. A given area of each kind of clover was taken up last fall and the roots followed. The Alfalfa went down in many instances three to four feet in the ground. This was grown from seed sown between the 12th and 15th of July, on a sandy loam soil. You can therefore see the value of this crop in the soil from its manureal value. Its roots decay and deposit in the soil a large amount of vegetable matter besides the nitrogen which they have the power of extracting through the medium of the bacteria working in the little nodules upon the roots.

*By Mr. McMillan :*

Q. You do not plough that in the fall?

A. No. We leave it on the ground and it is ploughed under in the spring. The ground will be cultivated up to the same period again; this season when it will be sown

in the same way and the crop allowed to remain on the ground all winter. In the case of pears I should be afraid that this cultivation in the early portion of the season, on heavy soils would give too much growth. We have not the same fear in the case of apples.

Q. Have you been troubled with any trees splitting in the bark?

A. Yes, this spring we were troubled in that way. A great deal of injury was caused through the country by a severe frost in March. Several days of warm weather were followed by severe frost. The effect of a high temperature on the trees is to start the growth at once. It liquifies the food materials beneath the bark and when the frost returns, it freezes the sap and expands the bark causing it to split, resulting in the injury of the tree. In the case of young trees, if we shade the stems on the south and west sides, we might in a good many instances avert the injury that but sometimes affects trees—as it did this year in our orchard—that were from six to eight inches in diameter.

Q. Have you tried a mulch to retain the frost and stop the sap from rising?

A. I am going to touch upon that I have some very interesting results to give you. A good deal has been said about the possibility of retarding vegetation by covering the surface of the ground with a mulch which will hold the frost in the ground. Last year I conducted a number of experiments under very favourable conditions. I selected a number of apple, cherry, plum trees and small fruits including strawberry plants and I covered the ground beneath with a heavy mulching of strawy manure. This was in March when the frost was well into the ground and the snow was still on the ground. I covered the surface of the snow with a strawy manure about a foot and a half in depth and extending to the limit of the spread of the branches. Notes were taken occasionally from the time that the growth began in the spring until the 5th of May when the trees began to blossom. Upon the latter date the manure was taken away and though there was a solid mass of ice beneath there was absolutely no practical difference of condition, as regards growth, between trees mulched and those not mulched. The reason is simply this; that the air surrounding the top of the tree determines the vegetative action of that tree at first. The tree when it goes into winter quarters in the fall has sufficient food material stored up in the buds, twigs and branches to carry on the vegetative process for a certain time in the spring, but after that food material is used up, the tree begins to call upon the roots to do their share of the work and they draw up food material from the soil. The leaf buds will partly open on the strength of the food material in the leaf buds and twigs, if the temperature is sufficiently high. This photograph illustrates the point. You will see at one side the twig of a tree which has been mulched and under which there was a quantity of ice. Another twig of tree shown here was allowed to grow under the ordinary cultivated conditions and you will notice that there is practically no difference in the condition of the two at the blossoming period. The photograph illustrates the different trees treated in that way. It just shows us this, that unless we can control the conditions surrounding the whole tree, blossoms will develop if the temperature is high enough. In the case of strawberries, where we can cover the whole plant with the mulch, as well as the ground, we may retard the growth and that has been done successfully. But with gooseberries, plums, cherries, etc., they must take their course. If you have a grape vine planted outside with the roots frozen in the ground and you train a cane into the house, in March, the vine will blossom and leaf out while the root is frozen solidly.

*By Mr. Rogers:*

Q. Then you would not recommend mulching?

A. I would not recommend it as a practical method of retarding fruit trees.

Q. If you mulched them in the latter part of May it would have a bad effect upon the roots and the tree generally would it not?

A. The thawing out would be more or less gradual. It would thaw from the top down. Of course it would not be normal and anything abnormal is likely to be injurious.

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*By the Chairman :*

Q. The thawing would depend on the rain ?

A. Yes. On the amount of rain we have at that time.

*By Mr. McMillan :*

Q. Is the splitting of the tree not caused by a large amount of sap going from the root into the tree and by being suddenly checked by frost.

A. I have known stems to split when the trees were absolutely encased in ice. The heat will liquify the food material in the tree which is stored in the form of starch and sugar and when it is in that condition it is easily affected by the frost.

*Peaches.*—An investigation which I made last year in connection with this subject was with regard to the relative hardiness of peach buds. In many districts of Canada we have been so unfortunate as to receive injury from the action of the frost on the peach buds; occurring sometimes tantalizingly near the blossoming time. Last spring, I obtained buds of a large number of varieties and from different sections of the country and with these made an investigation to find out which were the hardiest. I have here, though I do not think I will read it, the result of my investigations in this line. I have the hardiest, the next hardiest, and the next hardiest arranged in different grades, so that this grouping will be of considerable value to fruit growers situated in the northerly limits of the peach belt. They can ascertain which are the hardiest peaches from the fruit bud standpoint and that is the standpoint that affects their profit, because while we can get trees to grow we cannot always obtain fruit because the fruit buds are always injured by the frost, before the leaf buds. They are the tenderer, the reason being that they have a larger amount of juice or watery material in their tissues, and thus are more easily affected by the frost than those which have less. For that reason the peach bud is often injured while the leaf bud escapes. Among the hardiest we have Hill's Chili, Longhurst, Barnard and Early Rivers. I may say that the same investigation has been carried on with plums, and the results in that line will also be of considerable value to fruit growers.

*Drying Apples.*—An experiment which will be of some value to fruit growers in Quebec, was one which I undertook to determine the variety of apple which was best suited to the needs of the evaporator of apples. It has often been said that if we could not grow winter apples then we could grow summer apples, and these, if not used at the time could be dried and would be profitable that way. To test the value of different kinds, 5 pounds each of 15 varieties of apples were taken last year, subjected to the same drying process, and weighed carefully, to find the loss after paring and coring them. I found by testing the varieties of summer, winter and autumn apples, and by averaging the results, that we could not at the present time compete with the New York State evaporators, if summer apples were used, owing to the greater shrinkage in evaporating summer kinds. With summer varieties such as Duchess, St. Lawrence and Astrachan, a large amount of moisture was lost, and only 4 pounds to 5½ pounds of the dried product was secured, per bushel. With such winter varieties as the Northern Spy, Greenings, and Baldwins, 6 to 7 pounds of dried product to the bushel was the average return. This would cause the operation to be unprofitable.

*By Mr. McGregor :*

Q. That would be no great value to the summer apple, but of great value to the winter apple, which might even pay 4½ cents to the pound ?

A. Last year, when the price of summer and winter apples were both very low, it would hardly pay for the interest on plant and labour. The plant is the main cost. Last year, there was no money in drying summer apples, so there was no avenue to use them up, and the grower would have to depend mainly on cold storage to carry his crop to the other side, and sell them in the British market, or use them judiciously as cattle food, or turn them into cider.

*By the Chairman :*

Q. Was your dried product of the dry summer apple as good as of the winter?

A. No; they lost in colour and lost in texture.

Q. Then there would be no object in using them?

A. No, not commercially. But farmers could dry them for their own use. Small evaporators do not cost much, and a farmer could easily dry enough summer apples for his own use.

*By Mr. McMillan :*

Q. There is no evaporator, I know of, that has paid.

A. That is so.

*Storing.*—Now, with regard to storing fruit. I have some rather interesting results bearing on methods of treatment as affecting the quality of apples. I am sorry that I have not time to go over all my experiments so as to give you the results entire. One feature strongly impressed itself on me, and that is the necessity of wrapping apples if you wish them to keep free from decay for a long time. A given quantity of 25 varieties of apples were wrapped in tissue paper, and the same quantity of 25 others were not wrapped. Results show there was 26 per cent more sound apples in favour of those which were wrapped. The specimens which were wrapped and enclosed in tight packages and stored in the cellar have decayed to the extent of 48 per cent. The specimens which were not wrapped have decayed to the extent of 74 per cent. Each fruit was merely wrapped in a piece of tissue paper and the ends twisted. In this way, when an apple rotted the contagion was not readily conveyed to the others.

*By Mr. McGregor :*

Q. You wrapped them up the same as oranges?

A. The same as oranges exactly. The cost of wrapping would depend on the size of the apple. We can wrap big apples, of which there are fewer to the barrel, at less cost than small ones. The cost would only be from 10 to 15 cents a barrel, so that the practice would pay when storing apples both for home use and for distant shipments. These specimens which you see before you have all been wrapped, but have not been stored in a suitable cellar, and, as you see, they are slightly shrivelled.

*By Mr. McMillan :*

Q. Do you need a damp or dry cellar?

A. A cellar with a fair amount of moisture will keep them best, if not stored in tight packages.

*By Mr. Clancy :*

Q. What temperature should they be kept at?

A. At freezing point; but a couple of degrees below will not hurt them. Here is one specimen, Lawver, or the Delaware Red Winter, as it is sometimes called, which I think you will like very much.

*Grapes.*—Another little experiment which I commenced in 1893, and I would like you to make a note of to-day, is in connection with the preservation of grape juice. I put up some samples in 1893, and they are still in excellent unfermented condition. My object in making these experiments was to determine the lowest possible temperature at which the micro-organisms or bacteria which cause fermentation, would be destroyed and at the same time the natural flavour of the grape juice kept intact. I treated 16 samples in different ways, and found that by bringing the temperature gradually up to 170 degrees, holding it there for ten minutes, then bottling the juice in vessels which had been thoroughly sterilized in hot water, with the least possible delay, excellent results were obtained. As I said, I have kept these samples for three years in an ordinary cool

## Agriculture and Colonization.

cellar, and they are in good condition. I am sorry I can not prove it in a more satisfactory method, by bringing before you some of the preserved samples. If you raise the temperature higher than that, you get the distasteful boiled flavour. You can prevent fermentation by the use of antiseptics, such as boracic or salicylic acid; but these are more or less injurious if their use is continuous. There is no reason why grape juice should not be kept with all its original flavour by careful treatment.

*Sand Cherry.*—There is only one other thing left which I should like to bring before you, and that is some of our work in connection with the selection and improvement of wild types of fruit. We have in our country many types of fruit susceptible of great improvement. The one I now speak of is the Sand Cherry, a dwarf cherry common in the Lake Huron district and other parts of Canada, where it is found growing as a low dwarf, bearing fruit which is nearly as large as the Early Richmond; but not nearly as good in quality. We have grown a large number of seedlings, selected the best from these and planted them again. We can do this rapidly in this case, because it fruits invariably at three years from seed. This is a remarkable thing in tree fruit.

*By Mr. McGregor :*

Q. We lose a good many of them by Black Knot?

A. You are now referring to the Early Richmond type, which belongs to the Murello family. The one I allude to is a distinct species, and a dwarf in habit of growth.

*By the Chairman :*

Q. Does this resist Black Knot?

A. I have not seen it affected by Black Knot.

A peculiar variation was caused by top-grafting it on the native wild plum. In this way you can make it a stock for it, and when top-grafted it makes a nice shrub with a sort of weeping top. Not only does it graft well, but the plum stock seems to have the effect of increasing the size of the fruit, so these two effects, one in the form of the plant, and the other on the size of the fruit. You will notice that the fruit on the plum stock is considerably larger, and that is accurate because it is a photo.

Now, Mr. Chairman, I have gone over the ground hurriedly and imperfectly, but if there are any points which occur to any members of the Committee, I shall be glad to answer any questions.

*By Mr. Clancy :*

*Barrenness.*—Q. In regard to trees said to be barren, and trees which have been planted on good loamy soils, which did not seem to bear fruit at all, what is the remedy?

A. There are a good many causes for barrenness. The prime cause I suppose would be the condition of soil which might produce wood growth rather than fruit buds. This might be remedied by the application of a fertilizer which would harden the wood, like potash or phosphoric acid, and might also be assisted by root-pruning the tree, which is not a difficult process and can be done with a plough in the spring, by ploughing close to the trees at right angles, the roots are cut in this way. This would tend to cause the tree to ripen up its wood more thoroughly. There would be a less amount of roots to feed the tops and the leaves would elaborate the sap more completely, which would promote the formation of fruit buds.

Another cause of barrenness is the possibility in some cases of the trees being unable to fertilize themselves. Most fruit trees produce blossoms in which both sexes are present; but some plants like strawberry plants have only one sex present, and when set out by themselves, being sterile, are unable to fertilize themselves and thus unable to produce fruit. Greenings and the Northern Spy are occasionally unproductive for this season. The remedy for this is the intermingling of varieties in the orchard. With a view of doing this with the greatest amount of success, those varieties which blossom about the same time should be planted adjacent to each

other. I have secured and am still working on records covering the Dominion giving the blossoming period of a large number of fruits, so that I hope next year to be able to prepare a chart which will show at Grimsby or in the Annapolis valley, the blossoming period of the principal fruits. I shall then be able to make a chart giving the "mating period" of these different varieties based upon their time of blossoming.

These are the principal causes which bring about barrenness in trees, unfavourable condition of the soil and the possibility of the blossoms being infertile.

## EXPORT OF FRUIT.

*By Mr. McGregor:*

Q. What experiments have you made since we last met in reference to sending fruit to the old country in cold storage.

A. Last year, we sent over a number of packages of our tenderest summer fruits. We began with the Duchess and carried the shipments through until the middle of October when the winter fruits began to be shipped. I also included tomatoes with it. I wished to put the shipments through the regular channels of trade, in order to see if I could get reliable data, but my principle difficulty was to obtain from the large dealers in England, reliable information in regard to the condition of the fruit when it arrived. We sent over fruit packed in different ways and desired information as to the success of each method, but I got back blanket returns covering the whole shipment. I however learned from very reliable information that tomatoes picked when they had glazed, but before they had begun to colour and shipped in small cases stored in ordinary freight compartments, arrived in Manchester in good condition and were sold at paying prices. Other lots which were delayed in Montreal did not arrive in good condition. These were picked in a later time and were then beginning to colour.

Q. Were these sent over early in the season and were they shipped in barrels?

A. I am speaking of tomatoes. That was early in the season, about the middle of August. Tomatoes must be picked before they begin to color, when they are glazed, which is the commencement of the colouring process. They should be wrapped separately in tissue paper, packed in small cases such as I described before this Committee last year, and sent over. If you can get a well ventilated chamber without cold storage they will carry satisfactorily. This year, cold storage will be taken advantage of as it is already established.

Q. Will they bring prices enough to pay?

A. Those that arrived in good condition last year were profitable.

Q. What about peaches and grapes?

A. I can not say anything more about peaches as no further experiments have been made in this line, or with grapes. But there is an undoubted field for the tomato grower in England.

*By The Chairman:*

Q. Where would we expect to meet competition from tomatoes in England?

A. From the south of France and the Islands of Guernsey and Jersey.

*By Mr. McGregor:*

Q. Ours would be a little later than theirs?

A. They begin with those grown under glass and keep up the supply during the whole season. They grow them under glass with and without artificial heat.

Q. Do you expect to try peaches and grapes?

A. It is the intention this year, to give them a thorough test. Our first shipment two years ago was a complete failure.

## Agriculture and Colonization.

*By Mr. McMillan :*

Q. About fertilizing apples ; would there be any difference in the fruit of two trees, one a Spy and the other a Greening, fertilized as you describe.

A. This involves the discussion of a question of plant breeding on which you cannot lay down any definite rule. One year you may get effects and none the next year. I have seen a Greening tree with a Golden Russet growing beside it, and one year one side of the Greening apples were all Russeted, next year they were perfectly and characteristically Greenings.

Q. Were there no trees on the other side, that would give fertilization? If there were trees on the other side, would it not be one year Russet and the next another kind?

A. But it happens in this case the Russet blossomed both years. You get effects which it is impossible to account for or explain ; these are called vegetable sports. I had some apples sent in last year which were distinctly Ben Davis on one side and the other side was St. Lawrence, the line between them being as distinct as possible. I cut the apple in half, but the flavour was the same throughout. It was grown on a St. Lawrence tree and was all St. Lawrence in flavour. These curious sports appear to satisfactorily account for these vegetable curiosities. In crossing varieties we rarely see any effect from the pollen which we apply.

I may say to the committee that we have now as a result of our work in crossing fruits 200 or 300 seedlings grown from artificially fertilized seed. Our idea is to bring together the greatest number of valuable characteristics and blend them in the form of fruit of vigour and of hardiness. So we are not working altogether with a view of producing fruit for Manitoba and the North west ; but for Ontario and Quebec, and the export trade.

Q. What you said a moment ago reminded me to ask you, do you ever try driving nails into the body of a tree, to encourage fruitfulness?

A. The effect of that is satisfactorily accounted for in this way :—I do not think that any of the iron which might corrode in the sap of the tree would be utilized, but it is a well known fact that if you wish to bring a tree into bearing, or a branch of a tree, if you do anything to retard the downward distribution of the sap, you will produce fruitfulness. If you wish to produce fruit on a branch you may hasten the production of fruit, by tying a wire around it. If you drive nails into the stem of a tree, the same end would be partially secured.

*By Mr. McGregor :*

Q. The wire will kill the tree if you leave it on?

A. But, of course, you take it off. You put it on one year and you get the result the next.

*By the Chairman :*

Q. All grape men, "ring" for the same purpose.

A. Fruit will set on ringed vines, but though it is larger, the quality is inferior.

*By Mr. Pettet :*

*Strawberries.*—Q. Can you say anything about the result of your investigations on strawberries, in Prince Edward County?

A. I was there last summer under orders to look into the damage caused by the strawberry leaf roller, as well as to investigate a pea disease. The strawberry was an entomological question, but it was handed over to me, in the absence of Professor Fletcher. He gave such instructions as have been found very practical. One was, burning over the beds immediately after the fruit was picked. It was found that this insect to which Mr. Pettet refers hibernates in larval form, in the rolled up leaf of the

strawberry, and if the old foliage is allowed to remain on the plant it forms a breeding bed for the enemy, so Dr. Fletcher recommended, first moving the leaves and then burning the beds, also spraying the new foliage when it came up, with Paris green. The life history of the insect was not fully known at that time. It was thought that it hibernated in the form of a chrysalis on the leaf, but it was found that on a warm day during winter the larvæ were actively at work seizing the opportunity to devour whenever it presented itself. After burning the leaves the entomologist recommended the use of Paris green on the young foliage, so that the poison would be there to kill the insect when it began to work.

The best practice is to transplant strawberries every year, that is to take only one crop off a bed. About Pictou, where strawberries are largely grown, the practice is to set the plants this spring, cultivate the bed well so as to get a vigorous growth and as soon as the fruit is harvested the following season, to plough the beds under.

*By Mr. McGregor:*

Q. I know they frequently burn them over and let them grow next spring again?

A. Yes, it is a matter of practice. I would like to ask Mr. Pettet if as much has been done in the way of growing pease this year in Prince Edward County as in the past.

Mr. PETTET—They are only growing about half the usual quantity. Last year they let about fifty thousand bushels, but only half this year, and at a much reduced price. They were paying one dollar a bushel last year, and they are only paying fifty cents this year.

Mr. CRAIG—I was considerably interested and astonished at the extent of the pea-growing in Prince Edward County, which amounted some years to as large a sum as \$200,000 paid to the farmers for pea seed grown under contract. I learned this in connection with an investigation of a disease which has affected pease for some years past.

*By the Chairman:*

Q. Are they free from the bug there?

A. No, but they have got into a way of treating the seed with bi-sulphide of carbon, and in this way destroy the weevil.

Having examined the above transcript of my evidence, I find it correct.

JOHN CRAIG.

*Horticulturist, Dominion Experimental Farms.*

## Agriculture and Colonization.

COMMITTEE ROOM, 46,  
HOUSE OF COMMONS, Friday, 11th June, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10 a.m., Mr. Bain, Chairman, presiding.

Mr. Frank T. Shutt, Chief Chemist of the Dominion Experimental Farms, was present by request, and being called, addressed the Committee as follows:—

MR. CHAIRMAN AND GENTLEMEN,—On former occasions when I have had the honour of addressing you upon the work of the Chemical division of the experimental farms, I have endeavoured to explain, or at least to outline, the intimate relationship that exists between chemistry and agriculture. I have pointed out that the terms scientific, agriculture and agricultural chemistry are almost synonymous. By scientific agriculture I mean farming conducted with a knowledge of the natural laws which affect and govern plant and animal life and inert matter. There are indeed very few problems that meet the practical farmer that do not call for some assistance from chemistry. Whether it is a question of determining the plant food in soils, the feeding value of fodder or the quality of a fertilizer, they all require for their solution the aid of chemistry. It is therefore apparent that the work covered by the department of chemistry at the experimental farms covers a wide and, necessarily, varied range. The scope of our investigations is only limited by the opportunities that we have, and consequently it would be impossible for me this morning to even mention many of the experiments that have been conducted, and the interesting facts that have been ascertained by us during the past year. The work, in general, has been carried on, on very much the same lines as in former years. If time permits, I propose to say just a few words respecting each of the more important investigations that have been pursued.

### VIRGIN SOILS.

With respect to the examination of Canadian virgin soils, we have added somewhat to our knowledge. The data that we have accumulated are altogether too voluminous for me now to enter into or discuss in detail, but they appear in the report which is now in press. Some of the samples which have been examined were collected in the Cariboo District of British Columbia. That is an area which, as you are aware, has been especially looked upon as a mining area; it is a practically unsettled and uncropped area. The object of the examination was to ascertain what the probable fertility of the soil in that district might be, so that we could estimate the future possibilities of the district as an agricultural area, for grazing or mixed farming. You will doubtless be gratified to learn that the district may eventually be something more than it is now, a prosperous mining district, because I have been able to conclude from a chemical and physical examination of the soils, that have been sent from there that though the soils, as a rule, are light in character, there are many of them which possess an abundance of plant food,—both of nitrogen and mineral constituents. Others of the soils from that area that we examined were thin and poor, and certainly would require the most favourable climatic conditions in order to yield good crops.

### THE EXAMINATION OF CULTIVATED SOILS FOR FARMERS.

Besides the soils which were submitted to complete analysis, many samples of cultivated soils, received from farmers in Ontario and Quebec and in the maritime provinces, have been subjected to a partial analysis, which usually consisted of a determination of the humus, nitrogen and lime, and the relative proportions of clay and sand. This work,

owing to the very numerous demands made for soil diagnosis, has entailed a considerable expenditure of time; but I think the results, and the suggestions that we have been able to make from the results, have proved so useful that it would be advisable, for the present, at any rate, to continue it. The analysis of these cultivated, and what we might call partially exhausted soils, shows that we have many soils in Canada which, though giving poor returns, have by no means been depleted of their plant food. This plant food, however, is "locked up," and what is specially needed is more thorough tillage in order to render that plant food more available, and that is the opinion reached after the examination of a considerable number of samples. We need to draw the attention of farmers not only to the use of manures and fertilizers, but also to correct tillage. They should be instructed in the reasons for ploughing and harrowing, etc., and taught that a good mechanical condition of the soil is necessary, in order that the plants may find a good and comfortable seed and root bed, and that the soil be able to conserve moisture during seasons of drought. I am convinced that many of our cultivated soils could be vastly improved in productive power, simply by tillage of a more thorough and rational character. The reasons for drainage, ploughing, cultivating, etc., should be well understood and carried out, for it is by such means that not only the best mechanical condition and ratio of moisture of the soil is secured, but that the stores of locked up plant food are rendered available.

*By Mr. McMillan:*

Q. What is the first step to be taken?

A. That would depend upon the character of the soil; if a heavy soil, drainage would be of primary importance; then deep ploughing at the proper season when the soil is not wet, such ploughing as would thoroughly disintegrate the mass. Then the fining of the soil, if I may use such an expression, should be attended to, so that the roots may find an easy passage in search of their food. This is effected by disc and spring tooth harrows. Finally cultivation with harrow must be thorough in order to preserve an earth mulch which will prevent surface evaporation of the soil moisture.

An important factor towards productiveness or soil fertility, is tilth, and good tilth can only be obtained by following out methods based on scientific principles. The liberation of plant food in the soil, the lightening or consolidation of the soil, as the case may require, the absorption and retention of moisture, and the like, are all dependent upon a right mechanical treatment of the soil.

#### HUMUS IN THE SOIL.

Again there are many soils which stand in need of humus. Humus results from the decaying of vegetable matter. Where we find rich virgin soil, there we find humus. Humus has certain elements of plant food invariably associated with it, and these are in a condition easily assimilable by crops. Soils can most readily and cheaply be enriched in humus, by turning under a green crop, preferably one of the legumes, such as clover. Moreover, the presence of humus keeps the soil with a due proportion of moisture. The continued cropping of a soil without growing clover tends to deplete the soil of its humus.

#### VALUE OF LIME IN THE SOIL.

Then the examination of these soils leads me to the opinion that many are deficient in lime. Such rapidly become sour; and a sour or acid soil is unsuited to growing crops. Where the percentage of lime falls below one per cent, most agricultural chemists deem that soil deficient in lime. Lime has its abuses as well as its uses, but I think we may well call the attention of farmers to the rational use of this constituent in some form, because its presence is necessary for the best returns. Not only is it a direct plant food, but it liberates other plant foods, notably potash, and is a valuable and important instrument in bringing about good tilth and correcting sourness. The judicious application of lime, marl or gypsum has proved most advantageous.

## Agriculture and Colonization.

*By Mr. Wilson :*

Q. What is the nature of marl?

A. It is carbonate of lime. It is called "mild" lime as its action is not so immediate as quick or slaked lime; but for many soils it is better, and as it is frequently found in large deposits it is certainly cheaper than quick lime.

*By Mr. McGregor :*

Q. Have you made any calculations as to the proper amount of lime to apply per acre?

A. It would depend upon the percentage of lime in the soil and what previous treatment the soil had had; but I presume that under ordinary circumstances, 40 bushels to the acre would be a good dressing. I would not advise a heavy dressing, as it would tend to over-stimulate and exhaust the soil, more especially if other fertilizers are not used.

*By Mr. Wilson :*

Q. Do you mean 40 bushels of unslaked lime?

A. Yes; it is allowed to slake by placing it on the soil in small heaps. These heaps are covered with a little earth and allowed to slake spontaneously. In a few days it can be spread easily, being then reduced to a powder.

*By Mr. Semple :*

Q. Would lime be as necessary where the land has a limestone bottom, or where limestone is found on top?

A. No. It is only where, as I was pointing out, the soil is deficient in lime. The soil on a limestone rock foundation may contain from 2 to 5 per cent of lime. Such a soil does not require lime. Hence, the necessity for a chemical examination of the soil, or a field test with lime to see if there is any response. I do not recommend heavy applications, but rather small dressings at more frequent intervals. Lime has a tendency to sink into the ground and consequently is frequently found in the sub-soil in larger amounts than in the surface soil. This points to the wisdom of small and frequent dressings.

*By Mr. McGregor :*

Q. Would you dress on top of a crop?

A. Not necessarily; it would depend on the nature of the crop. Clover may be top-dressed with gypsum, which is sulphate of lime. This is found to give excellent result.

### IMPROVEMENT OF MUCK SOILS.

We have conducted some experiments in connection with improvement of muck soils. A thorough drainage for such soils is, of course, of primary importance in order to get rid of the excess of water and correct sourness. That is the first step. We have found that such soils while naturally rich in humus and nitrogen, are particularly deficient in some of the mineral constituents. From pot experiments conducted in our laboratories at the farm, it has been found that the crop-producing power of such soils may be greatly increased by the application of wood ashes, in other words, by potash, phosphoric acid and lime in available forms. These are the elements in which muck soils are more particularly lacking. These experiments have met with great success, and we have been able to give ocular demonstration of the fact that the yield has been very much improved by such an application. The data of these experiments will appear in the forthcoming report.

## FERTILIZING DEPOSITS.

With regard to the naturally occurring fertilizers, such as mucks, mud and river and tidal deposits, marls, &c., we have as usual continued their analysis, but as I have on former occasions explained the nature of these materials, and as your time is pressing to-day, I need not now discuss their value from an agricultural standpoint. The results obtained during the past year afford useful information to those farmers to whom deposits are easy of access, for it must be remembered that many of our farmers are in a position to use such fertilizers without entailing much expense. Muck and peat in the air-dried condition are exceedingly useful absorbents for use in and about farm buildings, and I am of opinion that their more extensive use in this way would not only give our farmers a larger quantity of more valuable manure for their fields, but that much valuable plant food would be saved that would otherwise be lost. Instructions for preparations of these materials—because muck requires preparation before it can yield its constituents for plant growth—are set forth in the report.

## PRESERVATION OF BARNYARD MANURE.

In the preservation of barnyard manure we have undertaken to estimate approximately during the past year the losses that follow upon various methods of preserving it. Some of these experiments are not yet completed but sufficient data have already been obtained to show that in rotting manure there is a distinct and considerable loss of its fertilizing constituents, even when precautions are taken to have the conditions of fermentation as favourable as possible—that is, when excessive fermentation can be controlled and checked, and when leaching from rain can be prevented. The losses that occur when manure suffers excessive fermentation, known as fire-fanging, and when by rain it is leached, ought to be well known to the farmer. The first, known as fire-fanging, leads principally to the loss of nitrogen (the most costly element of plant food) and humus; and leaching leads not only to the loss of nitrogen, but of potash as well. We are, I dare say, all well aware of the value of nitrogen and potash as elements of plant food, but we have not hitherto recognized the importance of humus, or decaying vegetable matter, in the soil. It is found in every productive, virgin soil, and experiments carried on, on the Continent and in the United States, have gone to show that it is the mineral plant food in association with humus that is most easily and readily assimilable by crops. Hence the necessity of having our soil rich in humus. Besides its chemical benefits, humus also acts most beneficially from a mechanical standpoint, it is a patent agent in the retention of moisture and in the improvement of tilth generally. The losses through excessive dry fermentation are the loss of humus and nitrogen, and through leaching, chiefly, nitrogen and potash. To compensate for the losses that occur in the rotting of the manure, because there are compensations, we have the rendering more assimilable of the plant food in the manure. In other words, rotting or fermentation makes the elements of fertility more immediately available. Whether the one may balance the other can only be decided when all the conditions and circumstances are known. For heavy soils there can be but little doubt that the greatest economy lies in applying the manure fresh and at once turning it under. Such soils are retentive of the manurial elements, and consequently suffer but little loss from drainage.

*By Mr. McGregor :*

Q. Would you put it on in the winter?

A. If there is not much snow on the ground. When the manure is placed upon deep snow it prevents the frost from coming out in the spring and often delays the spring work. It would not be good practice to put manure upon a sloping side where it might be leached in the spring by surface flooding. The principle is that with a retentive soil there will be less loss by getting the manure into the soil as quickly as possible. Rotting manure in the soil would improve a heavy soil mechanically.

## Agriculture and Colonization.

*By Mr. Rogers :*

Q. Would you plough that deeply ?

A. No, as the tendency of the manure is to work down, in most instances it is better economy not to bury it.

On the other hand, light and leachy soils are more economically treated by annual applications of partially rotted manure. They are not retentive, and it is well in such cases to add the manure in a readily assimilable condition, that is partially rotted so that the crops may at once utilize it. Such an application should be made from year to year.

*By Mr. McMillan :*

Q. Experiments have been carried on at the farm with both green and rotting manure, side by side, which is best ?

A. These experiments you refer to were not under my charge, but I know that the results obtained by the Director are in favour of green manure. I am speaking now with regard to the principles of manuring.

In order to build up or work towards a permanent improvement of light soils, it would be more economical to first use the legumes. By ploughing under several green crops, the soil would be brought into a more retentive condition, and then manure could be applied with less risk of loss through leaching.

There are other matters which should be considered in arguing the question as to whether fresh or rotted manure is to be applied, as for instance, the crop to be grown. If the crop has a long growing period, as most of the root crops, we may supply it with plant food, the greater part of which is not immediately available, that is we can give it fresh manure. But where the crop is a short lived one, such as the cereals, then I am of the opinion, that the best returns would be obtained by supplying the plant food in a more or less available form such as is to be found in rotted manure.

*By Mr. McMillan :*

Q. Would the benefit of leaving the manure to rot in the barnyard or in a shed, not be lost by allowing it to lie over, all summer. Would you be recompensed for the loss resulting from not getting it out the first year, by the benefits to be derived from the rotted manure.

A. The extent of the loss will of course be dependent on the conditions of rotting the manure and the length of time in rotting. If proper precautions are taken to keep it moist and compact, the loss will not be so great as when allowed to lie over loose and uncared for. There will be loss, however, under the best conditions, and I think it becomes a question to consider whether this loss is compensated for, by rendering more available the fertilizing elements. For certain crops and certain soils I believe that that loss is more than compensated for by the increased assimilability of the plant food left in the manure.

*By Mr. Wilson :*

Q. It is light soils in which that would be the result ?

A. I think for light soils, growing short lived crops more particularly, the manure should be in a partially rotted condition, that is to say, when its plant food is more readily assimilable or available than it is in fresh, green manure.

Q. That is the kind of soil that it would pay best to rot your manure for.

A. Yes, exactly.

As you are well aware, truck or market gardening and intensive farming cannot be carried on without rotted manure. The market gardener grows several crops a year on the same ground. He therefore needs manure that gives an immediate return. Where a farmer, however, has roots, for instance, growing for several months, it might be more economical to use fresh manure.

Q. But on light soil it would pay best to use rotted manure.

A. Yes.

MR. McMILLAN—I know of one gentleman who for a number of years took the first prizes in potatoes, mangels, turnips and carrots in Toronto. I was very anxious to learn how he managed his soil, and I ascertained that he raised the crop always in one field. One drill being under crop and the next drill under cultivation, or in other words, each alternate drill was under crop while the intervening drills were under cultivation. The drill which was to produce the crop next summer, was manured and wrought this summer, so that the manure should be thoroughly assimilated for the next year's crop.

*By Mr. Wilson :*

Q. How far apart were the drills?

MR. McMILLAN—The drills were five feet apart, the intervening drills being cultivated so as to assimilate the soil for the next year's crop.

*By Mr. Martin :*

Q. How long would green manure have to remain in the soil before becoming assimilated?

MR. SHUTT—That would depend largely on the nature of the manure and of the soil and the season. If the manure contained a considerable amount of straw (such as is often carried out to the fields by our farmers) and there was but little moisture in the soil, it might lie in the soil for several seasons without suffering decomposition; but if the manure contained a large percentage of excrement and was turned under, the soil being exposed to favourable climatic influences, the manure would for the most part be rotted the first season. The rotting of manure may proceed until there is nothing left but the mineral constituents. But for ordinary purposes, the rotting may go on for three to six months. As rotting proceeds the manure will be continually decreasing in weight, losing its organic matter and nitrogen. To a certain extent the percentage of nitrogen will increase. The percentages of potash and phosphoric acid also become greater. The extent of the losses that ensue in fermenting or rotting manure will, therefore, be dependent on the circumstances. Under ordinary conditions, that is to say, using no special precautions, we found that the shrinkage in weight was between 60 and 75 per cent. In other words, one hundred pounds of fresh manure will yield, when rotted, between 40 to 25 pounds, according to the state to which you advance in the process.

*By Mr. McMillan :*

Q. And according to the amount of straw in it?

A. Exactly.

The resulting manure was about twice as rich in the elements of fertility as the fresh manure. Thus we found that the percentage of phosphoric acid in the fresh manure was .32, and in the rotted manure it was .73. This goes to prove that under the conditions of rotting, in this investigation, the phosphoric acid had not leached out. In the fresh manure the percentage of potash was .76 and in the rotted manure it was 1.49, showing, as I have already stated, that weight for weight, rotted manure is much more valuable than fresh manure, and this is more especially true when care has been taken to prevent fire fanging and leaching.

*By Mr. Erb :*

Q. How were these experiments conducted? Are those the percentages that are contained in a given weight of green manure and the same weight of rotted manure, or on the weight of rotted manure that was obtained from a similar weight of green manure.

A. The figures that I have just given you were obtained from the analysis of green and rotted manure. They are percentages, or in other words, represent the number of pounds in 100 pounds of fresh and rotted manure, respectively.

## Agriculture and Colonization.

*By Mr. Featherston :*

Q. What is the percentage of fresh manure compared with rotted manure ?

A. The analysis of a sample of fresh, mixed (horse and cow) manure, afforded us the following data :—

	Per Cent.	Pounds per ton.
Nitrogen.....	·52	10·4
Phosphoric acid.....	·32	6·2
Potash.....	·76	15·2

A similar sample, after the manure had been thoroughly rotted furnished the following figures :—

	Per Cent.	Pounds per ton.
Nitrogen.....	·888	17·76
Phosphoric acid.....	·733	14·66
Potash.....	1·496	29·92

These figures undoubtedly prove the superior quality of rotted manure. Further, we have good reasons to suppose that the elements of fertility in the latter are more soluble and available than those in fresh manure. This concentration, however, is accomplished at the expense of certain organic constituents.

In the rotting of the manure nitrogen is lost and humus or organic matter is destroyed. If there is any leaching, potash, in addition to these, will be lost.

*By Mr. Featherston :*

Q. What is the loss then of rotting ?

A. First there is a shrinkage in weight. This may vary from 40 per cent to 70 per cent. Under ordinary good conditions I presume that the decrease is somewhat more than one half the weight of the fresh manure.

Our experiment in this matter, in which no special precautions were taken, furnished the following weights :—800 pounds of fresh manure became reduced to 2,659 pounds by rotting during one year. The total weights of the constituents at the beginning and end of the year have been calculated as follows :—

	Nitrogen.	Phosphoric Acid.	Potash.
-----	Lbs.	Lbs.	Lbs.
8,000 pounds of fresh manure, contained.....	41·6	24·8	60·8
2,659 pounds of rotted manure, resulting therefrom, contained.....	23·6	19·5	39·8
Loss of constituent in rotting.....	18	5·3	21·0

This experiment is now being repeated under somewhat different conditions, conditions, at all events, that will lead to less loss of phosphoric acid and potash.

I am convinced that fermentation or the rotting of the manure in the barn-yard leads to much greater losses than is indicated above. The probability is that under conditions as usually found on farms, one half of the plant food is lost before the manure gets into the ground.

*By Mr. McMillan :*

Q. The only way is to weigh the manure coming from the stables, analyze it, set it apart and analyze it from time to time, to see the loss in weight and constituents.

A. We have done that

*By Mr. Erb :*

Q. And give the result in pounds instead of percentages ?

A. Yes, we are giving that information. Our experiment consisted in keeping manure in an open shed and under cover. The two lots weighed and analysed every month. We not only estimated the total plant food, but also determined the percentage of it that become available by the process of rotting.

The analytical work is not yet finished, but we trust the results will be ready in about two month's time.

Q. Have you tried liquid or solid manure ?

A. Our experiments have been conducted on manure made by keeping the solid and liquid manure together. Liquid manure more readily ferments and suffers loss of nitrogen than solid excrement. The advice to be given to those preserving manure is to keep it compact, in order to exclude the air as much as possible, and to keep the mass moist. Under these circumstances there will be the least loss.

#### PHOSPHORIC ACID IN MINERAL PHOSPHATE.

We made an experiment to ascertain if any of the phosphoric acid in ground "mineral phosphate" could be rendered soluble by mixing it with rotting farmyard manure. You are probably aware that the phosphoric acid in mineral phosphate or apatite, is in an insoluble and therefore unavailable condition. When this material is treated with sulphuric acid, super-phosphate—in which phosphoric acid is soluble—is formed. It has been repeatedly urged that if the finely ground mineral phosphate was composted with actively fermenting manure, the same result would follow, namely, the rendering soluble of the phosphoric acid.

We took 50 pounds of apatite per ton of manure, allowing the mass to ferment from April to August. Further analyses were then made. They showed that no phosphoric acid had been thereby rendered soluble. We, therefore, have very good proof for saying that the fermenting manure has no influence on this apatite.

#### CLOVERS AS GREEN MANURES.

In the question of enriching soils by turning under clover—one that has been attracting a great deal of attention of late—we have done some further work during the past year. In my report for 1895 I discussed at some length the benefits to be derived from this method of fertilizing, giving analytical and full data of our experiments. We have followed up the work during 1896, and estimated the approximate gain per acre by ploughing under Alfalfa, Mammoth Red Clover, Crimson Clover and Common Red Clover. This investigation was undertaken to find out which of these crops yielded the largest amount of nitrogen and humus, that is to say, which was the most valuable for turning under. The results showed that Alfalfa or Lucerne stood first in point of nitrogen, humus and mineral matter; it was closely followed in many particulars by the Mammoth Red Clover. There are many advantages to be got by using Alfalfa. It has the most extensive root system of all the clovers tried, and more than half the nitrogen is found in the roots. The value of such a crop as a soil enricher is therefore obvious, even when the foliage—stems and leaves—are used for soiling purposes. It is not so with Crimson Clover, for instance, where less than half of the whole nitrogen is contained in the roots.

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The following table shows the composition, the weight of crop per acre, and the amounts of the more important constituents per acre :—

Clover.	COMPOSITION.			Nitrogen.	Weight of Crop Per Acre.		AMOUNT OF CERTAIN CONSTITUENTS PER ACRE.		
	Water	Organic Matter.	Ash.				Organic Matter.	Ash.	Nitrogen.
(Sown July 13th, 1896, Cut October 20th, 1896).					Tons.	Lbs.	Lbs.	Lbs.	Lbs.
Crimson Clover, stems and leaves...	83·32	13·91	2·77	0·382	11	234	2,093	602	85
“ roots.....	83·87	12·92	3·21	0·304	3	201	801	199	19
Total.....					14	435	2,894	801	104
Alfalfa, stems and leaves.....	71·63	23·81	4·56	0·671	5	1,192	2,664	510	75
“ roots.....	64·74	29·47	5·79	0·557	5	558	3,120	613	61
Total.....					10	1,750	5,784	1,123	136
Mammoth Red, stems and leaves...	79·13	17·05	3·82	0·620	6	1,310	2,269	508	82
“ roots.....	77·57	19·41	3·02	0·662	3	1,260	1,409	219	48
Total.....					10	570	3,678	727	130
Common Red, stems and leaves....	76·24	18·84	4·92	0·718	4	1,779	1,842	481	70
“ roots.....	71·22	25·61	3·17	0·784	2	1,445	1,394	172	47
Total.....					7	1,224	3,236	653	117

The weight of crop was calculated from the yield of one square yard—the roots being taken to a depth of two feet.

The following paragraphs, taken from my current report, state in brief, the more important deductions from this investigation.

*Alfalfa.*—In total yield of crop Alfalfa stands second. It was from this plant we obtained the largest amount of humus in the stems and leaves, as well as in the roots. It also afforded the most nitrogen per acre, nearly half of which is in the roots—a feature in which it stands alone among the clovers experimented with, and one of great importance when the crop is intended for soiling or curing. The extensive or rather deep root system is of much value in this mechanical improvement of the soil and serves to bring to the surface layers much plant food ordinarily out of the reach of farm crops.

The mineral matter exceeds by 300 pounds per acre the amount in the Crimson Clover crop—the next best in this respect. More than half of the 1,100 pounds of ash constituents recorded as stored in the yield upon an acre, is contained in the roots.

Taking into consideration all the important requirements, from a chemical standpoint, of a crop for green manuring, the Alfalfa gave the best results in the present investigation.

*Mammoth Red Clover.*—In yield per acre, humus (organic matter) and nitrogen this crop stands a close second to Alfalfa. The amount of nitrogen in the foliage is slightly greater than that in the foliage of Alfalfa, but the roots of the Mammoth Clover contain per acre only two-thirds of the amount in the Alfalfa roots in the same area. Although the ash constituents in the foliage of these two crops are almost identical in amount, the roots of the Mammoth Clover possess but one-third, approximately, of that in the Alfalfa roots.

*Common Red Clover.*—Though giving the least weight of crop, this clover ranks higher than Crimson Clover in its nitrogen and humus content per acre. In ash con-

stituent or mineral matter it possesses about two-thirds the amount in Crimson Clover. Its root system is not so heavy as that of the other clovers of the experiment, but the quantity of plant food contained in it is not far behind that in the Mammoth Red Clover roots.

*Crimson Clover.*—In total weight of green stuff per acre, the Crimson Clover gives the highest figures, but, on account of the very large percentage of water, it is seen to furnish less organic matter or humus, than any of the other crops experimented with.

As in humus, so in nitrogen, yielding but 104 pounds per acre, while the other crops give considerably higher results. In this connection it is worthy of note that the Crimson Clover roots are very poor in nitrogen, and therefore when this crop is intended as a nitrogenous enricher, the whole plant should be turned under.

The amount of mineral matter assimilated stands second in the tabulated results. This clover, when turned under, furnishes a large amount of ready prepared mineral food for succeeding crops, but the root system is not as rich as any of the others examined.

During the last two or three years we have been sowing clover with the cereals, and have found that it has not decreased the yield of grain. This is a practice that could be more generally followed with advantage. I could not recommend any better or more economical plan for keeping up a soil's fertility in nitrogen and humus, than in occasionally ploughing under a green crop of one of the clovers.

#### WOOD ASHES.

In the matter of fertilizers we have made an examination as to the respective values of maple and basswood ashes. We found that maple ashes contained approximately twice as much potash as basswood; but that the basswood ashes are much richer in phosphoric acid. The figures are:—

	Potash.	Phosphoric acid.
Maple ashes.....	6.5	1.6
Basswood ashes.....	3.7	2.8

Potash is an important element of fertility and where unleached hardwood ashes can be purchased for from 10 to 15 cents per bushel they certainly afford the cheapest source of potash for agricultural purposes. I am further of opinion that with a rational system of farming including green manuring with legumes and the use of hardwood ashes, our ordinary farmers would be independent of the purchase of commercial fertilizers. Wood ashes not only supply potash but furnish phosphoric acid, lime and other mineral plant food constituents. Hence when they can be obtained the purchase of superphosphate lime, gypsum, etc. is very seldom necessary. When wood ashes cannot be procured, kainit, muriate of potash or other of the German salts must be used to supply potash and superphosphate, used to furnish phosphoric acid.

#### GARBAGE ASHES FROM CITY REFUSE

Many inquires have been received from farmers living in the vicinity of large cities as to fertilizing value of the ashes from crematories. We, accordingly, made several analyses and found as a result that these ashes were extremely variable. As a rule, they are inferior to wood ashes. A sample from Toronto refuse contained 2.2 per cent of phosphoric acid and 2.82 per cent of potash. These results show it to be decidedly inferior to good wood ashes, as regards potash. I might say that two samples, sent on

## Agriculture and Colonization.

different dates from Vancouver, were found to contain a large quantity of phosphoric acid, evidently derived from the presence of a large quantity of bones in the refuse. They showed from 11 to 13 per cent of phosphoric acid. The first sample contained 1.74 per cent of potash and 11.66 per cent of phosphoric acid. The second sample contained 2.15 per cent of potash and 13.05 per cent of phosphoric acid. All this serves to emphasize that these materials are very variable in composition and that before purchasing, an analysis should be demanded.

### COMPOSITION OF WHEAT BRAN ASH.

We have ascertained the composition of wheat bran ash. It appears that wheat bran is some times used in the Manitoba flour mills as fuel. When the price falls below \$4 per ton it is contended that bran is the cheapest fuel they can use. We have found that a ton would contain phosphoric acid and potash to the value of \$78, valuing these constituents at the same price that they cost in commercial fertilizers. The ash contained 25 per cent potash and 45 per cent phosphoric acid, or 500 pounds of the former and 900 pounds of the latter, per ton. However, burning the bran is a wasteful practice. To obtain a ton of ashes (valued at \$78) \$100 worth of nitrogen is burnt away or wasted, so that the best and most economical treatment of the bran which cannot be fed, would be to compost it. Bran is rich in nitrogen, which is all lost in the burning.

*By Mr. McGregor :*

Q. How about feeding it?

A. Undoubtedly that would be the most economical plan, for by so doing you would obtain two profits instead of one. By composting it all the nitrogen would be saved that is lost by burning, practically amounting to \$100 worth for every \$78 worth of potash and phosphoric acid. We also determined the relative values of oil cake, germ meals and other grain feeds.

*By Mr. McMillan :*

Q. In calculating with respect to clover, grown for ploughing down, would it not be better to feed it to animals and then apply it in the form of manure?

A. Undoubtedly; where it can be fed to cattle, and the manure taken care of, feeding is the best method, because you get two profits instead of one; but where there is no stock and the only question is to improve the soil, you can obtain nitrogen and humus cheaper by clover than by purchasing commercial fertilizers—and that is the point that I wished to make in speaking of the clovers as green manures.

### ANALYSES OF WELL WATERS FROM FARM HOMESTEADS.

We have also continued the work of examination of wells on farmers' homesteads. Last year we examined in the neighbourhood of fifty samples of water, and of these we found forty-five per cent so seriously polluted that I was compelled to condemn them as unsafe for drinking purposes. Twenty per cent were returned as suspicious and in all probability unsafe for use, and thirty-five per cent were returned as unpolluted and wholesome.

The other work of the chemical division has been of an exceedingly varied character. Addresses have been delivered at agricultural meetings and conventions on subjects relating to soils, fertilizers, cattle feeds, &c. Correspondence, which is continually on the increase, forms a most important branch of the work. Farmers may apply to us for information on any subject, without even the cost of postage, and I may say that they have not been slow to avail themselves of the privilege. Nearly one-half of my time is now consumed in this matter of correspondence.

There are various experiments and investigations which we propose taking up during the coming year, and which I believe will give results of great value to the agricultural public of Canada, and I regret that we have not time this morning to discuss them, at least in outline.

Q. I think it would be very important if you could take up all the different classes of feed and analyze them carefully and give us their value?

A. Yes. We have accumulated this year further data on that subject, and as opportunity presents itself we purpose continuing the work. We should have on record data concerning the feeding value of all Canadian cattle foods.

Mr. McMILLAN.—That is very important.

Mr. SHUTT.—You will undoubtedly be interested then to hear that we analyzed last year two samples of oil-cake meal, one of which on calculation was shown to be worth four dollars a ton more than the other. It so happened that the poorer sample was being sold at a higher price. This illustrates the value of chemical analyses for ascertaining the feeding value of fodders, milling products, &c. Our work this year has been hindered no little by the fire that so seriously damaged our laboratories last July. That fire also destroyed many unpublished data, more especially those obtained by the analyses of Canadian grasses. We trust before another year, to be established in a new and separate building, especially built for the chemical division. We shall then be in a position to increase the expert staff and do still more work of interest and value to the agricultural population of Canada.

Having examined the above report of my evidence I find it correct.

FRANK T. SHUTT,  
*Chief Chemist of the Dominion Experimental Farms.*

## Agriculture and Colonization.

COMMITTEE ROOM 46,

HOUSE OF COMMONS,

Friday, 11th June, 1897.

The Select Standing Committee on Agriculture and Colonization met this day, at ten o'clock, a.m., Mr. Bain, Chairman, presiding.

Mr. A. G. Gilbert, Manager of the Poultry Department, Central Experimental Farm, was called and addressed the Committee, as follows :—

MR. CHAIRMAN AND GENTLEMEN,—I have very great pleasure in meeting you again and laying before you, that portion of the experimental work of the past year that is new or comparatively so. When I had the honour of appearing before your committee last year, I was requested to select fifty hens as much representative of the barnyard fowls of the country, as possible, and see what I could make them pay in a year ; in other words to handle them to the best possible advantage, the whole to be an object lesson to the farmers of the country. In order to make that statement as concise, intelligible and satisfactory as possible, I have prepared the following data in table form, which you will perhaps allow me to read and afterwards make any further explanations necessary. I appeared before the committee on the 10th of March last year and the experiments commenced on the 1st of April following. Fifty hens, representative barnyard fowls, were selected as follows :—Nine Silver-Laced Wyandottes, seven White Javas, and thirty-four mixed or common hens. Among the latter were eleven Plymouth Rock, Dorking Crosses. In making the above selection my object was to have stock of the proper age and in such condition as would likely make, with proper handling of course, the best winter layers ; that is, yield their product when it was worth most. To have also a certain number of thoroughbreds, so as to compare them with the mixed hens, and from which I could raise male birds to sell for market purposes, or for breeders—the pullets being, of course, retained as future layers.

### EGGS LAID.

The eggs laid by the fifty hens during the year were as follows :—

April .....	571
May .....	540
June .....	317
July .....	242
August .....	155
September .....	61
October .....	77
November .....	344
December .....	587
January .....	693
February .....	600
March .....	586
Total .....	4,773

It will be noticed in the above that the egg production was greatest at the period of high prices, and least during the months of August, September and October when prices were at their lowest. During the months of low prices the sitters were hatching out, or had hatched out broods of chickens. The object was to have chickens growing

at the period of low prices. In other words, when eggs were cheap, as compared with winter prices, they were used to hatch chickens from, and the cockerels of these chickens were sold as breeders, or could have been sold for market purposes at ten cents per pound; the pullets being reserved for winter layers. Another object aimed at and successfully accomplished was to get the hens over their moult, which is their season of non-production, at the time of low prices, (July, August and September), and to have them laying again when prices were good. The success achieved is shown in the 344 eggs, the output for November, when new laid eggs were worth in Ottawa 25 cents per dozen, and then we have 587 eggs in December, when 30 and 35 cents per dozen paid in the same city of Ottawa, for the new laid article. You will also notice that we had from the fifty hens 693 eggs in January, 600 in February, and 586 in March, when the experiment ceased. So we had the greatest egg yield of the year at the time when prices were at their best. Surely this course of procedure is worth imitating by those farmers, who make no effort to have their hens laying during Winter and obtain their product in the spring, or summer, when prices are at their lowest. Six hundred and ninety eggs in January show nearly fifty per cent of the fifty hens laying daily during that month. The actual average was twenty-two eggs per diem, but on some days twenty-six and twenty-seven eggs were laid. Later on, I may read a table showing the daily egg production during the winter months, if you think it necessary.

*By Mr. McMillan :*

Q. What was the age of these hens?

A. I forgot to mention the exact age. None of them were over two years of age.

*By Mr. Rogers :*

Q. Surely hens do not moult in July?

A. They do when they have been laying all through the winter and are properly handled.

I shall now tell you how I handled the 4,773 eggs so as to make a profit, my aim being of course, to so handle the eggs as to make them pay as much as possible.

TABLE SHOWING RECEIPTS AND EXPENSES RESULTED FROM THE EXPERIMENT.  
RECEIPTS.

Eggs sold for eating purposes at prices of from 13 to 35 cents per dozen.....	\$	78	69
Sold for hatching purposes .....		41	50
11 Cockerels sold at \$1 each, viz.; 9 Silver Laced Wyandottes and 2 White Javas.....		11	00
8 Silver Laced Wyandotte pullets on hand in the fall, at \$1 each.....		8	00
Total.....		139	19

EXPENDITURE.

Deduct cost of food for the year.....	\$	40	26
do rearing 19 chickens.....		5	00
		45	26
Profit.....	\$	93	93

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The following table gives the above in detail :—

### EGGS SOLD FOR HATCHING AND EATING AT HIGHEST PRICES.—1896.

April, May, June, July, 95 doz. at 12 to 15 cents a doz. . . . .	\$ 11 46
August, 13 doz. at 13 cents . . . . .	1 69
September, 5 doz. at 20 cents . . . . .	1 00
October, 6½ doz. at 20 cents . . . . .	1 30
November, 29 doz. at 25 cents . . . . .	7 25
December, 49 doz. at 35 cents . . . . .	17 15
January, 58 doz. at 33 cents . . . . .	19 14
February, 50 doz. at 25 cents . . . . .	12 50
March, 48 doz. at 15 cents . . . . .	7 20
do 353½ doz. at from 12 to 35 cents . . . . .	78 69
41½ settings sold for hatching at \$1 each . . . . .	41 50
11 Cockerels, viz.: 9 S. L. Wyandottes, and 2 W. Javas, at \$1 each . . . . .	11 00
8 S. L. Wyandotte pullets, at \$1 each . . . . .	8 00
	\$ 139 19

### DEDUCT.

Feed for the year . . . . .	\$40 26
Cost of raising 11 Cockerels to marketable age, and pullets to laying age . . . . .	5 00
	45 26
Net profit . . . . .	\$ 93 93

Now I have never held out to the farmers at any institute meetings that I have attended, and I have been at such meetings with some of the gentlemen present, a greater profit than \$1 per hen per annum. I have also contended that farmers in the neighbourhood of cities and towns, have opportunities to obtain high prices, that farmers at a distance from such markets, and who have to sell to middlemen, have not.

### PARTICULARS OF FEED BILL.

The cost of feed was made up as follows :—

Wheat, 1,882 lbs. at 1c. per lb. . . . .	\$ 18 82
Oats, 244 lbs. at 1c. per lb. . . . .	2 44
Buckwheat, 281 lbs. at 1c. per lb. . . . .	2 81
Barley, 10 lbs. at 1c. per lb. . . . .	0 10
Mash (ground grains), 440 lbs. at 1c. per lb. . . . .	4 40
Cut green bone, 244 lbs. at 1c. per lb. . . . .	2 44
Cooked refuse meat, 394 lbs. at 1½c. per lb. . . . .	5 91
Blood meat, 8 lbs. 7 ozs. at 4c. per lb. . . . .	0 34
Vegetables and grit . . . . .	3 00
	\$ 40 26

A point in the revenue statement to which exception may be taken, is the sale of 41 settings of eggs from thoroughbreds, for hatching purposes. It may be said that a farmer would not have a chance to sell eggs for hatching, at \$1 per setting. However that may be, he would, at any rate, have the stock from them. Of this stock the Cockerels ought to weigh 8 pounds per pair in 4 months—that is 4 pounds each at that time—and such birds will easily fetch 10 cents per pound from city dealers. The

pullets would certainly be worth \$1 each as prospective layers. With us, Cockerels of the Plymouth Rock, Wyandotte, Java and other heavy breeds have made, from year to year, flesh development of 4 pounds in 4 months, and many farmers to my knowledge have done and are doing as much. I have been told by farmers that they have actually done better than that, but I have always made it a point rather to underestimate than to overestimate.

TABLE SHOWING EGGS FROM THE 50 HENS SOLD AT MARKET PRICES BUT NONE SOLD FOR HATCHING PURPOSES.

1896.

April	48½	doz. eggs @ 10c. per doz.	\$	4 85
May	45	“ “ @ 12c. “ “		5 40
June	26½	“ “ @ 10c. “ “		2 65
July	20	“ “ @ 12c. “ “		2 40
Aug.	13	“ “ @ 10c. “ “		1 30
Sept.	5	“ “ @ 15c. “ “		75
Oct.	6½	“ “ @ 20c. “ “		1 30
Nov.	29	“ “ @ 20c. “ “		5 80
Dec.	49	“ “ @ 25c. “ “		12 35
1897.				
Jan.	58	“ “ @ 25c. “ “		14 50
Feb.	50	“ “ @ 20c. “ “		10 00
Mar.	48	“ “ @ 15c. “ “		7 20

398½ doz., or 4,782 eggs.	\$	68 50
Add 9 Silver Laced Wyandottes and 2 White Java Cockerels.		11 00
Add 8 Silver Laced Wyandotte Pullets, @ \$1 each		8 00
	\$	87 50
Deduct estimated cost to a farmer of feeding 50 hens for one year and raising the 19 chickens		35 00
Profit	\$	52 50

Or showing a little over \$1.00 per hen profit.

It is but reasonable to presume a farmer would hatch out more than 19 chickens. Any further revenue should be added to the \$52.50.

You will find that I have made no exaggeration in the calculation. It was to successfully demonstrate this point that led me to make a choice of Wyandottes, for the females are not only good layers, but their progeny make rapid flesh formers. Turning to my record book, I find, that a Silver Laced Wyandotte cockerel hatched on the 12th May of last year, weighed on the 16th October following (5 months) 5 pounds 4 ounces, and that a White Wyandotte Cockerel hatched on 30th April of the same year, weighed on 24th September following (4 months and 25 days), 5 pounds 15 ounces or within 1 ounce only of 6 pounds.

*By Mr. Rogers :*

Q. Is that dressed weight?

A. Killed and plucked but not drawn. I desire to impress upon you, gentlemen, that what I have done may be done by every farmer in the country, if he will only make choice of the breeds suitable, such as Plymouth Rocks, Silver Laced Wyandottes, Langshans and Brahmas.

## Agriculture and Colonization.

*By Mr. McMillan :*

Q. How many pullets did you raise with those 50 hens ?

A. Eight pullets, I did not care so much for stock. I wanted to get eggs.

*By Mr. Rogers :*

Q. Do you not find that Plymouth Rocks are persistent hatchers ?

A. Not until they are over 2 years. Then they are apt to become persistent hatchers.

*By Mr. Henderson :*

Q. You said you had 8 pullets ; how many cockerels ?

A. Eleven.

Q. That is 19 altogether ?

A. Yes, and I have shown that I sold these at \$1 each for breeding purposes. If offered on the market they would have been worth ten cents per pound for eating purposes.

*By Mr. McGregor :*

Q. How did you hatch out your chickens ?

A. I used some of the 50 hens to hatch out the chickens.

Q. You could have hatched more than the 8 pullets and 11 cockerels ?

A. Yes, but I did not make an effort that year to hatch out chickens and the experiment ceased at end of March of the following year, which was a little early as you know. My object was to get as many eggs as I could at the time of high prices because the selling of a superior quality of market poultry at high prices is not general. Farmers have not yet produced the superior stock required, but they have in many cases produced the eggs. We had nine Silver Laced Wyandottes and 7 White Javas, up to the 22nd of December, when, finding that the White Javas were not doing well, I substituted eleven Silver-laced Wyandottes. I have always advised farmers to keep a strict watch on their hens and if at any time, they find non-layers or drones, to pick them out and substitute others, as the drones were only eating up profit made by others. I demonstrated this myself in this case, by substituting 11 Silver Laced Wyandottes to take the place of poor layers.

As to the labour and raising of the chickens, I would say that I allowed the value of the manure to pay for the comparatively little trouble it would be to a farmer or his wife, or daughter, to look after 50 hens, and if you like to pay for the cost of rearing the 11 cockerels to a saleable age and the 8 pullets to a laying age. You may think this a too liberal allowance, but a bulletin issued by the U. S. Experimental Station at Raleigh, North Carolina, endorses the statement, "That the droppings from a hen in a year are worth half the cost of her feed for that time." According to that calculation, I would have \$19, half of \$33, the cost of my 50 hens for a year to pay for labour, and if you like, the rearing of the chickens. But, the cost of rearing the 11 cockerels to a marketable age, four months, and the 8 pullets to six months of age—the laying age—I put at \$5. I base my calculation on the hen costing 75 cents per annum for feed and we have 75 c. x 8 = \$6.—one half = \$3.—for raising 6 pullets to six months of age and \$2 to raise 11 cockerels to 4 months, or marketable age. At that age the eleven cockerels ought to be worth \$4.40 as market fowls, calculating them as weighing 4 lbs. each, or in all 44 lbs. at 10 cents per lb. A farmer would have the waste of his house to help raise the chicks.

The following table shows the number of eggs laid by the different breeds :—

EGGS LAID BY THE DIFFERENT BREEDS OF HENS COMPOSING THE 50.

	April.	May.	June.	Novem-ber.	Decem-ber.	January	Febru-ary.	March.	Total.
9 Silver Laced Wyandotte hens.	87	78	63	48	172	169	154	121	892
7 White Java hens	122	112	59	14	19	(replaced on 22nd December, by 11 Silver Laced Wyandotte pullets.)			
11 Silver Laced Wyandotte pul-lets					51	160	134	114	459
Mixed hens	233	209	142	52	191	198	169	206	1,400
11 Plymouth Rock and Dorking Cross hens	129	141	53	59	154	166	143	145	990
(Eggs laid by all hens when running at large during months of July, August, September and October)									706
Total									4,773

Now, we learn from the above that the 11 Plymouth Rock—Dorking Cross hens, the first cross, laid as many eggs as the 11 Silver Laced Wyandotte pullets during December, January, February, and March, a period of high prices. It also proves the correctness of my contention that a farmer can improve his stock by mating a thoroughbred cockerel with the pick of his common fowls, that is, he should select 7, 9 or 11 of his largest, most robust and best shaped hens, not over 2 years of age, and mate them with such a cockerel as I have described. He will then have first crosses, which will make him good layers and fairly good table fowls. Of course, I prefer thoroughbreds of the Plymouth Rock, Wyandotte or Asiatic type to breed superior market and laying poultry from ; but it is not always convenient for farmers to get hold of high class stock, and he will do very well in the manner described, until he can get altogether into thoroughbreds, or so improves his barnyard stock as to be good first crosses. The fact of the mixed hens, beginning to lay in November and continuing to do so throughout the winter, is proof that if properly handled, and of proper age, they will be revenue makers.

*By Mr. Erb :*

Q. Suppose you had an even number of hens, would it not be the same ?

A. Yes, but we give (in selling eggs) 13 as the dozen. Eight, ten, twelve, or even six hens would do just as well. The point is that he can improve his stock in one season by mating up with a thoroughbred cockerel.

COST OF FEEDING WITH VARIOUS RATIONS.

Coming now to speak of the ration per diem, and the cost, I may say that we reduced the ration of the fifty hens to 10 cents per diem. The morning ration consisted, during the winter months, of :—

3½ lbs. cut bone or cooked meat waste, at 1½c. per lb.....	5	Cts.
5 lbs. wheat or buckwheat, at 1c. per lb.....	5	
Total.....	10	
OR		
3½ lbs. cut bone at 1c.....	3½	
5 lbs. wheat or buckwheat, at 1c.....	5	
Grit and vegetables, say.....	1½	
Total.....	10	

## Agriculture and Colonization.

With his fifty hens running at large in summer the farmer should be able to feed them on five cents. The production of a dozen of eggs from fifty good laying hens should not cost the farmer more than four, or, at the most five cents per dozen during the summer season. Or take it in this way, say that fifty hens of a farmer lay twenty-four eggs per day, that is two dozen (they surely ought to do so) and the eggs sell at eight cents per dozen—the lowest price—he would have sixteen cents which he ought to make at no greater cost for food than four or five cents. He would actually make treble the cost of production. A large margin for any department of trade or commerce to have.

*By Mr. Erb :*

Q. Do you take into account that when the hens run at large on the farm they destroy a large amount of stuff. Last year I had half an acre of roots destroyed for which I had no return?

A. You could perhaps limit the run. I am taking the lowest price at the least possible cost of production so far reached, but there is no reason, even with a limited run, why you should not reduce the cost to five cents a day.

*By Mr. Beith :*

Q. If you confined the hens to a run you could not feed them on five cents a day?

A. Well, say that their feed cost double four cents, that would still leave the farmer a handsome margin. He would surely get sixteen cents worth of eggs from his 50 hens. It would be a poor lot of hens if fifty of them would not lay two dozen eggs a day even under the conditions of a limited run. The point I want to make is, that allowing the hens are confined to a run the farmer can keep them on much less than is thought.

Another point I am trying to show is that the farmer has a large margin of profit even at the low price that eggs are at present.

*By Mr. McGregor :*

Q. Did you keep the hens in a heated house or in an ordinary house?

A. In an ordinary house, such as a farmer could have.

Q. Was there a stove in it?

A. Yes. But a stove is worse than useless, because it does not give heat at the time most wanted, viz.: From midnight to seven in the morning. I think it would be much better if the farmer could so arrange his house as to economize the animal heat of the fowls. I have prepared a plan showing a house that can be so kept warm during the winter season.

*By Mr. McMillan :*

Q. Your hens you say produced 4,773 eggs in a year; if they produced 24 eggs a day for 365 days you would have 8,760 eggs?

A. Yes, but only 50 per cent of the hens were laying at my best season (the winter) and the greatest number of eggs I got in a day, during that time, was 27.

Q. On an average you would not get at that rate, much over 13 or 14 eggs a day.

A. But in some months my hens did almost nothing. I agree with Mr. Hunter who claims that if 40 per cent of your hens lay at period of high prices, that each hen ought to make \$2 a year, and I think he means profit, I do.

Q. What I am taking is the calculation you gave here, that 50 hens produced 4,773 eggs in a year which would be equivalent to 95½ eggs each per year.

A. Yes, but I did not strive for an all year record. The way we gained was by making the hens lay in the period of high prices, and selling eggs for hatching, or they might have been converted into market poultry.

Q. Do you think that was largely owing to the cut bone ?

A. Yes.

Q. Does anything depend on the time your chickens are hatched ?

A. Yes, the sooner the pullets are hatched the sooner they lay. It is hard for the farmer to get out chickens earlier than the month of May.

*By Mr. Featherston :*

Q. May chickens lay during the same year ?

A. Yes.

*Deductions.*—From the above I make the following deductions worthy of imitation by the farmers.

1. Get your product when it is worth most and sell it to the best possible advantage.

2. Reduce the cost of production as much as possible and sell at the highest price, so increasing your margin of profit. Should it be necessary to sell at a low figure, reduce the cost of production so as to still retain a large paying margin of profit.

*By Mr. McMillan :*

Q. The farmer calculates the number of eggs and the number of pullets that are raised, and then he will calculate his own market for the profit.

A. If he will only select his breeds, from breeds that are known to pay, he will have no difficulty in improving his stock.

Q. We have a large number of Plymouth Rocks, and Mrs. McMillan says she never had such hens on the place.

A. I am glad to hear it. You will find the Cockerels will make flesh development of a pound per month and will sell as choice poultry at 10 cents a pound.

*By Mr. McGregor :*

Q. How would you advise people who cannot get to market readily to keep eggs ?

A. I would advise to keep them in a cool cellar, arranged on shelves, but insist on their being new-laid fresh eggs when put in the cellar. I would prefer them to be non-fertilized.

Q. Is that better than keeping them in cases ?

A. If there is a circulation of air in the paper cases and they are put on shelves they ought to do well ; but there is a great deal of possible injury to eggs in their surroundings and from the substances in which they are put away, such as mouldy bran, musty oats, &c.

Q. Have you ever tried a pickle of any kind ?

A. No. I have not.

*By Mr. Featherston :*

Q. Did you ever try dipping them in scalding water ?

A. No. I have only tried putting them away in a comparatively cool cellar.

*Rations and Cost.*—Referring to the work of the year, I may say that the 10-cent daily cost for these 50 hens, found corroboration in the treatment of 204 hens which I had in charge during the year. The daily rations for the 204 hens and pullets during last winter was valued at 41 cents. The following are the figures :

	Cents.
Morning : 11½ pounds cut bone or meat waste at 1½c. per pound.....	18
Afternoon : 20 pounds wheat or buckwheat at 1c. per pound.....	20
Vegetable and grit.....	3
Total.....	41

## Agriculture and Colonization.

The 50 hens cost for food per day 10 cents and four times the number we fed for 41 cents, the cost of one lot thus corroborating the cost of another.

*Income Realized.*—On the 30th December last we produced five dozen and eight eggs, that is 68, from 20½ hens. I went to the city and looked up good customers for my choice article, for I considered obtaining the eggs and a good price for them, object lessons to the farmers. I sold the five dozen and eight eggs at 35 cents per dozen, and they netted me \$1.93. Deduct the cost of production, which was 41 cents, and I have a profit on that day of \$1.52. Our calculations are easily made. I have a book ruled off showing the breeds which lay the eggs and number of eggs laid; the other side shows the cost of production, so we can tell at the end of each day how we stand. The least number of eggs laid during that month—which was a time of high prices—was 14 eggs from the 50 hens, on the 6th. You see it cost no more to produce 5 dozen and 8 eggs than it did one dozen and two; but it should be said that when the 14 eggs were laid the hens were not in full winter laying. To secure such results the hens must be so handled in summer as to get them over their moult easily. Feed meat and let them have the run of a field, or if they are living and being treated artificially supply them with meat and green stuff and in response to such treatment they will shed their old feathers quickly, get their new ones, and go into winter quarters in good, healthy condition.

*By Mr. McGregor :*

Q. And not too fat?

A. No, they should not go into winter quarters too fat.

*Production per day.*—I have some figures which I will submit. They show the output of eggs per day by the 50 hens for December, January, February and March, period of high prices:—

December.—18, 16, 14, 18, 21, 13, 17, 16, 19, 18, 17, 14, 18, 20, 18, 19, 16, 18, 15, 19, 17, 22, 20, 23, 24, 18, 20, 27, 21, 28, 23=587. In this month eggs retailed at 30 and 35 cents per dozen in Ottawa.

January.—21, 27, 25, 18, 25, 23, 18, 26, 21, 23, 24, 21, 20, 23, 23, 25, 21, 25, 23, 20, 22, 22, 22, 21, 22, 21, 26, 24, 19, 22=693. Eggs sold at 30 and 35 cents. Eighteen dozen sent Montreal fetched 40 cents per dozen.

February.—22, 27, 23, 20, 24, 23, 19, 23, 19, 22, 20, 15, 23, 19, 18, 15, 25, 25, 20, 22, 23, 21, 20, 25, 17, 23, 23, 24=600. Eggs sold at 20 cents per dozen.

March.—20, 24, 18, 25, 18, 25, 23, 21, 23, 22, 19, 26, 19, 20, 14, 18, 11, 20, 15, 13, 12, 15, 14, 18, 18, 17, 17, 20, 20, 19, 22=586. Eggs sold at 15 cents.

From the above it will be seen how much profit was made during the winter months named, with cost of production at no more than ten cents *per diem*.

*By Mr. McGregor :*

Q. Have you been troubled much with disease in fowls?

A. No. Any one managing hens rightly will have no disease. The danger most to be feared is over-feeding. Over-feeding is the great rock to be avoided in the management of fowls.

*By Mr. Rogers :*

Q. Do lice on the fowls bother you much?

A. No. That trouble is easier prevented than cured. We find coal-oil the best remedy. We spread it with a brush over the woodwork and roosts.

*By the Chairman :*

Q. Do you use anything to prevent the young chickens from getting lice?

A. We damp a sponge with coal-oil and rub the hens' feathers and under the wings of the mother hen. Applied in that way it is not strong enough to injure the hens or chickens, and the fumes drive away any lice. We find that treatment best for the purpose. As I said before we find prevention a good deal better than cure.

*By Mr. Erb :*

Q. How do you hatch out your chickens ?

A. We hatch out our chickens under hens.

Q. How do you treat your hens when they want to set ?

A. When our hens are broody we put them into a pen by themselves where there are no nests, let them stay there, feed them well, and they soon get over the incubating fever.

Q. How do you get the hens to set when they don't want to ? We had a difficulty in this.

A. That is rather a difficult matter. The idea is to get fowls that will not sit early. The incubator is used in many cases now.

*By the Chairman :*

Q. With an incubator you are independent of natural instincts ?

A. Yes, to a certain extent. There is a phase of the question I would like to emphasize, and that is, the farmer who is living in the neighbourhood of a city or town has opportunities of getting better prices and seeking out better customers than the farmer at a greater distance. It ought to be an object to the first named to so handle his fowls as to take advantage of high prices.

*By Mr. McMillan :*

Q. The farmer in the country has generally to depend on the export price ?

A. Yes, but the farmers in the neighbourhood of towns and cities are able to get ten, twelve and fifteen cents per dozen in summer, and higher figures in winter.

Q. In the country they have to depend on getting 7 cents a dozen ?

A. I have prepared a table touching upon that point. I intended to have read it. I am sorry that I have not had time to read some more tables and go into points which you have raised at length. I thank you gentlemen very much for your kind hearing while I have given you the results of the experiments with the 50 hens.

Mr. McMILLAN.—I have made a little calculation. It would cost you 10 cents a day or \$36.50 a year to feed the hens ; you will get 10 cents a dozen for the eggs ; you have \$48 so that you have 19 chickens and \$12.50 of profit on the 50 hens at the average market price that the farmer gets.

Mr. CHAIRMAN.—When the tables are printed people can size that up for themselves.

Mr. GILBERT.—I have an estimate prepared covering the point. Winter prices are higher, than 10 cents per dozen with us, that is our summer price. If the farmer does get a low price for his eggs, he is supposed to raise stock as well.

If I am allowed to take the 41½ settings and hatch them out I should have 200 chickens, not an unreasonable estimate. Then I estimate that half of the number will be cockerels, which at end of four months should weigh 6 pounds per pair, or 3 pounds each, giving me 300 pounds of choice poultry meat which is certainly worth 10 cents per pound

100 Pullets valued at 50 cents each.....	\$30 00
	50 00
	\$80 00

Deduct cost of rearing the chickens to market and laying age, and for loss by death.....	\$20 00
	\$60 00

Net profit.....	\$60 00
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## Agriculture and Colonization.

### THE COST OF FEEDING AND PRODUCTION IN SUMMER.

In regard to the cost of producing a dozen eggs, to the farmer, who has fifty hens running at large in summer, I would like further to explain, as you may think that my allowance of four cents, for cost of fifty hens per day, too little. I may state that whenever I have had opportunity I have submitted the figures to farmers and asked their opinion. I may mention a particular instance:—Not many days ago a farmer visited me, and I put the case to him in this way. I said: “We have reduced the cost of rations to fifty hens, during last winter, to ten cents per day. On these rations they laid well and were in perfect health. My opinion is that with his laying stock running at large—as they do in most cases—the cost of the fifty hens per day to a farmer could be reduced to five cents, if not to four cents. I calculated, that as prices go, four cents would buy five pounds of sound grain, say buckwheat and oats mixed, or wheat and oats. I would give half of the quantity in the morning, and the remainder for evening ration. Meanwhile the hens have had opportunity to find insect life, grit and green stuff, and would return with their crops well filled, and the 2½ pounds of grain would be quite enough for them.” He said that under the circumstances he did not think the cost would be any more. I further explained that my object was to show that the production of a dozen eggs, in such a case, should not cost more than four cents, and that a greater number would likely be laid by the fifty hens during the day. Speaking on the subject to a friend who lives in the neighbourhood of the city limits, and who successfully manages a flock of Barred Plymouth Rocks, he remarked that he thought he was doing something very like what I stated. I asked him to give me his figures, and he did so in the following letter which I submit to you:—

OTTAWA, June 8, 1897.

MR. A. G. GILBERT,  
Experimental Farm.

DEAR SIR,—My answer to your question, “How much does it cost me per dozen to produce eggs in the summer months?” is two and a half cents. I find that twenty of my hens, (Barred Plymouth Rocks) will lay an average of one dozen a day from first of March until 1st. of September, on the following rations:—

1½ pounds of shorts, mixed with cooked vegetables, in the morning, 1½ cents;  
2 pounds of buckwheat in the evening, at 25 cents per bushel, 1 cent.  
Making together 2½ cents.

The vegetables used are culis of no market value, and when not available, skimmed milk is used to moisten the meal. My hens are at liberty to forage about the pastures and yards, and the abundant supply of worms, grubs and insects make up any deficiency that I do not supply.

Yours sincerely,  
S. SHORT.

I would not use skim milk as Mr. Short does, because skim milk with us is to a certain extent costly. I consider such a letter important. It goes to confirm my point and to show farmers that no matter how low prices of eggs have been, there yet remained a margin of profit.

*By Mr. Featherston:*

Q. Which shows the greatest profit, raising chickens or selling eggs?

A. Both give good returns. Get the eggs in the winter time when they are high in price and the stock in summer. Of the stock the cockerels sell at 10 cents per pound. In addition you have the manure which is very valuable.

Having examined the preceding transcript of my evidence I find it correct.

A. G. GILBERT,  
*Poultry Manager, Central Experimental Farm.*

COMMITTEE ROOM 46, HOUSE OF COMMONS,  
FRIDAY, 28th May, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10.45 a.m., Mr. Bain, Chairman, presiding.

BY THE CHAIRMAN.—Our arrangement for this morning was that we should hear Dr. Fletcher on questions connected with entomology, but we have with us Mr. Angus MacKay, manager of the Experimental Farm at Indian Head in the North-west Territories who has come down from the North-west. His time is limited; he will be only two or three days in Ottawa, and I thought that you would all be pleased to hear a few words from him on the lines of work that they are carrying on out there. We have placed him at this disadvantage that he came here without any notice and we will have to consider that in any statement that he may make. But Mr. McKay says that perhaps a few words of general outline as to what is being done, may suggest questions to the members of the committee that he will be pleased to answer. I thought that as Dr. Fletcher was in Ottawa and could easily be got another day, that it would be convenient for us all, this morning, to hear Mr. McKay who will now give us a brief summary as it occurs to his mind, of the salient points of the work at Indian Head.

MR. MACKEY.—Mr. Chairman and Gentlemen of the Committee, as your Chairman has very kindly said I am taken somewhat at a disadvantage. Besides I am not a public speaker and you will have to make allowance for anything I may say to you to-day.

#### LOCAL DIFFICULTIES OVERCOME.

In regard to our work in the North-west Territories I need not say to the gentlemen present that we have a very difficult country up there to deal with both in the way of agriculture and tree planting or forest cultivation, and in consequence at first we had a great many failures. These failures are getting less year by year as we go on, and we find means of overcoming the many difficulties that we have had in that country to contend with. When we started the Experimental Farm we had nothing but bare prairie land. There was not a tree or shrub that would afford protection. We are troubled in that part of the country with winds, not cyclones as they have in the United States, but continuous winds that last for several weeks, about the time our grain is being sown or has appeared above the ground. To overcome this difficulty we had to institute a system of tree planting. The first experiment we made on the farm, was the planting of our native trees, seeds of which we gathered in the valleys in the surrounding country, and these were planted as wind breaks. In consequence of this we have overcome the difficulty of these winds to a considerable extent on the farm. We have also been troubled with spring frosts and these constitute one of the greatest difficulties we have in the way of tree cultivation, especially in the way of fruit cultivation. Early in the spring we often have very hot days, and possibly on the evening of such days a hard frost, probably 12 to 18°. The sap is injured and the growth of the tree is checked for that year, and very often killed. These are two great difficulties in connection with forest planting in the North-west. There are other drawbacks in the North-west so far as dry weather is concerned, but this is overcome to a certain extent by a system of summer-fallowing. We found that the ordinary way of farming as it is carried on in Ontario, for instance, is not at all suitable to the North-west Territories. In eight years out of ten if we followed the course of fall or spring ploughing as it is done in Ontario, we would have very poor crops. It has been found that summer-fallowing the land, ploughing it and working it through the summer previous to sowing the crop, ensures a supply of moisture that in addition to the rain that may fall when the crop is growing, will almost

## Agriculture and Colonization.

invariably ensure a crop. Sometimes it is a light crop, but very often it is a good one. Before summer-fallows were instituted or carried out, there were years in the North-west Territories when farmers would only get from two to three bushels of wheat to the acre: now it is a rare occasion when a man will get less than 20 bushels to the acre of wheat, and very often from 35 to 40 bushels to the acre on summer-fallows, and in some instances where the land is suitable, and in good localities, farmers will get on summer-fallowed land 45 bushels of wheat to the acre. In the district where we have the experimental farm a great many farmers by following this system had as much as 45 bushels of wheat to the acre on 200, 300, and in one case, 400 acres of land. This shows what has been done to overcome that particular drawback in the North-west Territories.

### LINES OF EXPERIMENTAL WORK FOLLOWED.

The lines of work that we follow at the North-west Territories farm at Indian Head, consist of experimenting with different varieties of grain the same as they do at Ottawa and the other farms, forest plantation, fruit cultivation and stock. We go in for cattle, pigs and poultry, but so far we have not taken up sheep or the rearing of horses.

In regard to the work of growing grain it has been found that the summer-fallow is the chief safety of the North-west Territories. We find that in the newer sections of the country where the farmers have not gone in for summer-fallowing, they are liable every year to a partial failure, and in some years to almost a total failure of their crops. We are making this point of summer-fallowing in the North-west Territories one of the chief features of our experimental work, in fact we summer-fallow all the land that we use for crops at the Experimental Farm, except a few acres. The farmers in the North-west Territories, as a rule, summer-fallow about two-thirds of the land they crop, and sow the balance on stubble land. As a rule, we use no stubble land except for testing a few varieties of grain on that kind of land to show farmers the difference between summer-fallowed land and land treated in this way. We have been very successful in growing all kinds of grain in the Territories—all varieties of wheat, pease, oats and and barley. There is no difficulty whatever in growing any sort of spring grain that does well in any other part of the Dominion, provided it is sown on summer-fallowed land.

*By Mr. Wilson :*

Q. Does that mean that you must summer-fallow every year?

A. Yes, every year.

*By Mr. Martin :*

Q. Must the land remain idle for one year?

A. It remains idle for one year. There are two objects in summer-fallowing land in the Territories. The chief one is to overcome the dry weather we have in that part of the country; the other object is to do the work at a time when the farmers have the most leisure. In the Territories there is no such thing as farmers using their manure; they have no fences to look after and practically they have very little to do from the time they put in their seed until the harvest commences. Haying in the Territories comes on a week or so before the harvest. On account of May being very dry, the hay is very late.

### DATES OF SOWING AND HARVESTING.

*By Mr. Calvert :*

Q. When do you do your seeding?

A. Usually we start about the second week in April. Last year seeding commenced in the first week of May, although we had sown some grain about the middle of April

It depends on the frost and other conditions. This year we started about the 15th of April, but as a general thing spring work starts about the second week in April. Last year was the latest year I have known in the Territories.

*By Mr. McGregor :*

Q. Was your crop as good ?

A. Last year's crop was the best we ever had in the North-west Territories, as on account of the lateness of the spring we escaped the winds. The winds all took place before the crops were put in, and when suitable weather came the crops were got in nicely.

*By Mr. Wilson :*

Q. What was the sowing time ?

A. The bulk was sown after the 1st of May, and a few acres about the 15th of April, but we had a heavy snow storm after that and did nothing until the beginning of the month.

*By Mr. Calvert :*

Q. About what time does the grain ripen ?

A. The 15th August and 7th of September, are the two limits. Last year we started on the 14th August.

*By Mr. Talbot :*

Q. What do you mean by those winds which you escape ?

A. There are winds which come about the 1st of May—this year they started earlier. They are a continuous series of winds from the south-west and the north-west, which blow for several days and nights continuously, usually increasing the last day. This spring we have had them for a week without intermission ; and the surface of the soil, more especially after a few year's cultivation, gets so fine that it is dust almost, and it is blown about ; and in many cases the grain is blown out of the soil.

*By Mr. McGregor :*

Q. What is the soil, principally ?

A. We have several varieties of soil, but the great bulk is a clay loam, with a white clay subsoil. Of course in many cases there is a sandy loam and sandy subsoil ; neither of which is very good for that country on account of the dry weather. The clay loam with clay subsoil is the best on account of its keeping the moisture better in dry weather.

*By Mr. McMillan :*

Q. You spoke of the sap in the trees coming up in the spring and being frozen, is there any difference in the situation ? That is, does a southern or northern exposure have the same effect ?

A. Yes. There is a great difference. In a northern exposure, where there is protection like a bank or anything of that kind, the snow lies and the sun does not reach it so early, and there is no danger of those trees being hurt. It is only where the sun gets at the trees on a southern or eastern exposure and melts the snow, and the soil thaws out three or four inches deep, when the trees begin to grow, and the sap to ascend, that there is a danger of the frost striking them.

Q. How often do you plough your summer-fallow ?

A. In early years we ploughed twice during the year ; the first time as early as we could, as early as the horses could reasonably do it, six or eight inches deep. In sum-

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mer we cultivated the land with spring tooth harrows and ordinary harrows and worked it two or three inches on the surface to keep down weeds. Then we ploughed again in the fall. That was two deep ploughings and several cultivations. We found that induced too much moisture, for if we had an ordinary wet season we would get too much growth, and the grain, instead of ripening in August, would continue to grow later and would be invariably frozen. Now, we plough once deep, in the spring, and surface cultivate on top.

*By Mr. Semple :*

Q. Have you any Canadian thistles out there?

A. I don't wish to contradict a member of this committee; but I beg to differ with him.

Professor FLETCHER.—They are rare.

Mr. MCKAY.—Yes; and they are not increasing; they are rather decreasing. During the time the Canadian Pacific was going through, they must have taken the seed out in hay, and that became scattered over the country, and to-day along the railway line you will find patches of Canadian thistles. We have a nice patch on the farm, but it is not increasing, and we have no trouble with it. They are something like the potato bug; the North-west soil is not suitable to them.

*By Mr. Calvert :*

Q. Does it ever rain at the time of the winds?

A. If we had rain the winds would cease. That is what we all desire, when the rains start the winds cease.

*By Mr. McGregor :*

Q. What wheat do you grow with the best results?

A. Red Fife wheat is mostly sown.

Q. What about Ladoga?

A. It does well; but there is not so large a yield as with Red Fife. It ripens 8 or 10 days earlier, but we find it does not make as good flour, and we have discarded it and sow very little. At Prince Albert and Edmonton a few farmers grow it for their own use.

Q. Is there any danger of running out the Red Fife seed?

A. There does not seem any danger of that. It is as good to-day as it was 15 years ago.

*By Mr. Rogers :*

Q. And new soil is always coming up?

A. Yes. And besides that as a rule, the farmers exchange their seed every few years.

### AVERAGE YIELD OF CEREALS.

*By Mr. Semple :*

Q. What is the average yield on a field that has been summer-fallowed?

A. I should say that last year the average yield in the whole Indian Head District, was 40 bushels to the acre; but probably the ordinary yield would be 30 to 35 bushels on summer-fallowed land. On stubble land, that is, where sown the following year after having the summer-fallow, and I may say to the Committee that the farmers as a rule do not plough before sowing the second time; but burn off the stubble without further cultivation before sowing, and then sometimes you may get an average yield of 20 to 25 bushels of Red Fife from that.

*By Mr. Rogers :*

Q. Don't you think that after a time the land becomes too firm?

A. No. As a rule, our soil is too loose.

Q. I thought clay soil would blow less?

A. For a year or two; but after that there would be danger. Our only hope, then, is to trust to the Brome grass; the roots of this grass will, we hope, protect the soil from winds in the same way as the roots of native grass have done for several years.

*By Mr. McMillan :*

Q. Do you find that summer-fallowing is as good for oats and pease as for barley?

A. We get the same results on oats as on wheat and barley. We can grow on an average 75 to 80 bushels of oats on summer-fallow land, while on stubble land you get 30 to 40 bushels, very rarely over 40 bushels. Stubble is generally used for oats or barley by farmers; with summer-fallow we can sometimes get 70 bushels of barley and usually 40 bushels of pease, and 75 to 80 bushels of oats.

*By Mr. Wilson :*

Q. That is only every other year?

A. Yes. You understand that we sow part of the summer-fallow the following year without cultivation.

Q. I suppose it does not pay very well because the yield is so small?

A. Yes.

*By Mr. Semple :*

Q. You would not sow pease on land summer-fallowed?

A. We do on the Experimental Farm, they would do on stubble land, but you would get a decreased yield.

Q. How do you account for that?

A. By the absence of rain. After the 15th of July we will probably not have rain until the following June. Sometimes we do have rain before it freezes up in the fall—about the last week in October. When the winter commences the ground is as dry as an ash-heap, and continues in that condition until the rain comes next spring. The ground is very dry, and if we do not have a good deal of rain in June the ground dries out in a few weeks and little vegetation takes place, whereas if you have summer-fallow it keeps in the moisture. Summer-fallowed soil is moist, whereas the soil on stubble land is very dry. In digging post-holes in the two kinds of land you can dig on land summer-fallowed the year before with the ordinary spade in any part of the Experimental Farm or the country round about; whereas if you take a piece of stubble land that had not been summer-fallowed, it is almost impossible to dig a hole with a pick or crowbar.

*By Mr. McGregor :*

Q. Have you ever tried fall wheat?

A. Yes, for some years we experimented with it. It came through the winter and started in the spring quite green, but it was entirely killed before the 15th of May.

#### FATTENING CATTLE,—PROFITS.

Q. Have you experimented much on the feeding of cattle in that country?

A. Yes, we are feeding steers every winter to some extent; usually from eight to ten head, and we have experimented the same way with feeding swine.

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Q. Have you found cattle profitable?

A. Yes. I have no notes with me, but we fed twelve head of cattle last winter and sold them this spring at 3.60 cents per 100 pounds. The gain in weight and price equalled twice the amount paid for them.

Q. And the cost of feeding?

A. About one-third of that.

Q. One-third of what?

A. One-third of the value over and above the price we paid for them. We find that we have as good success there with corn and ensilage as in other parts, except that we cannot get a large yield. We had ten acres of corn last year and filled two silos with one hundred tons—just ten tons to the acre—and all winter we have been feeding that to thirty-five or forty head of cattle and have two months supply left.

Q. Does the frost bother you?

A. Yes, we cannot get corn advanced as far as in Ontario?

*By Mr. McMillan :*

Q. How do you sow it?

A. We sow it with the ordinary seeder in drills three feet apart.

*By Mr. Hughes :*

Q. Is Indian Head better off than other parts of the North-west in respect to frost?

A. No, we are troubled just as much with frost, but we try to get in crops early in the Spring and induce ripening by proper cultivation, and then there is not so much danger. In some parts of the Territories the farmers have not the means, and the grain is not put in early, and they do not work their land in such a way as to produce early maturity, and under such circumstances the crops are often poor

### PORK RAISING.

*By Mr. Wilson :*

Q. How do you get along with pork raising?

A. We have no difficulty. The chief thing is to keep the pigs dry and give them exercise in the Winter. Wheat is the chief feed for pigs in that part of the country. The farmers have little else.

Q. Do you not raise barley and pease?

A. Yes, but we do not use much barley, although we are going more extensively into it during the past two or three years. As a rule the farmers feed wheat. On the Experimental Farm the feed is a mixture of wheat and barley. We find that grinding and then soaking the feed gives the best results.

Q. Is wheat not expensive?

A. Yes, in many parts of the country, but most of the farmers have a lot of small wheat. They take their wheat to the elevator and the small stuff and screenings are taken back and fed to the pigs. In some parts when they have frozen wheat they cannot sell, they use it for that purpose.

*By Mr. McGregor :*

Q. How far are you from Moose Jaw?

A. About eighty miles from Moose Jaw.

Q. Is the climate about the same there as at Indian Head?

A. I think it is to a great extent. The soil is a little different there from that at Indian Head. They had a good crop last year, and may expect good crops, if the soil is worked so as to retain more moisture.

#### WATER SUPPLY.

Q. Have you any difficulty in getting a good supply of water?

A. Yes. It runs in veins. In the village of Indian Head there is no difficulty in finding water, twenty to thirty feet deep. They have a good many wells there. At the Experimental Farm a short distance away, we have gone as deep as seventy feet without getting water.

*By Mr. Hughes :*

Q. How about the farmers in that neighbourhood?

A. The average farmer gets water at about sixty-five feet down.

#### SHEEP RAISING.

*By Mr. Calvert :*

Q. How about raising sheep in that country?

A. No provision has yet been made to have them on the Experimental Farm. Wolves are the chief drawback to sheep raising in that part of the country. We expect to try some experiments with sheep before long. I hope we shall be able to do so.

#### FODDER SUPPLY.

*By Mr. McMillan :*

Q. In feeding ensilage do you mix it with cut straw?

A. Yes, we cut oat straw or wheat straw and feed them together.

*By Mr. Calvert :*

Q. What do you do with the straw in the Territories, burn it up?

A. The farmers burn it in some districts, but farmers as a rule are now going into mixed farming and use a great bulk of their straw. They are finding that oat, barley and rye straw are just as good for use in the Territories as anywhere else.

Q. Do you grow any clover?

A. No. It does not stand the winter.

#### BROME GRASS.

*By Mr. McGregor :*

Q. Do you find that this Brome grass is a success?

A. Yes, it is a great grass for that country. In the early years of the farm, in 1888 or 1889, Dr. Saunders sent me up 30 or 40 varieties of grass to test. We tried them all and out of the whole number this *Bromus Inermis* was the only one that stood the winter. It continued to do well and we continued to grow an increased acreage of this grass. We have repeatedly tried many other varieties of grass and this is the only one that has done well. This grass is of the nature of a quack grass and it is possible that there may be a little difficulty in getting it out of the ground, but in the territories we do not consider that a great obstacle because farmers will sow from 10 to 20 acres exclusively for hay or pasture. Two years ago on the experimental farm we ploughed up half an acre and found no difficulty in completely taking it out of the ground.

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Q. How much does it produce ?

A. From a ton and a half to two tons an acre in dry years, and in exceptionally good years as much as three and a half tons. Last year our average for 25 acres was two and one half tons.

Q. Is it satisfactory when you are feeding it ?

A. Yes, our stock like it better than anything else we have.

*By Mr. McMillan :*

Q. It will form a level and continuous sward ?

A. Yes.

Q. It does not grow in tufts ?

A. No. We are trying experiments in eradicating it. We have ploughed up two acres after having taken two crops off and we find that we can plough the land the same as any other grass land in the country. We have sown it with peas. We have also ploughed some portions of the land deep and some shallow and will continue ploughing after the present crop of grass is taken off. We find with grass two or three years old there is no difficulty in ploughing, but after the grass has been down for five years it is hard for the horses to pull through.

*By Mr. Wilson :*

Q. That is when you want to break it up ?

A. Yes.

*By McMillan :*

Q. It will not continue to grow if it has been in five years ?

A. Yes, but it gets too thick and it makes better pasture. The great advantage with this grass is that the farmers all through the territories can have plenty of hay and afterwards all the pasture they require. This is the greatest boon that they could have in that country. I may say that Professor Saunders had a letter yesterday from Mr. Bedford, who is in charge of the Experimental Farm at Brandon, and he stated that the Brome grass was 15 inches high there, while the prairie grass was hardly high enough for the animals to eat it. Last week when I left, our Brome grass in the territories was 8 to 10 inches high.

*By Mr. McGregor :*

Q. It will be good for a feeding grass as well as a hay grass ?

A. Dr. Saunders has pronounced it as good as timothy.

*By Mr. Rogers :*

Q. At what stage do you cut it ?

A. We follow something the same course as with timothy, and cut when it is in the first bloom. It takes about three weeks for the seed to ripen after that. We get 300 to 600 pounds of seed per acre. The first crop gives the most seed. There is no difficulty in farmers getting all the seed they need from an acre or two.

*By Mr. Pettet :*

Q. Will it drown out in the spring by water lying on it

A. It may if the water remains too long.

Q. It does better on high land?

A. Yes.

Dr. FLETCHER—It will stand more water than timothy.

Mr. MACKAY—In the Calgary district where they have irrigation and where they have put on too much water, the crop is poor in proportion to the crop that has been grown with just enough water. It takes a certain amount of water, but it grows better than any other grass with less water.

#### ROOT CROPS.

*By Mr. McMillan :*

Q. How do roots do with you, mangels and turnips?

A. Turnips and mangels do well, but there is a risk of mangels being frozen in the fall before they get to maturity. Turnips of course would stand frost; in fact, a little frost in the fall does them good; it kills the top a little and the root increases, but mangels are apt to get frozen on the top and then they rot. We can grow good crops of roots in that country.

Q. In feeding pigs have you tried turnips?

A. We have not made a ration of turnips, although we feed roots with grain. We find this a great advantage, as it keeps them in better health.

#### FARM ACREAGE,—COST OF LAND AND CULTIVATION.

*By Mr. Cargill :*

Q. What is land worth in your district?

A. The Bell farm, of which the Experimental Farm is a portion, is being bought up and sold to ordinary farmers at from \$8 to \$16 an acre, but ordinary farm land in that part of the country can be bought at from \$5 to \$7 an acre.

Q. How much land would you recommend one man to take up for farming purposes?

A. A man to be at all successful should have 320 acres. On account of summer-fallowing his land he has to have more than otherwise would be sufficient. He should have 320 acres to give him a succession of crops.

Q. Do you think a man would make more money by buying 320 acres of land and summer-fallowing it every year, than he would by buying 160 acres of land and cropping it every year without summer-fallowing?

A. Well, a man with 160 acres of land without summer-fallowing would starve in five years if he depended on grain. He would have to leave the country.

*By Mr. McMillan :*

Q. About manures? What do you do with your manure? Don't you think it would be well to cut the straw and have it for use in the form of manure?

A. Yes; there is no doubt about that. We use all our manure, putting it on summer-fallow, and find it an advantage, and the sooner farmers follow the same practice the better. We use all the manure on the farm, and have been experimenting to find out whether it increases the yield or ripens the grain sooner; but we find no increase in the yield, and probably one day earlier in ripening.

*By Mr. Cargill :*

Q. How much help is needed to work a farm of 320 acres, that is, in teams and men?

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A. A team and a man—and in the North-west Territories a team is three horses, and they use a sulky plough and ride on it—will summer-fallow from 80 to 100 acres a year; that is, from the time seeding is over until winter sets in.

Q. Besides putting in the crop?

A. Yes; they can do that. For 320 acres, you would need two teams and two men; that is six horses and two men.

*By Mr. Martin :*

Q. Does manure to any extent do away with summer-fallowing?

A. No; it would increase the difficulty, unless the manure is well rotted, it would keep the soil too loose, the great object in that country is to consolidate the land, unless on the top, for a couple of inches it is better for the soil to be loose, but the bottom should be firm. If not rotted, the manure keeps the ground dry and open, and there is no moisture. It is to counteract that, that we summer-fallow.

### POTATOES.

Q. Can you raise a good crop of potatoes?

A. Yes; as in the case of grains summer-fallowing is the proper way to cultivate for potatoes. Some years stubble would give better results; but to be sure of a crop every year summer-fallowing is necessary for potatoes as well as grain. The same thing holds good in regard to trees.

Q. Are the farmers generally summer-fallowing?

A. Yes; as a rule at Indian Head, every farmer has two-thirds of his crop on summer fallow and one third on stubble.

*By Mr. McGregor :*

Q. Did you ever try ploughing as soon as the crop was off and leaving it over winter?

A. We have tried that, and it is a complete failure. It would turn up just like an ash heap, and remain all winter in lumps which would be the same in the spring. Winter has absolutely no effect on it. The great object of summer-fallowing is to turn up the soil before the rain comes in June, and get the good effect from these rains.

### SNOW FALL.

*By Mr. Semple :*

Q. You will have little snow in winter?

A. Our snow in winter does not often exceed two feet, and as a rule it blows into the coulees, as a rule also the snow is very dry and light. This year we had over two feet of snow, and never had less water in the country than we have just now.

*By Mr. Martin :*

Q. How far does the frost go into the ground?

A. It is hard to say. We have a pipe going from the barn to the reservoir that we get water from, and it was frozen down 8 feet 2 inches this year; but you will understand that the frost went down the side of the drain. As a general thing I think it is not more than 4 feet in the ground.

## HOUSING ROOTS.

*By Mr. Cargill :*

Q. How do you protect roots in the North-west Territories ?

A. It is a little more labour in that country to protect them ; but we make pits. We do it more for experiment on the farm, because we have good cellars there. The last two winters we experimented with several pits of potatoes, turnips, mangels and cabbage, and the roots this year came through the winter better than those in the cellar. The pits were in general covered with three inches of straw and six inches of earth, and we let the earth become slightly frozen by the first frost in November, and a slight crust form upon it. Then we put another layer of three to four inches of straw and then another layer of earth, and about Christmas we put on coarse manure on top of all. The only danger is from too much heat, we have had a few spoil through too much heat.

## ADVANTAGES TO SETTLERS,—HOW TO START A FARM.

Q. You have had experience of farming in Ontario. What are the advantages in the North-west Territories compared to Ontario in favour of the farmers ?

A. One great advantage in the North-west is that there are little or no taxes.

Q. That is a good country ?

A. And any man can go out and take up 160 acres or 320 acres and break all the land he wants the first year. You can break from 70 to 80 acres the first year and have a crop the second year.

Q. With one team can you do that ?

A. With an ordinary team of two horses, you can break an acre a day, and the first year you will have from the time you go there until the middle of July, to break the land, so a man can calculate what he can do.

Q. And can he backset that ?

A. From 1st August to 1st November he can backset.

Q. So, even with the low prices for his produce, in that country a farmer should succeed ?

A. He will do better than in Ontario, and as a general thing he does succeed.

*By Mr. Rogers :*

Q. Because it is a good soil. How much do you get for wheat ?

A. For the last crop from 65 to 70 cents ; but on an average 60 cents.

*By Mr. Martin :*

Q. And what for barley, pease and oats ?

A. There is not much market for pease ; but we get for oats 25 cents, and for barley 30 cents.

*By Mr. McMillan :*

Q. Have you any creameries there ?

A. There is a creamery at Indian Head, and 15 or 20 others throughout the Territories.

Certified a true copy of Mr. McKay's evidence, from the Stenographer's report.

J. H. MACLEOD,  
Clerk to Committee.

# Agriculture and Colonization.

COMMITTEE ROOM 46,  
HOUSE OF COMMONS, FRIDAY, 4th June, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10.45, a.m., Mr. Bain, Chairman, presiding.

Mr. S. A. Bedford, superintendent of the branch Experimental Farm at Brandon, Manitoba, was called, and addressed the Committee as follows:—

MR. CHAIRMAN AND GENTLEMEN, it gives me great pleasure to meet the Committee, because I know it is one of the most important in connection with the House of Commons. Living as I do in Manitoba where the farming interests are very large, I regret that I am unable to present these interests in as full a manner as I would like. In regard to the location of

## THE EXPERIMENTAL FARM AT BRANDON,

it is in the centre of the province and in the midst of the largest grain growing district. It is also located so that farmers may reach it without much trouble. It is a short distance from the town, from whence it can be seen, and there are good railway connections. The roads of that district are good, and a large number of farmers have already been able to visit the farm. Another point in favour of the location is that we have a variable soil, it varies from gumbo or stiff clay to a light sandy loam. We have the ordinary black loam, gravelly loam and clay loam. We have also high and low land, sheltered and exposed fields, and spots both with and without sufficient natural drainage, so that the farm may be considered fairly representative of the whole province. We have also a good supply of water which is obtained in wells by digging from thirteen to twenty feet. We have also the Assiniboine River on our southern boundary and a lake in the centre of the farm, and sufficient small timber to afford shelter for the stock, and we have some good natural hay meadows. We have to make experiments of various kinds to meet the requirements of the province. For instance, last year we had considerable rust on the grain. It did not extend westward of Brandon to any extent, but the further east you went the worse the rust, so we were in a position to report on the variety of grain least subject to injury from this rust. Then, again, portions of our land are high and escape the frost unless it should be very severe, while the lower portions are sometimes seriously injured by it. There is often a difference of four or five degrees in temperature, between the high and the low land.

## LINES OF EXPERIMENTAL WORK PURSUED.

Experiments on the farm include the testing of different varieties of grain, grasses and fodder plants; the suitability of different breeds of stock, also the hardiness of trees and their suitability for the different purposes for which trees are used. Great care has to be exercised in the selection of a variety of grain for our country. wheat, for instance, must be a good milling variety and ripen early, have a vigorous plant with power to resist disease. These and other things we have to look at from a Manitoba standpoint. Then, we have been dependent on our native meadows for hay; there are thousands of acres unfit for any other purpose. We find some of these meadows running out from various causes, and have to consider how we can best replenish them or what can be utilized in their place.

*Summer Fallowing.*—You can understand that we have special difficulties to contend with, and our object is to overcome these and to spread the information generally among the farmers. Perhaps we have paid as much attention to the preparation of the

land for grain crops as to any other subject. We find that we have to differ a little from the views generally held in the older provinces, because our conditions are different. The rainfall in Ontario is larger than in Manitoba. We cannot make it rain there but we can so treat the soil that what moisture is there, is conserved—bottled up so to speak—and that is what we are trying to do. In some parts if the season is wet or land is summer-fallowed too often, we get rust. Very often what will apply to the Brandon district may not apply to Winnipeg, and what will apply to the Riding Mountains may not apply to a district at a lower altitude. We find a great difference between the drilling in of grain and broadcasting. There is a difference of from ten per cent to fifty per cent. In 1889 one of the first crops we put in was a half-acre of Black Tartarian oats, sown broadcast, which produced sixteen bushels, and the adjoining half-acre where the grain was drilled in, produced just thirty-two bushels. This was an exceptional case, but the average difference is very great, and with barley perhaps more so than with any other grain. We must drill barley in or it will not germinate satisfactorily. It ripens unevenly and the result is a small yield.

This question of drill is an important matter and we repeat these experiments for a number of years, possibly too often, but I find that the farmers are following us closely, especially if repeated for a number of years with practically the same results. Today there are far more drills in use than formerly.

When the farm was started there they amounted to about ten per cent of the whole, but now ninety five per cent of the sowing machines are drills, either hoe or shoe-drill. We find summer-fallowing of great importance with us. One of the leading eastern agriculturists when visiting us a few years ago, stated that we made a great mistake in summer-fallowing so much land that it was a waste of labour and land. I explained to him that it was so much to kill weeds, although that is important, as to conserve moisture. A few years ago a drain was dug across the farm at Brandon from four to seven and a half feet deep. Where the drain passed through summer-fallow the soil was moist for the whole distance, so much so that it could be formed into a ball, whereas land that had not been summer-fallowed, was dry from the surface to the bottom of the drain and when we threw it out it failed to freeze even with a severe frost. We have two years' rainfall for one year's crop by summer-fallowing; in other cases we get but one year's rain for one year's crop. We have tested the different modes of summer-fallowing, sometimes ploughing late in July and then harrow on the surface. Other times we plough early and then harrow. The last crop of weeds are allowed to remain on the ground to prevent the soil from blowing. We have never harvested a small crop from summer-fallowing.

#### A PREVENTATIVE TO SOIL DRIFT.

The drifting of soil is another serious problem in some parts of the provinces. In some places the land becomes light and the strong wind we have there drift it from the field and the best of the soil is blown away. We have been considering this problem for some time. It does not prevail all over the province, but only in districts where the soil is light and where the winds have a full sweep. We have drilled east and west, and north and south, used broad-casting machines, the old-fashioned drill and the shoe-drill side by side, and we have also endeavoured to prevent this by sowing crops on the land to produce vegetable fibre, and that is really the most successful plan. In other words seeding the land to grass more frequently than is done. There are fields in Manitoba, which have been cropped from year to year for forty years, and still fair crops of wheat are grown. I do not refer to all land, but in spots it can be done, but it is not good farming and it is not profitable either for the farmer or for the country. We think that land should be seeded down every three or four years.

*By Mr. McGregor :*

Q. With what?

A. With suitable grasses. Seed it down, let the sod form thoroughly, and then break it as we do the virgin prairie, then backset it and get a crop in

## Agriculture and Colonization.

the next year. Last summer we broke up a three-year old field of Brome grass. This land was troubled badly with blowing, so much so that the former owner could not grow grain on it with a reasonable expectation of reaping it. It was a sharp hill and the soil would be swept from the grain. After seeding it down with Brome grass for three years the roots went down five inches and nothing in the world but a cyclone will move that soil to day. The grass roots will rot in time, but certainly the drifting of soil will be stopped in the meantime.

*By Mr. Stenson :*

Q. How is it that summer-fallowing causes the moisture to penetrate more deeply into the soil?

A. I do not think it makes the moisture go down but it prevents moisture from coming up. It is like the wick of a lamp. The moisture is coming up all the time, but if you can put something over it to stop the capillary attraction the moisture remains there. Dr. Saunders could explain that to you better than I could. The practical results are that we retain the moisture by summer-fallowing.

*By Mr. McMillan :*

Q. Are these roots not liable to sprout again?

A. There is no trouble that way. If we leave Brome grass sod until the seed ripens and plough in the fall we get a better crop of Brome grass than in the previous year, but if broken up in the spring or early summer and backset in the fall, we are able to eradicate it. We tried this plan some years ago and have had no trouble with the roots since.

Another plan to prevent drifting soil is to use shelter by planting trees. We have tested this, but I do not think that it can be applied to all parts of the country. It can be used to a limited extent but not generally speaking.

### SMUT IN GRAIN,—HOW TO PREVENT IT.

Another problem we have to grapple with in Manitoba, is that of smut. First it was smut in wheat. I had an experience with this smut twenty years ago when I first settled in Manitoba. Two young men came at the same time as myself and settled across the road from where I was, and grew a wheat crop of thirty acres, but they were careless in procuring their seed, it was very smutty and they lost their whole crop, and that opened my eyes to the necessity of grappling with this problem of smut, and as far as wheat is concerned I think we have settled it, for we find that by the proper use of bluestone we can almost completely wipe out this hard smut in wheat. Its presence deteriorates the value of the wheat very much, in fact a great many crops are ruined by it, but we find that it is very easily handled if properly treated.

The usual plan is to dissolve a pound of Bluestone in a pail or a pail and a half of water and this is sprinkled on about ten bushels of wheat. The wheat is kept moving by shoveling when being sprinkled so that the liquid covers every grain. This is allowed to remain for a few hours and then sown with an ordinary drill. The difference in yield between treated and untreated grain is striking. We made a test last year with Red Fife wheat. In nine square feet sown with untreated seed we had 3,685 smut heads. That was a very severe case because the wheat was very smutty when sown. In the same space sown with seed treated in the way I have described we had exactly thirty-two smut-heads, the difference between 32 and 3,685. The treated seed gave 44 bushels of No. 1 hard wheat and the untreated gave 17 bushels of very inferior feed wheat, the difference being between 17 and 44 bushels to the acre. In other words, about two cents worth of bluestone and labour saved us 27 bushels to the acre. We do not always have such emphatic results, but it shows what is possible to do with a little bluestone. I do not say that the experimental

farm originated this remedy, but we have impressed its usefulness on the farmers, and we recommend all farmers to bluestone all seed wheat, no matter how clean it is.

*By Mr. McGregor :*

Q. Have you tried it on oats and barley ?

A. Yes.

*By Mr. Sproule :*

Q. Do you not put something on it to dry it after sprinkling ?

A. No, but have to make allowance in sowing for the slight swelling of the grain. I may add that with thirty million bushels of wheat grown in the province of Manitoba, you can see how useful the farm can be and how it is possible to save the cost of working it, in a very few years. With regard to smutty oats, we have had even more trouble with this in late years than with wheat. The kind in oats is known as the soft smut. We have been trying to prevent this by sprinkling with bluestone, as is done so successfully with the wheat, but we find it of very little use, although it helps it some. Lately we have been trying sulphide of potassium, and that is the best remedy we have found yet, last season we made extensive experiments with it. We used one and a half pounds of sulphide of potassium to twenty-five gallons of water. It dissolves readily in water. We soak the grain in the liquid for twenty-four hours.

*By Mr. Cargill :*

Q. How many bushels will that treat ?

A. I do not think I kept an account of the quantity, but it will treat a large amount.

*By Mr. McGregor :*

Q. Is the treatment the same as in wheat ?

A. No, we soak it for twenty-four hours. The oats were very smutty. I took a handful as they came from the field the previous year, and out of ten heads eight were smutty. We fanned this grain and sowed it the second year.

*By Mr. McMillan :*

Q. Did you soak it or sprinkle it ?

A. We soaked it. We put the grain and liquid together into a large barrel and left it there for twenty-four hours. The oats treated in this way gave sixty-seven bushels to the acre and we had one smutty head on nine square feet of land. The oats that were not treated gave fifty-six bushels and there were ninety-eight smutty heads on the nine square feet. The difference in yield was as between 56 and 67, or 11 bushels. Banner oats which were not so badly affected with smut, when subjected to this treatment, gave 86 bushels to the acre, and there were no heads of smut while the untreated gave 75 bushels per acre with 28 heads of smut per 9 square feet. The difference in the yield was identical with the test with Prize Cluster.

*By Mr. Clancy :*

Q. Did you find the dark variety more readily affected by smut ?

A. No, the short, plump, white oats were the worst, such as the Welcome, which with us has been very bad.

Mr. CLANCY.—We find the dark variety more subject to it.

Mr. BEDFORD.—We do not grow many black oats with us.

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*By Mr. Semple :*

Q. Do you know what is the cause of the smut or what it is?

A. It is a fungus growth. Some conditions of the soil will assist its spread. Very severe frost in the spring will check the growth of the plant and encourage smut. Anything that will check the growth of the plant appears to encourage the smut.

*By Mr. McMillan :*

Q. Do you think it is propagated by spores?

A. I think so.

Mr. SAUNDERS—The whole history of these smuts has been given in Bulletin No. 3 by Prof. Fletcher. They are always propagated by spores.

### RUST ON GRAIN,—HOW TO PREVENT.

Mr. BEDFORD—Another enemy we have to contend with, although it is not very general, is rust in grain. This was worse last year than any year in the history of the province, and was particularly bad in the low altitudes such as the Red River Valley. I have been asked whether it could be overcome by the bluestone treatment. We find that bluestone has no effect on it, but one thing which does prevent rust, to a great extent, is early sowing. Every year we sow one plot of wheat, one of barley, one of oats and one of pease each week for six weeks, and we find invariably that the last three sown are rusty, while in nearly every case the first three escape the rust, showing that early sowing will prevent rust to a great extent. This did not apply to last year, because it was an exceptional year, but as a rule it does so. Then, again, the selection of varieties has a good deal to do with it. In our test of oats last year we had sixty varieties. The "Banner" was only slightly affected. It gave one hundred bushels to the acre, while "Scotch Hopetoun," which was badly affected, gave only 26 bushels to the acre. The "Banner" weighed  $41\frac{1}{2}$  pounds per bushel, while "Scotch Hopetoun" weighed less than thirty pounds. They were grown side by side under exactly the same conditions. One was of little value from a Manitoba standpoint, while the other was an excellent oat.

*By Mr. Sproule :*

Q. Would not the dampness of the weather when sowing have a good deal to do with rust?

A. No doubt it has. That is one reason why early sowing prevents rust. The plant is far enough advanced to resist rust when the wet weather sets in.

Mr. McMILLAN—It is the same with us.

Mr. TALBOT—It is the same in Quebec. Oats sown in the first week of June are almost all rusty, but when they are sown in May they are not.

Mr. BEDFORD—I am pleased to see that our experience is corroborated in the east.

### FODDER SUPPLY.

Another important problem for our western country is that of grasses. Our province is called the home of the buffalo, and we have large areas where we have been cutting natural grass for hay. The crop has been large and harvested with little labour and expense and has proved excellent feed; but now that the country is getting settled so rapidly, stock increasing, and the meadows in many instances running out, we have to provide a means of keeping cattle without these meadows. Then the meadows seldom occur in the higher land, and if hay could only be obtained in these natural meadows, very few could keep stock outside of the Red River Valley. So we have paid a great deal of attention to this matter. I wish to speak of some of the reasons why these meadows run out, because a great many from the east do not understand, and expect to find hay growing everywhere, three or four feet high. That is not the case. We get our

hay in low land. In time this meadow land, if a crop of hay is cut each year, fails, because the main grasses are cut before they seed. Take the Red Top, which is a perennial plant but not a very persistent one, it requires to be replenished with seed every few years. Then we have an anemone, with small white flowers, the native sunflower, the rosebush and other plants, and when the hay is cut early in the spring it gives these weeds a chance to crowd out the useful grasses.

At the Brandon farm, when I first went there in 1889, we cut 75 tons of hay from our natural meadow; now we cannot get five tons on the same area, just on account of the increase of the weeds referred to. We have searched the country over to find something to take the place of the native meadows. One of my neighbours came to the conclusion that it was impossible to grow grass under cultivation, and he went thirty miles to Oak Lake to cut hay there and afterwards spent the whole winter carting it home. He could have sown grass and fodder plants close to his own barn with less labour and saved the long haul from Oak Lake. We first secured the seed of native grasses in small quantities and sowed it in plots, with the result that we have now thirty or forty acres of native grasses growing on the farm at Brandon from this seed. Of these only three or four varieties proved to be useful. We find that we can get as large a crop of hay from the native grass as we can get from the Awlness Brome, but the native grasses have this disadvantage, that there is scarcely any pasture from them either in the spring or fall, as nature provides that they shall be ripe before the cold weather sets in, and there is no aftermath. But if these native grasses are grown for hay alone they are very useful. Two of these native grasses, *A Tenerum*, or Western Rye, and *E Americanum*, or American Rye, are perhaps the best. They will yield in a year of heavy rainfall three or four tons of dry hay to the acre, but generally run from two and a half to four tons to the acre.

GREAT VALUE OF AWNLESS BROME GRASS.

*By Mr. McMillan:*

Q. How do you cultivate them?

A. The ordinary cultivation, we sow broadcast, fifteen pounds to the acre.

*By Mr. Calvert:*

Q. How long would you have pasture in the summer?

A. We seldom turn out the cattle on native pasture before the 24th May, and unless there is abundance of pasture we take them in early in the fall. One of the best imported grasses is the Awlness Brome grass. It starts early in the spring and gives a good aftermath in the summer, when cut for hay.

*By Mr. McMillan:*

Q. When you sow your Brome grass in the spring you cannot cut it that season?

A. No, but we can pasture it. It makes good pasture. To give you an idea, I kept track of the dates we could pasture Brome grass and the native meadow, and we found that there was just one month's difference between the time we could turn the cattle into the Brome grass and the time we turned them into the meadow, so we lost one month from not having a pasture field of Brome grass to which we could turn into in the spring. In the fall the Brome grass gives pasture right up to snow. We had a field of seven acres of Brome grass and twenty head of cattle, and I turned them all in and was surprised to find what little effect they had on the field. They satisfied themselves quickly and would then lie down and rest, and they did not seem to lessen the pasture at all.

*By Mr. Calvert:*

Q. How long did you leave them there?

A. About four weeks, until the snow fell. Then we took them off. We herded them on it during the day and took them in at night.

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*By Mr. Rutherford :*

Q. Up to the first of November ?

A. Yes.

*By Mr. McMillan :*

Q. Did you feed them at night ?

A. Just a little. We like our cattle to go in the stables in good shape in the fall.

We found the milk was dropping steadily in the native pasture, and directly we turned them into the Brome grass they made considerable gain. The yield of Brome grass has not been equal in quantity to the yield of some of the native grasses with us. We get from two and a half to three tons of Brome grass hay, whereas we have had from two and a half to four and a half from native grasses, but to look at the crop you would think that the Brome was the heaviest. The Brome grass has a spreading leaf and has a bulky appearance while the native grasses are heavier than they appear.

*By Mr. Sproule :*

Q. What kind of land does Brome grass do best on ?

A. I was surprised to find that our best crop last year was from gravelly loam. I do not know whether this will always be the case, last season was a very wet one. We have not tried it on the very low land yet.

*By Mr. Calvert :*

Q. Then that would be on high land ?

A. Yes.

Q. Is your meadow on the high uplands or part of the river section ?

A. By the river.

*By Mr. Rutherford :*

Q. With us it is more inclined to lodge.

A. It has not lodged with us yet ; your land at Portage la Prairie is heavier than ours. That could be prevented perhaps by giving it inferior cultivation. In regard to the sowing of Brome grass, as a rule we do not succeed as well if the grasses are sown with a grain crop. The grain appears to take the moisture and so deprive the young grass plants of what they require just at the trying time, and the result is that a great many of the plants die. We recommend the sowing of grass seed on the spring ploughing, leaving the stubble on the surface as a protection to the young plants, then as soon as the weeds and young grass come up, mow the weeds before they ripen and do it a second time if required during the season, and that fall you will have good pasture and the next spring a big crop of hay. This year we had seventy-eight plots of grasses and seventy-six of these were sown without a grain crop. The seventy-six are a solid mat to-day, while the other two are very thin. Of course we have a little volunteer crop of grain come up, but not enough to injure the young grass plants.

*By Mr. Talbot :*

Q. What amount of seed was sown ?

A. About fifteen pounds to the acre. We are now testing this question further of the proper amount of seed to use.

*By Mr. Calvert :*

Q. Of course you could not say whether it is the same in this part of the country ?

A. No, but do not attempt to plough it in the fall. Plough it in the spring.

Another point in favour of Brome grass is that the cattle are fond of it and it is very nutritious, and Brome grass we find eaten readily by cattle even if allowed to grow seed. When Timothy is left for seed the hay is very woody, but Brome grass is more sappy and has more leaf. Timothy does not succeed in every part of Manitoba. In the immediate vicinity of Brandon it is not a success. Those other grasses are better. Timothy requires a more moist soil and climate. At Carberry, Portage la Prairie and Pilot Mound, farmers grow it successfully. Another way by which we hope to provide abundance of fodder is by growing mixed crops of annuals such as oats and pease, oats and tares, &c.—and I think we have met with fair success, so much so that farmers are now largely sowing these mixtures for fodder. Our plan is to sow them soon after the grain grown for seed and cut the hay just as the top berry is turning brown, we bind it in small sheaves and loosely. If bound in large sheaves and tight, the centre of the sheaf is wet and rots. We have grown from two and a half tons of dry hay per acre on spring ploughing, to four and a half tons on summer-fallow by this plan. We have tested it for feed for both cows and steers, and we found that in comparison with native hay at \$5 a ton, the oats are worth \$7 a ton.

#### GROWING GRAIN FOR FEED PURPOSES.

*Oats*.—Q. Would oats be advanced sufficiently so as to be of value to the cattle?

A. I think not to the full value. In selecting grain for this purpose we try to accomplish two or three things. First, we endeavour to get a variety of grain that is not inclined to rust and with a fine straw. I consider the "Black Tartarian" variety unfit for this purpose. The "Banner" variety is good. We also like it to ripen early, so that we can cut it between seeding and harvest, and then it should produce abundance of fodder. We generally use the "Triumph" and "Banner" varieties. We often mix other grain with oats, such as oats and pease, and oats and tares. We get the largest yield by mixing oats and pease.

*A mixture*.—We think pease are rather coarse fodder, but by using a mixture of tares and oats, a bushel of each, we get a large yield and it makes an excellent food.

*By Mr. McGregor:*

Q. Is there no danger of the tares staying in the ground?

A. We have had no trouble with them yet. I have never seen volunteer plants of this grain in our country. The largest yield from this mixture was four and a half tons of dry hay to the acre.

#### CORN.

*By Mr. Douglas:*

Q. Have you tried tares alone?

A. Yes, but the difficulty is that they lodge and it is impossible to harvest them.

*By Mr. McMillan:*

Q. Have you succeeded with corn?

A. Yes, we have done very well with it. It is, however, necessary to remember a few points in connection with corn. One is that the variety selected be an early one, and also that it produces a large amount of fodder, and then select a warm southern exposure with good drainage. A person is unwise to select low or clay land, or a late ripening variety. Our crop of corn generally runs from nine to thirty tons of green fodder per acre.

*By Mr. McLaren:*

Q. Have you silos?

A. Yes.

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*By Mr. McGregor :*

Q. Does it ripen enough to glaze?

A. Not as a rule ; but just enough for cooking purposes. Sometimes we get ripe grain from the Flint corn. We have three promising varieties and they ripen in this order : first, the Native Squaw, which is the earliest known ; Mitchell's Extra Early and the North-western Flints, such as the North Dakota Flint. We have tried oats and pease in silos, and it makes poor feed.

*By Mr. Cargill :*

Q. Can you grow corn to take the place of this free corn ?

A. No, sir. I do not think we will ever be a corn-growing country.

*By Mr. Talbot :*

Q. These oats and pease, you put them into silos cut ?

A. Yes, we cut them and they decay on the outside and are not solid enough to keep out the air.

*By Mr. Sproule :*

Q. You said that drilling gives a much larger yield of grain ; how is that ?

A. Judging from the appearance of the crop it is because germination is more uniform. It comes up all together, ripens all together, and no weeds have a chance to compete with it.

Q. Is that due to putting the seed deeply in the ground ?

A. Yes, and the evenness of the growth. The plants all grow up together.

*By Mr. McMillan :*

Q. We sow barley lightest of any grain we grow.

A. Still you drill it.

Mr. McMILLAN.—Yes.

*By Mr. McGregor :*

Q. How would you advise the sowing of grass seed ?

A. We have sown Brome broadcast, but lately we have procured a wheel-barrow drill for grass seed, and in this way overcome the difficulty of windy weather.

### MANITOBA FOR YOUNG MEN.

*By Mr. Cargill :*

Q. You were brought up in Ontario ?

A. Yes.

Q. Do you give Manitoba the preference to Ontario ?

A. With young men it has many advantages.

Q. You would advise our young men to go out there and take up land ?

A. I would certainly do so.

*By Mr. McGregor :*

Q. Do you find it pays to grow pork ?

A. It pays well as a side issue with the farmer.

*By Mr. Calvert :*

Q. Where do you ship to ?

A. Both ways, but principally west to the mining country and to other parts of British Columbia.

*By Mr. Rutherford :*

Q. Have you a packing-house in Brandon ?

A. No, but there is a good one in Winnipeg.

*By Mr. Calvert :*

Q. What do you feed to your hogs ?

A. We feed coarse grains, barley principally, and a few oats in winter.

*By Mr. McGregor :*

Q. Do you grind it ?

A. Yes.

Q. And feed it dry ?

A. Yes, in winter, we generally try and mix the grains.

*By Mr. Sproule :*

Q. Have you tried frozen wheat ?

A. Yes.

*By Mr. Calvert :*

Q. Do you ever cook it ?

A. No.

*By Mr. McLaren :*

Q. Do they ship these hogs east for export ?

A. Not many from Brandon.

*By Mr. McMillan :*

Q. Are hogs slaughtered there or taken alive to British Columbia ?

A. They are shipped alive.

*By Mr. Talbot :*

Q. Do you feed corn ?

A. No. The facilities for growing coarse grain in our country are almost unlimited, and we do not need to import corn.

#### PROFITS ON FATTENING BEEF.

*By Mr. McGregor :*

Q. Do you find it pays to fatten beef by winter feeding ?

A. Yes, it pays well in most years and sometimes exceptionally well. A few years ago we bought a number of steers for two cents a pound, live weight, kept them for seventy-two days, and sold them for four cents a pound. I paid the man say \$100 for steers which took him two and a-half years to raise, kept these for seventy-two days and sold them for \$200. In other words he lost one hundred per cent by selling in the fall. To give you an idea of what good that did, the man came to me after a time and said he hoped I had succeeded with the steers. I showed him what we had done, and he

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said he must get a barn and feed his own steers, and in the summer he put up a barn. This was Mr. Bright Nesbitt, of Rapid City, and he was convinced the experiment was a good one. We think it folly to export lean cattle and then export our coarse grain. It is a waste of money both ways.

### MARKETS.

*By Mr. Calvert :*

Q. Do you sell your cattle for the western markets ?

A. No, all go the old country.

*By Mr. Cargill :*

Q. Do you think it would be beneficial to the Manitoba farmer to have free corn ?

A. I would not like to touch on that. Whether free or not, we do not want it there.

### DAIRIES.

*By Mr. McLaren :*

Q. Have you a butter factory ?

A. Yes, one near Brandon. In the early days it was difficult to get good butter in any of the hotels in Manitoba, but since the dairy experts have come through, it is very hard to find bad butter. If they did nothing else they have given us good butter.

*By Mr. Talbot :*

Q. How much do you get on an average for milk from the creamery ?

A. We have not gone into dairying on the farm, but a farmer living near Brandon informed me a few days ago that he had realized seventeen cents a pound, net, for his butter, but they have a good local market at present in the city of Brandon.

*By Mr. Rutherford :*

Q. In Manitoba they have not got right cows ?

A. And they do not keep them in the right way.

Having examined the preceding transcript of my evidence, I find it correct.

S. A. BEDFORD,

*Superintendent of the Experimental Farm, Brandon, Manitoba.*

COMMITTEE ROOM No. 46,  
HOUSE OF COMMONS,  
TUESDAY, 15th June, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10 a.m., Mr. Bain, Chairman, presiding.

Mr. Thomas A. Sharpe, Manager of the Dominion Experimental Farm at Agassiz, B.C., was present, and being called, addressed the Committee as follows:—

EXPERIMENTAL FARM AT AGASSIZ,—LOCATION, AREA, PRODUCTIONS, CLIMATE.

MR. CHAIRMAN AND GENTLEMEN,—The Experimental Farm in British Columbia of which I am the manager, is situated about 70 miles from the coast, and a mile and a half from the Fraser River. There are about 320 acres of valley land and about 800 acres of mountain land ranging from 800 to 1,200 feet high. When I took possession of the farm in 1889 there were about 30 acres of it partially cleared; it had been cropped, but the stumps had not been removed. The balance of it was pretty much in a state of nature with the exception that the best timber, in some places, the large firs, had been removed. Since that I have got about 125 or 130 acres thoroughly subdued and under crop, a great deal planted to fruit trees. About 15 acres of the mountain areas at different elevations have been cleared and planted with fruit trees. The principal industry in that country is and should be fruit growing. While experiments in grain growing and root cultivation have not been neglected, greater attention has been paid to fruit growing which is more important to the farmers. We have now about 70 acres in fruit, large and small, on the level land and on the mountain areas we have cleared and put in fruit from 10 to 12 acres. We have at the present time about 800 varieties of apples in nursery and in the orchards, and probably the largest collection of fruits on any farm in the world. We have over 2,000 varieties of fruits now under cultivation. Apples, pears, cherries and plums do very well. We have a great many peaches. Peaches are rather an uncertain crop, but the fruits I have mentioned as well as all the small fruits succeed very well in that country. Of course there is a wide difference in the climate of our country. We are just on the edge of what is called the dry belt. We have plenty of rain fall to about 70 or 80 miles east of us. Experiments that may be successful with us might not be applicable to conditions elsewhere in British Columbia.

*By Mr. Wilson:*

Q. To what proportion of the country do your experiments apply?

A. To all the country west of the Cascades including Vancouver Island. I could not exactly give you the area of cultivable land.

Q. Could you state approximately what the area is?

A. There are now in the Chilliwack Valley and the Fraser Valley probably 200,000 acres of land that is available for cultivation, really good land, and there are other valleys farther up the coast that are coming into settlement now.

Q. That are similarly situated to your district as far as climate and rain fall are concerned?

A. Yes, they are very similar. There does not appear to be very much difference in the climate in the east and the far north.

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### WHAT FRUITS FLOURISH ON THE ELEVATED BENCH LANDS.

*By Mr. Sproule :*

Q. Do they farm down in the valley or on the rise of the ground towards the mountain?

A. No, we are about 45 feet above tide water.

Q. I understood you to say you had 800 acres of mountain land that rises out of the valley?

A. Yes, but it rises almost directly up ; it is quite a steep climb.

Q. That would be valuable as giving you the different temperatures for testing.

A. It is particularly valuable in this respect, that there is a great deal of valley land in the country west of the Cascades, and a great deal of land in the Chilliwack valley and other places on which they can with a little trouble get good roads. There is another peculiarity in our experiments on the mountains, for instance, with gooseberries, mildew is one of the things we have to contend with and it has been very serious with valley plantations. But the same varieties got from the same nursery at the same time, planted 800 feet high, have been absolutely free from mildew on the fruit or foliage.

*By Mr. McGregor :*

Q. Does it make any difference on which side of the mountain you plant, the north or the south?

A. I do not think it makes a great deal of difference in that respect. We have just taken advantage of suitable elevations regardless of the exposure. Peach trees are very susceptible to curl leaf in a damp climate and we have had to spray for that every season, but peach trees 800 feet high have escaped. They fruit very early up there.

*By Mr. Sproule :*

Q. You say you have over 2,000 fruit trees?

A. Yes, in all varieties of fruit.

Q. Including strawberries?

A. Including currant bushes, &c.

Q. And grapes and peaches?

A. Yes, we have 190 varieties of peaches and 100 varieties of grapes. I do not include in the list I gave, a number of varieties of apples which I planted this year just before I left home.

*By Mr. McGregor :*

Q. What fruit can you grow with the most profit in British Columbia, taking the province as a whole.

A. I think that in the country west of the Cascades, pears, plums, cherries and all large fruits are the most profitable. Plums may be grown most anywhere with profit, and cherries on the elevated land where it has either natural drainage or is capable of being artificially drained. Cherries do not succeed where there is dampness.

Q. Are you troubled with black knot?

A. No. I have never had but one black knot on the plums on our farm, and we have received trees from different parts of Ontario, and from all over the United States and Europe. I promptly removed that some years ago, as soon as it appeared and I have not seen it since. I do not know whether it is owing to climatic influences or not. In an orchard across the river from me, black knot was found on two or three trees. I went over to see the man who owned them and we removed it. I have not heard of it since.

Q. Do you grow peaches equal to those grown in California?

A. I think that we can grow as good early peaches as can be grown in California. But peaches are not always planted with profit in British Columbia, for the reason that the blossom is very tender and is susceptible to sudden changes. They are not a certain crop.

*By Mr. McMillan :*

Q. How is that orchard doing which was planted on the side of the valley there going up to the high land. It was planted when I was there?

A. We have planted two since that higher up and they are doing very well. They have been remarkably free from disease of any kind, and they are fruiting now, plums, apples, peaches and some pears last year, and I expect quite a crop during this year. We planted an orchard in the spring of 1895, at an elevation of 1,150 feet, and it is doing very well.

SOIL AND CLIMATE ON THE BENCH LANDS.

*By Mr. Rogers :*

Q. What is the nature of the soil up high?

A. At an elevation of 1,150 feet the soil is a warm loam, finer in texture than it is lower down. It is a beautiful soil for fruit culture.

*By Mr. Wilson :*

Q. And is it as rich?

A. Yes; judging from the growth, the natural growth of firs and maples,—and of ferns which are the undergrowth—trees make really fine growth. Last year with our plums, some of them made a growth of five feet.

*By Mr. Sproule :*

Q. Have you ever trouble with frosts in the late spring or early fall?

A. No. I think not. The sudden changes that occur through dampness, do not affect us on the uplands or in the valleys. For instance, ferns will be waist high on top of the hills, while beneath they are only breaking through the ground. If we had a sunshine recorder, I believe it would show 25 per cent more sunshine at that upper elevation, in spring and fall, than in the valleys. I have been working up there on a spring day when I found it uncomfortably warm, and on coming down I found there was no sunshine recorded. It is just like a blanket some forty feet below preventing the sunshine reaching the lower levels.

Q. Do you grow grapes on the farm?

A. Yes; we have considerably over 100 varieties of grapes, and the trees do very well, but with the exception of some of the earliest varieties we do not have much success with grapes. You see, in the month of August, and early in September, we frequently have a good deal of damp weather, but not frost, and this affects the ripening of grapes.

*By Mr. McGregor :*

Q. Does this mildew affect you?

A. No; just the absence of sunshine, which affects the grapes and prevents them ripening.

Q. Have you ever tried the lighter coloured grapes?

A. We have all colours, over 100 varieties, but only three or four are really what may be considered acceptable grapes as you would call them here. They are good for jam; but little less. Sixty or seventy miles east of us they grow good grapes.

## Agriculture and Colonization.

*By Mr. Sproule :*

Q. I would have thought there would be good sunshine in the valleys ?

A. Well, all fruits, peaches, grapes, etc., ripen a little early ; but I would not claim for that country—the Fraser River Valley—that it was a grape country.

*By Mr. McMillan :*

Q. You have a variety of soil on the farm ?

A. Yes ; the farm is admirably adapted to our purposes. In some places we have sandy soil, in some clay, and in others gravel ; but I find it does not make much difference as to soil, for fruit trees do well and make a strong growth anywhere on it.

Q. What grain do you grow on the farm ?

A. We have had good success with barley, oats and wheat, but the wheat generally, in all my country, is soft.

Q. Depending, of course, on the summer ?

A. Yes. Last year they grew high, because we had a hot September. But the seed of No. 1 hard, which we got from the North-west, did not turn out better than No. 2 Northern.

*By Mr. Sproule :*

Q. How do you find the smaller fruits, such as gooseberries, blackberries, raspberries, etc., ?

A. Raspberries and strawberries do marvelously well, and the quality is good. But as regards gooseberries, like many places, we have gooseberry mildew. Gooseberries, so far as tested on elevations of 700 or 800 feet, are singularly free from this, and we never treated them. Those in the valleys we spray, and do our best to combat the disease, but on the mountain both fruit and foliage are free from mildew.

*By Mr. McGregor :*

Q. Have you tried any apricots ?

A. A good many, probably all the leading varieties. The apricot is one of the first to bloom in spring, when we are likely to have changeable weather, with cold and showers which kill the blossoms.

Q. Have you tried prunes ?

A. Yes ; but prunes are merely a variety of plum.

Q. They do well with you ?

A. Yes. But the popular variety of prunes, Italian and German, are a little late in ripening, and the difficulty is that if we take prunes from the tree before they are absolutely ripe they are hard, dry, chaffy prunes. If you leave them on, you may have a shower of rain and it turns around and spoils them. They are difficult to grow, but we are in hopes that one of the latest varieties got from England, which is sweet, will give good results. Some Americans were up, and they said that if it did as well as it had done with us last summer, it would be one of the most valuable prunes raised on the Pacific Coast. They were young trees, and I had probably 25 from two trees last year, and out of curiosity took a couple to my office to dry and put away, and on weighing them, found they weighed a little over five ounces, and they were large and sweet. If they do as well as that, I think we have found something to fill the bill for prunes on the Pacific slope.

*By Mr. Sproule :*

Q. How do you find cherries ?

A. Cherries do well ; but are probably better adapted to high lands, high enough to secure absolute drainage. Cherries will do well in British Columbia, west of the Cascades.

Q. Do they ripen the same as here, or earlier?

A. They ripen at different times. Some importations from England ripened on the 25th May, and when I left home some others were a little larger than pease.

*By Mr. Dechene :*

Q. Have you tried any experiments with the tobacco plant?

A. Yes.

Q. How does it succeed?

A. I had some seed sent to me by Mr. Smith, Commissioner of Lands in Winnipeg, sent to him by a tobacco expert in New York. I sowed it, and sent a sample on to the latter, who said he found it admirable for wrappers, if we could send him enough. This year we have some seed under test, but I suppose it is one of the things which will require some time to get at good results. I presume its usefulness for wrappers is not the only thing, as flavour has to be considered. This New York expert spoke highly of the sample we sent him, and he is in the habit of handling Cuban and Connecticut Valley tobacco.

Q. Was the season long enough to ripen it?

A. Yes. I believe it will make a success in some places.

*By Mr. McGregor :*

Q. Is that on the high land or the low land?

A. We grow that in the valley land.

Q. What time do grapes ripen?

A. We had the earliest, some of the Director's hybrids, on the 10th September on the mountain.

Q. Do they ship from your district towards the North-west Territories?

A. Not of grapes. Grapes are not grown in our district to any considerable extent; but we ship large quantities of small fruits and large quantities of plums. Last year, which was an off-year, they shipped east six or seven carloads, and in a year or two the people of the North-west Territories will have no use for your eastern fruits.

Q. What off-year do you have? Every other year?

A. No; but last year was the first year we had since I had any knowledge of the place, that was an off-year. At the time of blossoming, we had bad weather and a good many of the blossoms were destroyed in that way.

*Fruit Market.*—Q. Do you ship grapes to Calgary and those points where there is competition from the east?

A. I don't think you need be concerned about the Fraser Valley competing with you for grapes; but I don't think that in another year or two you need hope to get a market for small fruits.

#### CHARACTERISTICS OF THE BENCH LANDS.

*By Mr. Rogers :*

Q. Are these elevations you speak of foot-hills, or the sides of the hills?

A. We have cultivable lands both on tops and sides of the mountains. The foot-hills are of all elevations. Surveyors have told me that there are plenty of foot-hills on which there are plateaus of 200 or 300 acres. Rolling land, you know; but of course, you can plough and cultivate it. On the top of our mountain, judging from walking backward and forward—it is not always easy to arrive at an approximate area—but I could easily enough get fields of from 20 to 25 acres.

## Agriculture and Colonization.

Q. Those you have made, are they flat or on the side?

A. The first three are on the side and the last one only on the top. That is rolling land. When I speak of clearing, it was not the intention of putting any great expense on. All I did was to clear the timber, grubbing a small spot the size of the wheel of a wagon, go over it with a hoe two or three times, mow the ferns or anything that comes up on the whole of the land and clean it that way: but we did not put a great deal of expense on it.

*By Mr. McMillan:*

Q. Have you grown hops?

A. Yes, two or three varieties.

*By Mr. McGregor:*

Q. Have you tried grasses?

A. All the grasses do well. Red Clover is almost a weed with us, speaking from the farmers' standpoint, and speaking from a farmer's standpoint, I would not, given that condition, want grasses.

*By Mr. Wilson:*

Q. Is your farm well located?

A. Yes, and it is so accessible that it has that advantage and there are so many varieties of soil within its limits. We have practically gravel and sandy loam and black peaty land and clay. All these kinds of land are under cultivation in the province, and furthermore being better lands of the first quality, if we succeed, it follows that any one can succeed. If we can succeed and raise satisfactory crops and trees on that part of our farm containing poor soils, it follows that any fool can succeed.

Q. Then you think that your farm is a representative one of the province?

A. Yes.

### VARIETIES OF FRUITS GROWN ON THE AGASSIZ FARM.

*By Mr. Sproule:*

Q. Some of your fruit is very large, how does it compare with Ontario fruit, say pears or apples.

A. Our pears compare well, but the reproach has been made against British Columbia apples that they lack quality. I find that you people in the East are using a great deal of Northern Spy and the Fameuse apple, and some of these that are popular and deservedly so. I find that those two require just what the grape does, warm sunshine in their finishing period on the tree. Last year we had warm weather and sunshine in September, with the winter apples ripening up and the result was very good but the Northern Spy in that country lacks sunshine. But take other varieties, the Preston (Public,) and Golden Southern Beauty, York Imperial and such as these, and if I was at home to-day I could give you a better apple than I have succeeded in getting since I came to Ottawa.

Mr. WILSON,—Apples at this season of the year are not very good anyway?

Mr. SHARP,—True, but I think I could succeed in getting a fairly good apple if I was at home.

*By Mr. Sproule:*

Q. Are you growing peaches?

A. Oh yes. We have under test nearly 200 varieties.

Q. How do they succeed ?

A. The early peaches do very well, that is the quality is good, but owing to the uncertain spring weather I would not plant peaches as a commercial crop.

*By Mr. McMillan :*

Q. I want to ask you about the apples keeping last season. We never had such a poor season for keeping. We have generally had splendid apples in the summer, but this year our apples all went during the winter ?

A. We find that condition out there, but when an apple does keep without decaying if it is really good, it should retain its flavour.

*By Mr. Wilson :*

Q. Have you a good apple at this time of year ?

A. Yes, comparatively speaking. Mine are not as good this year as some summers. But with fresh meat, strawberries and cherries you do not care for apples.

*By Mr. Rogers :*

Q. Have you strawberries already ?

A. We had strawberries and ripe cherries on the 24th of May.

Q. How is it with wheat out there ?

A. There is not much wheat raised for milling purposes and until recently, if there is now, there was not much malting done in the province, and consequently there is not much demand for barley,

Q. How do pease do ?

A. Very well.

Q. And corn ?

A. Ensilage corn does very well.

*By Mr. Sproule :*

Q. What variety of plums do best ? How is the yield compared with what is found down here ? Were you an Ontario man ?

A. I was raised in Ontario. I planted three plum trees of the Hueii variety, and in the spring of 1892 I got a little more than forty pounds from each of those trees, and the yield increased in each year until in 1894 we got 200 pounds, and 200 pounds or a little over ever since that.

Q. What is the name ?

A. Hueii. Other varieties, the Washington Check, Monarch, Grand Duke, Cox's Emperor, all these are large plums of very good quality, and are free producers. There are a great many others which are equally worthy of note.

Q. Do you find a ready sale for all plums ?

A. Oh, yes, I think the North-west will always want more fruit than we can supply.

Q. Then you find raspberries and gooseberries do well there ?

A. Well the raspberries are subject to the altitude, but the strawberries and raspberries do very well.

#### GROWTH OF GENERAL FARM CROPS.

Q. How about roots ?

A. In roots we do very well. For potatoes, turnips, cabbage and these things our conditions are very favourable.

## Agriculture and Colonization.

*By Mr. Wilson :*

Q. I suppose any fruit that ripens early is good for you ?

A. Yes, your winter fruit like the pear or apple or late peaches would not succeed with us.

*By Mr. Featherston :*

Q. Do peaches of any variety succeed there ?

A. Yes, I have had Amsden, June, Early Canada, Kilborn, Early York or General Taylor. All of these are early ripeners, and quite a number of others which I do not recall now. Late peaches do not ripen to finish in good quality.

*By Mr. Sproule :*

Q. What yields do you have on these lands of potatoes, turnips and mangels ?

A. The yields vary on our lands. Last year my potatoes were a very light crop owing to the long continued drought. I do not think that we had last year much over 150 bushels to the acre. We have had as high as 500 bushels to the acre, we ordinarily have from 300 to 400 bushels. We usually have from 800 to 1,200 bushels of the larger roots to the acre, according to the season.

*By Mr. McMillan :*

Q. You do not keep any cattle on the farm ?

A. We had 19 head when I left home.

Q. What roots do you grow mostly ?

A. For the main crop, I like the Swede turnips, and the Tankard mangels best.

Q. Is that the yellow mangel ?

A. Yes. I like it best for feeding. It is a little easier harvested and yields as well as the Large Red, and it is not so liable to break when you are unloading it.

*By Mr. Featherston :*

Q. They will not yield as high as the Red ?

A. I think they compare very favourably in that respect.

Mr. FEATHERSTON.—You have good land.

### CLIMATIC INFLUENCES.

*By Mr. Sproule :*

Q. We had at one time before this committee a gentleman who gave what I regarded as valuable information in regard to the climatology of the different elevations there. Have you made any observations, in regard to the different heights of land, there, to ascertain which are the best adapted for cultivation.

A. As far as my experience goes, it is very limited, because the low elevation of 1,200 feet so near to the coast is affected by the Japan current in the same manner as the valley lands, so that there would not be anything very radical in that.

Q. An elevation of 1,200 feet here would make a great difference in the climate ?

A. I suppose it would here, inland, but on the coast with the low elevation we have, we would be subject to the modifying influence of the Japan current in the same way as in the valleys, and I do not think that there would be anything remarkable on account of the elevation except that most of the elevations are so well drained, and the soil is so good, where there is soil at all, that when trees are planted the roots get into the cracks of the rocks, and they will probably stand more growth than in the valley, as they would not be affected by a deluge of water.

Q. How is your water supply in the summer?

A. As a rule, we have plenty of water. Last year we had a drier season than any since I have been there, but as a rule we have plenty of rainfall for the successful growing of crops.

*By Mr. McMillan :*

Q. Is there much land cleared on these high elevations?

A. There is a good deal being cleared along the side of the river. They did not think that these lands were of much account until after the high water of 1894. That, together with the success we have been making in fruit-growing on the farm, has turned their attention to these foot-hills, and now they are very largely taken up. They are clearing them as rapidly as they can, but the clearing of the land on these benches for grain-growing involves considerable expense, and if farmers undertake it they have to go very slow.

*By Mr. Rogers :*

Q. Is there no help in the rotting out of tree stumps?

A. Yes; but nature works slowly in taking a fir tree out?

#### GROWTH OF FERNS AND FODDER GRASSES.

*By the Chairman :*

*Ferns.*—Q. Ferns grow rapidly, do they not?

A. Yes, very rapidly, indeed. It is only a matter of three or four weeks between the bare ground and ferns above your head.

MR. McMILLAN—I have been told by gentlemen of the growth of these ferns, and to see for myself I went out one day and measured some of them with a stake. The next morning I measured them again, and I found a growth of six inches.

*By Mr. Sproule :*

*Grasses.*—Q. I understood you to say that the country was good for grass. What kind is best?

A. We have not many elaborate experiments in grass?

Q. Is there any difficulty about the fodder supply in that country, or is it so naturally adapted that there is no need to test it?

A. Probably there is not for general farming a better variety than clover.

Q. But that is not for horses?

A. We feed our horses on it; and probably Red Clover, if cut and cured, would do well.

MR. McMILLAN,—Horses will do better on clover than Timothy.

MR. SHARPE,—Selling it instead of using it, is a matter of prejudice.

*By the Chairman :*

Q. Are heaves prevalent amongst horses in your country?

A. No. I don't think they have much heaves among horses, but I am not much of a horseman.

*By Mr. Sproule :*

Q. How does timothy do?

A. It does well; but better on low land than on an elevation.

## Agriculture and Colonization.

Q. What is the yield to the acre ?

A. Two years ago with conditions favourable, I got two tons to the acre in the first cutting, mostly clover, and one ton and three quarters on the second cutting. If we had rains in time I probably would have had a third cutting of about one ton.

Q. You don't mean three cuttings in one summer ?

A. Yes. I expect to cut my meadows three times this summer. I left orders to take off the first cutting just before I left home.

*By Mr. McMillan :*

Q. I found two very large stacks of hay when I visited the farm.

A. Yes. Wherever the seed is dropped it takes, and is not killed out.

*By Mr. Sproule :*

Q. Nearly five tons of hay to the acre is a great yield. With us that would be pretty large.

A. Well, I expect that ; but the second cutting may be better, although ordinarily the effect of rains sets us back a little.

*By Mr. Calvert :*

Q. What time is the first cutting ?

A. This year it is late, and I expect the first crop will be harvested now. This was a late spring, and it has not come on as well.

Q. And what time is the second cutting ?

A. That will depend. If we have rains, I expect the second cutting about the 25th July or the 1st of August.

Q. And then the last one ?

A. It depends altogether on the season, whether we get the last one or not ; but if we do it will be about the middle of September.

Q. Have you pasture after that on the same land ?

A. Well, I have seen clover grow there until nearly Christmas ; but after a meadow has done as well as that for you I would not consider it justice to pasture it. There is another difficulty. We have a great deal of rain in the fall, and so a meadow would be badly off if you turn cattle on.

Q. How does your Timothy yield compared with clover ?

A. I have not sown much Timothy there, but it yields down in the valley from two and a half tons to a little over four tons to the acre. I have seen crops have over four tons in the acre. It does well down in the Delta, in the islands in the gulf.

Q. Would the three crops of which you speak in a season apply to all parts of the province of British Columbia ?

A. No, not the interior but just along the coast and in the lower part of the Fraser River Valley. South of the river, and on some of the Sea Islands, they do not do much. The prejudice is against clover, and Timothy which does so well on the low lands is the popular grass.

Q. Do they not raise cattle ?

A. Yes, but even in that case when a man has a considerable area under cultivation he would rather raise a grass which if he has more, than he needs, he can sell. The prejudice is for teams.

Q. Would not a little mixture of Timothy and clover do well?

A. Yes, a good many teamsters so regard it in Ontario. When the clover is cut there is little difference in the constituents of the two grasses, and horses, like every other animal, like a little variety.

*By Mr. Sproule :*

Q. Have you tried pease and oats?

A. Yes, pease do very well with us. We seldom or never have mildew on the pease and we generally have good crops. We have had as high as 100 bushels to the acre.

Q. Are you troubled with bugs?

A. No.

*By Mr. Calvert :*

Q. Have you any cheese factories in that district?

A. Yes, there is one in Chilliwack. There is a good creamery running now at Ladnor and one or two on Vancouver Island, at Duncan, but it has not been gone into, to any considerable extent.

*By Mr. Featherston :*

*Pease.*—Q. What variety of pease would you grow 100 bushels to the acre?

A. I have had the ordinary White Marrowfat, Mummy, Prince Albert and Prussian Blue, and we have had nearly 90 bushels of the White Vetch. In fact the yield has been so large that I was almost inclined to prune my report and report only 50 or 60 bushels to the acre, but while I was making my report out a gentleman from New Zealand came in and we fell to discussing it. I said that you would put it down as a fish story in all probability, but he did not agree with me. He said that every farmer knew that at times when nature is bountiful there will be an extraordinary yield. He had had the same experience in New Zealand, one season, and never could get as large a yield afterwards.

*By Mr. Wilson :*

Q. How many acres had you under cultivation where that yield was produced.

A. It was all experimental, but there was no special attention given to them. They were sown in the young orchard and got no fertilizers.

Q. For experimental purposes you got the land perhaps in better shape?

A. That was the first year I had that land under crop, and our lands were not at their best until they had been two or three years under crop, and I do not think they had any special advantage that way because we had no time to give any special directions.

Q. Do you think you would have had as good results from other land?

A. I think I would have had just as good results. It was just nature.

Mr. McMILLAN,—I saw the heaviest crop of pease when I was out there, that I ever saw. It was a little piece down to the left on that road as we went to the building. There was an excellent crop of barley, but the pease I never saw the like of them.

Mr. SHARP,—I never saw such pease. A little bundle would make a pitchfork bend, and a man screw up his face throwing them on the waggon.

*By Mr. Featherston :*

Q. What kind of soil was that crop on?

A. It is warm loam almost inclined to be gravelly.

## Agriculture and Colonization.

*By Mr. Bell :*

Q. How long were the vines of those pease ?

A. There are different varieties. The Mummies when they stood straight would be about six or seven feet high, but there were pods from the ground up. The White Vetch gave a yield of a fraction of over 92 bushels to the acre.

*By Mr. Featherston :*

Q. Sometimes it is best to sow pease in strong land.

A. Yes, but I do not know that you could call that extra strong land.

Mr. FEATHERSTON,—It must be rich though.

*By Mr. McMillan :*

Q. What quantity of pasture does it take per animal during the summer when you have them out at grass.

A. That is a question that I could not really answer because I have only about 18 acres of pasture and I let everything in there to give them exercise except the males. I turn my horses in there more to exercise them although of course there is a little grass.

Mr. McMILLAN,—I saw a piece of land that had been cut for hay two years ago. I measured some of the young Douglas pine, and I found one or two that were seven feet high, and another timber 12 feet long where it had been run over with the mowing machine two years before. Young timber will grow right up.

Mr. SHARP,—That would be alder, I think.

### WATER SUPPLY AND FOREST WOODS.

*By Mr. Sproule :*

Q. What is the quality of the water you have there ? Is it good or is it tainted with alkali as they have it in some parts of the western country.

A. We have no alkali there at all. I sent a sample to Mr. Shutt, and he pronounced it almost perfect water. There is no alkali in it or any mineral. It is first-class water.

*By Mr. Calvert :*

Q. What kind of timber grows there ?

A. Douglas fir is the most important there, besides which there is cedar and alder.

Q. Pine ?

A. Some spruce, but no pine.

### HOW INFORMATION IS COMMUNICATED TO FARMERS.

*By Mr. Sproule :*

Q. What means do you take for disseminating the information you get on the farm, among the people of that country.

A. We have farmers' associations and fruit growers' associations, and I meet them occasionally, and then a great many of them come to the farm on occasions, and in addition to that our association meets there in summer time.

*By Mr. Sproule :*

Q. Do you issue any bulletins especially for the farmers of that country ?

A. None from there.

Q. None except those from the Central Farm here?

A. There are none.

Professor SAUNDERS.—And, of course, a special edition was issued for that country there.

Mr. MORRISON,—I think it might be advisable to hear Mr. McMillan, who has gone out over the farm, and might be able to corroborate Mr. Sharpe.

*By the Chairman :*

Q. What about the San Jose Scale, with which we are having trouble in Ontario? Has it reached you?

A. It has not appeared in British Columbia; but we are quite familiar with it and its treatment from its being prevalent in California, Oregon and Washington, and I have had samples of infested limbs sent up from there to familiarize myself with it, so that we might know it when it comes. We have had none, however, if I except one tree that Professor Fletcher got hold of, and the owner dug it up and burned it; but whether it was the San Jose Scale or not I do not know. I have had a number of limbs and branches sent me by fruit growers in British Columbia, who thought it might be affected with San Jose Scale. If they see something which they do not recognize, which they cannot get at with a shot gun, they get frightened, and send to me for my opinion as to what it is. However, I can assure the Committee that we have none of the Scale with us.

*By the Chairman :*

Q. It would look as if you were outside the belt?

A. Well, no; they thought that in Washington too; but they have had to take steps against it there. They use a mixture of lime, sulphur and salt, which appears to be effective on the coast; but Mr. Fletcher told me it was not here.

Q. In what season is it used there?

A. In the winter season. It is a very powerful remedy and would burn up the foliage if applied in the summer.

Certified a correct copy of Mr. Thomas A. Sharp's evidence, from the Stenographer's report.

J. H. MACLEOD,  
*Clerk to Committee.*

Agriculture and Colonization.

# THE EVIDENCE

## PART II

DISEASES OF DOMESTIC ANIMALS AND QUARANTINE.



# Agriculture and Colonization.

COMMITTEE ROOM 46,

HOUSE OF COMMONS,

FRIDAY, 21st May, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10.30 o'clock a.m., Mr. Bain, Chairman, presiding.

Dr. MCEACHRAN, Dominion Veterinary Inspector, was present by invitation, and addressed the committee, as follows:—

## IDENTITY OF TUBERCULOSIS IN MAN AND ANIMALS.

MR. CHAIRMAN AND GENTLEMEN,—Of all the diseases affecting food producing animals, Tuberculosis is on account of its subtle nature, its contagiousness, its incurability and its intercommunicability, not only between animals of the same species, but between animals of different species; and more especially its intercommunicability from animals to men and from men to animals, by far the most important subject which the Committee could consider to-day. Affecting as it does not only our herds of cattle, swine, and poultry, and their products; more especially the butter and cheese industries; and being a menace to the health of the human family which consumes milk, butter, and cheese, produced from tuberculous animals. Consumption in men and animals is one and the same disease. This I may say has been fully demonstrated not only by Continental investigators, but by the experts of Great Britain who were examined before the Royal Commission two years ago and who established the positive and undeniable fact that these two diseases are one and the same.

This is a very important point, Gentlemen, for you to carry in your minds, that there is no question whatever as to the identity of tuberculosis, whether it is found in cattle, swine, poultry, or in the human being. The disease is exactly the same, dependent upon the same causes, running the same course, but like many other diseases, tuberculosis affects each class of animals differently. Thus, for instance, we know that in the human subject small-pox is exhibited by cutaneous eruptions, and it very frequently affects the internal organs. The corresponding disease in horses is usually manifested by an affection in the heels; in cattle it is found in a mild form in the udder and other parts, so that it will be seen that we must not expect that tuberculosis will exhibit exactly the same features in every species of animals it affects. While the difference in the animal affected has a modifying influence, the disease is dependent upon the same general cause, the invasion of the tubercle bacilli.

## HISTORY OF TUBERCULOSIS, *alias* CONSUMPTION.

In reference to the history of this disease the earliest medical history indicates that it existed both in animals and men from the earliest ages. It is true, that of late years we have heard a great deal more about it, because pathologists have explained its true nature. We understand more about it. It has claimed the attention of the stock breeder to greater extent, for the reason that of late years stock breeding has received more attention. More effort has been made to improve the quality of the herds of cattle, more particularly of dairy cattle, and, therefore, more intercommunication between healthy and diseased herds. The disease, of late years, has commenced to spread, and to-day is existing in England to a most alarming extent. But it exists in every country in the world no matter what the climate may be; in the north, in the south, in the torrid and the frigid zones, this disease exists wherever animals are congregated together.

## SOURCE OF THE DISEASE.

The cause of this disease is demonstrated to be the introduction into the system of a bacillus, a micro-organism. It is very easy of demonstration in the majority of cases; any person accustomed to the use of a microscope can readily demonstrate this, so that its features are well known. I have here some illustrations published in the report of the Royal Commission, in which you will see the bacilli in the tissues of the different organs represented. This bacilli attacks different organs of the body, and it produces different effects. Thus, for instance, we may find it in the lungs and throat. It will attack the bronchial glands and other glands of the lungs; small nodules will form first, scarcely the size of a pin head, called milliary tubercles; as the disease progresses, the tubercular masses assume various forms, usually ovoid like a turkey's egg or even larger, and subsequently have the appearance of a split fig, the casuris matter becoming calcareous in cases of long standing.

An animal having the disease in a chronic form may go on breeding and milking for years and then may be easily fattened. I have seen cattle with the lungs almost gone from tuberculosis quite fat when killed. It affects the lymphatic glands, the glands which have so much to do with nutrition and assimilation.

Then we get a more rapid form of the disease, what is commonly called in the human subject, galloping consumption; the nutrition is stopped, and the man or the animal wastes away. We find it in the mesentery, serous membranes, mammary glands, liver spleen, kidneys, intestines, meninges of the brain and the superficial glands. The bacillus varies in activity according to the tissues which are affected. It is particularly rapid, as I have said, in the lymphatic glands, and is also very rapid when affecting the udder: consequently we find that the milk produced by the udder affected by tuberculosis is teeming with bacilli, because they are exceedingly active when attacking this gland.

## SYMPTOMS.

In reference to the symptoms of this disease it is of a very subtle character. We may have tuberculosis confined to a single small gland in the body, and the animal will show no symptoms whatever; in fact the most expert veterinarian or inspector would fail to detect anything the matter with the animal, and would unhesitatingly say it was sound. In other cases where it affects the lungs pressing upon the bronchial tubes and producing bronchial irritation, we have the characteristic cough of the consumptive, which is continued and prolonged and will take place any time, more particularly when the animal is exposed to change of temperature or is excited. In such cases there is not such rapid wasting. Occasionally we have the disease affecting the glands of the throat and producing enlargements of them: but no dependence can be placed upon clinical examination excepting in advanced cases.

## ANIMALS MOST LIABLE TO BE AFFECTED.

Coming to the animals most subject to this disease we find that the herbivora are more so than the carnivora. Cattle are most susceptible of all the domestic animals. Swine come next in susceptibility; poultry are very prone to the disease; sheep are found to be but slightly susceptible to it; dogs and cats rarely contract the disease in a natural way, but both are susceptible to its introduction by inoculation or by feeding upon flesh or milk from tuberculous animals. I have repeatedly seen it in dogs which had been fed from tuberculous cows; but in a natural way dogs and cats may be said to be almost immune. Monkeys are particularly prone to be affected when kept in the zoological gardens. The difficulty they have in zoological gardens in keeping monkeys is owing to their proneness to contract tuberculosis. This must be by the inhalation of the bacilli coughed up by the consumptive patient, dried, wafted about in the air currents and inhaled by the monkey. Sheep are but slightly affected, and calves are found in the abattoirs to form a very small proportion of the tuberculous animals. This can be readily explained in reference

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to the calf. The calf does not live long enough. It is killed usually within a month, six weeks or two months, and consequently it does not live long enough for the disease to be developed, which accounts for the small number of calves found in the continental abattoirs, by inspection, to be diseased.

Horses are rarely affected. Instances are recorded of tuberculosis in horses, but they are exceedingly rare.

Rabbits, guinea pigs and rodents are very prone to the disease, and as you well know, the human subject is also prone to it, more particularly children and weak persons who are suffering from a debilitating complaint, and old people in whom vitality is gradually lessening. When these members of the human family take into the system milk or flesh from tuberculosis animals, there is every probability that a very large percentage of them will contract the disease.

Of the different breeds of cattle there is a general impression that dairy cattle, and some special breeds of dairy cattle, are more prone to contract this disease than others. This is a fallacy. Any bovine is just as susceptible to the disease as any other bovine. In the case of the human subject, the man or the woman of robust constitution, the leucocytes of their bodies will destroy the invading bacilli and resist the disease. So it is in the case of animals. Animals of strong and robust constitution are not so liable to contract tuberculosis when exposed to infection as animals that are debilitated. We find that dairy cattle, being highly fed and subject to a considerable extent to constant milking, become debilitated, and they are thereby rendered more prone to contract the disease when exposed to infection than the beef breeds which are more robust and stronger of constitution. The dairy cattle are more closely housed, and are therefore more exposed to inhalation. A tuberculous animal in a byre will cough up large numbers of bacilli every time she coughs. These dry on the woodwork or floor; air currents lift them up and they are wafted about in the barn: the cow inhales them and she becomes tuberculous, so that as an actual fact, any bovine may contract the disease, but those that are debilitated are more closely housed are more prone to contract it than those that are in the open, particularly the beef breeds. Dairy cattle, as a rule, are kept much longer than beef cattle. It is quite common for a dairy cow to live 12, 13 or 14 years, whereas a beef animal is usually disposed of at from two to six years of age, so that they do not live so long, and for that reason they are not so liable to be found diseased when they are slaughtered.

### SPREAD OF TUBERCULAR CONSUMPTION.

Now, as to how this disease is spread in a herd of cattle. It is almost invariably spread by the introduction of a diseased animal into a healthy herd, and that diseased animal is usually the bull. It would be well that agriculturalists should know this fact, that a bull is the most dangerous animal for introducing contagious disease of any kind; but more particularly tuberculosis, into a herd. It is also produced by the dry sputum, coughed up by either animals or by persons in attendance on them. A consumptive attendant should never be allowed to have anything to do with cattle. It is well established and now believed by the whole profession, both in Europe and on the continent of America, that this is a most fertile source of the introduction of tuberculosis into herds, and this should also be well known to farmers. I hope that some day the Minister of Agriculture will make regulations that a consumptive will not be allowed to feed, milk, or have anything to do with cattle in a housed condition.

Badly constructed buildings favour the development of this disease, and I think the placing of the heads of cattle opposite to one another is one of the sources of its spreading in barns. I think if the heads are turned away, instead of facing one another, with a narrow passage between them, where, when they cough, the sputum is thrown across the passage, it would be more healthy than the other way.

Milk from diseased cows is a fertile source of spreading the disease in the herd. I will read you presently some extracts from the report of the Royal Commission appointed to inquire into the effect of food derived from tuberculous animals, on human health, which will astonish you by showing the virulence of the disease. There is some differ-

ence of expert opinion as to whether it is necessary that the udder should be diseased to make the milk tuberculous. The concensus of opinion, based on experiments largely substantiated since this report was published, go to show that it is not necessary that the udder should be diseased; that if the animal is diseased at all, the tuberculous bacilli would almost to a certainty pass through the body or milk to persons consuming it.

*By Mr. Sproule :*

- Q. Could you not sterilize that milk by heat and do away with the danger there?  
A. I am going to come to that.

EXTRACTS FROM THE ROYAL COMMISSION REPORT, ISSUED IN 1895.

Believing that the report of the Royal Commission would be more impressing to the Committee than any statement of my own with reference to the communication of the disease by milk and meat, if you will allow me, I will read you a few extracts from the report.

*By the Chairman :*

- Q. What is the date of that report?  
A. 1895. The report says :

“The primary object of the commission, to learn the effect of food derived from tuberculous animals upon human health, was obviously one that could not be attained by direct experiment upon human beings. Yet it was upon this question that there had been least accord among the witnesses, though they did agree in their assurances that there was no valid evidence on the point to be had. The commission undertook, therefore, these inquiries as to the effect of tuberculous food upon the health of lower animals, in the expectation of obtaining information applicable to the case of the human subject.

“Dr. Martin selected for his experimental research, a variety of animals which differed in their customary food material: pigs, guinea pigs and rabbits. The animals were fed with their usual foods, with the addition of some material (sometimes meat—much in the sense that a butcher might speak of meat—sometimes milk, but always uncooked) derived from a tuberculous animal. No particular examination for actual tubercle in the food material was made in the experiments now being recorded, but some care was taken to avoid any obvious mass of tubercle.

“Of each kind of animal thus fed, a certain percentage was found to become tuberculous: of pigs, 36 per cent (5 out of 14); of guinea pigs, 16 per cent (24 out of 145); of rabbits, 15 per cent (2 out of 13).

“The experiment comprised also a number of animals kept under the same conditions as the rest (the pigs being members of the same litter), and only differing from the other animals of the experiment, by receiving no material from a tuberculous animal in their food. Of these ‘control’ animals (numbering 5 pigs, 23 guinea pigs and 8 rabbits), none became tuberculous.”

Thus showing that tuberculosis is communicated in the food coming from tuberculous animals, and the report goes on to say :

“We cannot but regard these differential experiments as showing the danger to a healthy animal from the introduction into its food of material taken from a tuberculous animal. Further, Dr. Martin made experiments, not only with feeding material, derived from tuberculous animals, but with material containing tuberculous matter recognized as such, and purposely added to the food of the experimental animal. This was done in the case of one pig, 8 guinea pigs and 10 calves; and of these the pig, 6 guinea pigs and 8 calves became tuberculous. In these experiments the tuberculous matter had been taken sometimes from a bovine, sometimes from a human source, and it is noteworthy that each animal received only a single dose of it.”

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Thus showing the communicability between cattle and the human subject.

“Other experiments with manifestly tuberculous matter are recorded by Dr. Woodhead, among a number of investigations made in the course of his own inquiry undertaken for us. He found this matter given (uncooked) to various animals, gave rise to tuberculous disease in all the pigs (seven) and all the calves (five) that received it, and in 50 guinea pigs out of 76. These more particular experiments by Drs. Martin and Woodhead, made with matter that had been identified as tuberculous, add much force to the inference derived from Dr. Martin’s more general experience. They indicate in the material used in feeding the element that is dangerous to the healthy animals which have been fed. We cannot refuse to apply, and we do not hesitate to apply, to the case of the human subject, the evidence thus obtained from a variety of animals that differ widely in the habits of feeding, herbivora, carnivora, omnivora. As regards man, we must believe—and here we find ourselves agreeing with the majority of those who gave evidence before us—that any person who takes tuberculous matter into the body, as food, incurs some risk of acquiring tuberculous disease. By ‘tuberculous matter’ we mean here, of course, that which is capable of giving rise to tuberculosis in lower animals. This matter may be found in parts of animals affected by the disease. It is known to the naked eye by some well marked though various characters and microscopically by the all but certain discovery or characteristic bacilli, the bacilli of tubercle.”

This will show you, gentlemen, the great danger to which people are exposed, who use for food the flesh of animals in which there is the possibility of tuberculous bacilli existing. The milk of animals is another source of communicating the disease to the human subject, and on this I will merely read a few extracts from Dr. Sims Woodhead’s report on this subject. Of certain experiments the report says :

“Of the five tuberculous cows which had udder disease, found post mortem to be of tuberculous nature, three showed him tubercle bacilli in their milk. He could not find tubercle bacilli in the milk of the other two. With milk from the three cows, 15 test animals were fed, with the result of producing tuberculosis in every one of them. With milk from one or other of the same three cows, 13 test animals were inoculated, with the result of all 13 acquiring tuberculous disease. The milk of the fourth cow (one of those which had not shown tubercle bacilli) was used to feed 10 test animals, and produced tuberculosis in four of them. Inoculated into six test animals, all of them became tuberculous. The milk of the fifth cow (in which also no tubercle bacilli had been seen) was used to feed two animals, but without result. Yet, when it was used to inoculate two other animals, both of them acquired tuberculous disease. It remains to note these tests as applied to the milk of the two cows found after slaughter to be suffering under another disease, but not tubercle. The results were: No tubercle bacilli found in the milk of these cows; inoculated into 17 test animals, it did not produce tuberculosis in any one of them; milk from one of the cows, however, in some test animals gave rise to various abscesses.”

The report continues :

“According to our experience, then, the condition required for ensuring to the milk of tuberculous cows the ability to produce tuberculosis in the consumers of their milk, is tuberculous disease of the cow affecting the udder. It should be noted that this affection of the udder is not peculiar to tuberculosis in an advanced stage, but may be found also in mild cases.”

I have already explained that since this report was published, it is generally conceded by scientists that it is not necessary that the udder should be affected.

Further, with reference to this disease, Dr. Martin writes :

“The milk of cows with tuberculosis of the udder possesses a virulence which can only be described as extraordinary. All the animals inoculated showed tuberculosis in its most rapid form.’ Dr. Woodhead, investigating, for his own purposes, the effect of unboiled milk, speaks in similar terms of this virulence of milk derived from tuberculous udders and inoculated into

test animals. The two observers had occasion to use milk from a cow which had tuberculous disease in one quarter only of the udder; and they found the milk from the other three-quarters to be perfectly harmless, on inoculation; but the mixed milk taken from the four teats was to all appearance just as virulent as the milk taken from the diseased quarter. Butter, skimmed milk, buttermilk, obtained from the milk of a cow having tuberculous udder (by the usual processes, but with complete precautions against accidental contamination of articles used in the manufacture) all contained tuberculous matter actively injurious to test animals. And not only this virulence, but the rapidity with which milk can obtain its harmful quality, attracted Dr. Woodhead's attention. He reports: 'A most important point is that the spread of tubercle in the udder goes on with most alarming rapidity; this I was able to observe in the cows constantly under observation, but I have also noticed on several occasions during the interval between fortnightly inspections, carried on along with a veterinary surgeon, that the disease has become distinctly developed. It may be, of course, that the early evidence has been overlooked at the previous inspection; but whether this is the case or not, the spread of the disease was so rapid as to afford very good ground for alarm. The very absence of any definite sign in the earlier stage is one of the greatest dangers of this condition.' And both Dr. Martin and Dr. Woodhead insist that no tuberculous animal of any kind should be allowed to remain in the dairy."

#### MILK AND MEAT FRUITFUL SOURCES OF CONTAGION.

Another of the sources of contagion to a human subject is undoubtedly milk. Milk fresh from cows is frequently used by Canadians and by English-speaking people all over the world, unsterilized, and the result is that large quantities of tuberculous milk are being dispensed in our towns and cities. Butter, unquestionably, will retain bacilli active and alive for three months or more. Cheese to a certain extent also will retain them; but as a rule cheese is usually used in an old state, and there is a liability or probability that the bacilli die. If cheese is kept long enough it is rendered less liable to produce tuberculosis than butter or milk.

Contact and inhalation is unquestionably a very fertile source of disease spreading in the human family. We know that in the consumptive hospitals in Germany the life of nurses is only 6 to 8 years. They may go in there healthy women; but by inhaling the dry sputum, which is in the atmosphere—the dry bacilli floating all around—they rapidly contract the disease and become patients of the hospitals, themselves. With reference to the question which Mr. Sproule has asked as to the sterilization of food, I can say unquestionably that milk, being fluid, lends itself to easy and complete sterilization. If exposed to a temperature at which water boils, milk will become perfectly sterile, and may be injected or eaten without danger of tuberculosis. Unfortunately, it is very seldom that milk is used in this way. It is more generally used in the raw state. With reference to the sterilization of meat, this is always very imperfectly done. You will hear a general statement that if meat is boiled or roasted it becomes sterilized. Such is not the case, because it is very seldom that the deeper portions of a roast are exposed to such a high temperature as is required to destroy the bacilli, and therefore while the bacilli on the surface—and surface bacilli are one of the great dangers we have to contend with whether in meat from tuberculous animals or not—the deeper ones are untouched. Where the disease is localized in the lung or in one of the glands, that meat is perfectly free from tuberculosis.

I want you to remember that one point; in the destruction of animals for tuberculosis it is not absolutely necessary to destroy the meat of all the animals in which tuberculosis is found. It is the practice in France, Germany, Great Britain, the United States, and also the practice of the Department of Agriculture of Canada, to allow the meat to be sold where the disease is localized and not wide-spread; but where it is generalized it is always dangerous. So that one of the dangers to be prevented in dealing with tuberculous animals and meat is this: that the butcher with his knives or saw or hands may smear the surface of a body with tuberculous matter. For instance, in cutting away the tuberculous portions from the cavity of the chest, or wherever it may be, he may split it open with his knife and with that knife may cut the flesh. At all events, a

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smearing over with tuberculous matter is one of those things which should be carefully looked after and the inspectors, or those charged with the supervision of butchers, should see that nothing of this kind is done, but even the superficial smearing of the bacilli is rendered sterilized as a rule by roasting or boiling, even so, I would not say that all cooked meat is safe.

*Effects on children.*—Let me speak of the effects on children. Children fed largely on milk, it may be from a tuberculous mother, that child may contract the disease from the milk. It is not as a rule conveyed from the mother to the child by heredity. This question has been fully established, though this report which I hold in my hand adheres to the theory of heredity of disease.

### PROPAGATION FROM THE SIRE.

*By Mr. Davin :*

Q. How does the bull spread the disease ?

A. By coming in contact and by the seminal fluid. The heredity forms a small part of the means of extending the disease. The experiments of Professor Bangs, in Copenhagen, show that calves may be taken away from diseased mothers, fed on sterilized milk, kept in thoroughly antiseptic places and do well, growing up thoroughly healthy. In the Eastern Townships recently I visited a farmer whose herd was affected by tuberculosis. He intended to have them killed. I advised him to try Professor Bangs's experiment. He kept seven calves from seven diseased cows, and kept them away from their mothers who were never allowed to suckle or lick them, and when I went there to superintend the slaughtering out of his herd, I found one of the calves that gave a reaction. He said to me : "I knew that. With all the other calves I carried out your directions to the letter, but this one was born in the field and was sucking its mother before we got it." This shows that the calf got it from the mother's milk.

*By Hon. Mr. Fisher :*

Q. And the mothers were all tuberculous ?

A. Yes, we slaughtered them all, and found them tuberculous. I repeat that heredity forms a very small part of the means of the spread of this disease, and in the human family a child safe guarded from exposure will be found free from the disease.

### FATALITY FROM TUBERCULOUS MILK.

In children who are affected by tuberculous milk it has been found to produce meningeal tuberculosis. It is often called cerebral meningitis when tubercular meningitis should be added to it. In many cases where a child is said to die of Canadian cholera it will be found to be tuberculosis of the intestines. Many a child pines away and dies, and on examination it will be found to be tuberculous of the mesenteric glands. There is no doubt that a number of the human family contract consumption by taking into the system milk or meat from tuberculous animals. As you are aware, in the large cities of the United States statistics show that at least 8 per cent of the people die from tuberculosis, die from an unquestionably preventable disease. I do not say that there is not by heredity a previous predisposition to disease. With reference to these calves I spoke of a few minutes ago, I would not myself want to have them, because coming from tuberculous parents they have a predisposition, a liability, to contract disease which does not exist in a more robust family of animals.

### DR. KOCH'S DISCOVERY,—TUBERCULIN.

With reference to the diagnosis of the disease this was rather a difficult matter until Koch in his experiments to discover a cure by an anti-toxine gave us the results in the shape of a sterilized preparation from the bacilli which when injected into the animal's body, if tuberculosis is present, produces a rise of several degrees in the tempe-

rature. If tubercle is not present there is no reaction. So, since this discovery by Koch, we have been able to go into a herd and say this animal is tuberculous, and that is not, with reliability in 98 per cent of the cases. It is a remarkable fact that of all the animals we have condemned as a result of the reaction we have not made a single mistake. There was no animal in which we did not find the disease in one stage or the other. You will not always get reactions. If the animal is in an advanced stage of tuberculosis, the system is already so saturated with tuberculin, that you will get no reaction. Fortunately such advanced cases can always be diagnosed by clinical symptoms, and when charts of temperatures and reaction are sent to me for the purpose of deciding, and I find no reaction, yet find the clinical symptoms and the history of the case indicate advanced tuberculosis, I am bound to condemn the animal independent of tuberculin; but in other cases where there are no clinical symptoms, tuberculin will be found reliable in 98 per cent, and as I have already said we have not yet slaughtered an animal in connection with the Department of Agriculture without finding tuberculosis in one stage or another.

#### TUBERCULOSIS IN CANADA.

With reference to the extent of this disease in Canada, if you have a copy of the report of the department, the blue-book, you will find from my report that it does not exist to any very large extent. You will find it in the blue-book and also in a separate form, showing that in the last twelve months not more than 40 reports of tuberculosis cases have reached the department. This is a very small number when we consider that most of these reports are made by members of the veterinary profession and are usually accompanied by a request for employment to deal with the disease. I am satisfied that if the disease existed to any great extent we would have notice of it from the profession, as well as from the owners of the animals. We have less tuberculosis in Canada, relative to the number of cattle in the country, than in any other country in the world, and I feel confident that we have it within our power to exterminate it at a comparatively little cost.

#### PROPOSED METHOD FOR EXTERMINATION OF THE DISEASE IN CANADA.

In my report this year I made a very strong recommendation that Parliament should be asked to vote \$100,000 so that we could take out and destroy the worst herds and worst affected animals in the different herds which are reported to us, and I think \$100,000 will go a long way towards it. In the recent arrangement with the United States, entered into between the Minister of Agriculture and the Secretary of Agriculture of the United States, for the removal of the quarantine between the two countries, it was made a *sine qua non* that all cattle should be tested when brought in from either country for breeding purposes. Now, gentlemen, that regulation has had this effect, it has led owners of thoroughbred herds, who have a large market in the United States, to have their herds tested, and that will constitute a very large number of our cattle. That will not cost the Government anything. Then, I find every day, that men are awakening to their own interest and breeders of stock are becoming alive to the fact that they are running great risks in bringing into their herds animals that have not been tested, and very few will take the risk of bringing a new animal in without first testing it. That will be an advantage which will cost the Government nothing. In cities and towns where animals are kept, the head of a family will no more think of taking a cow to feed the family on without first having it tested than he would think of placing a loaded pistol in the hands of his child. The people are therefore coming to understand the necessities of the case, and I think the placing of \$100,000 in the Estimates, a mere bagatelle, considering the importance of the live stock trade in Canada. It is most important, when we consider the beef, meat and dairy products, so that in my estimation \$100,000 dwarfs into insignificance, compared with the benefits to be derived from the expenditure, and I hope you will see it in this light, and will, as members of Parliament, use your influence with the Government to see that this matter, which has such a great bearing upon the farmers of Canada, and upon every man who keeps an animal, is attended to.

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### PRESENT DIFFICULTIES IN DEALING WITH THE DISEASE.

Now, I refer, as an officer of the department, to the great difficulty we experience in dealing with tuberculosis. We receive frequent letters. For instance, here is an illustration, a letter received by the Minister, which will form an illustration of the kind of letters we receive:—"I beg to bring to your notice a case of tuberculosis which I feel quite sure you will regard as of peculiar hardship to the owner of the herd." This gentleman who writes has a creamery, and it was reported to me that one of his clients had tuberculosis in his herd. This man was a poor man and could not afford to employ a veterinary to examine his herd, and the owner of the creamery, the writer of this letter, employed one who made a report and found that the disease was actually tuberculosis in an advanced stage, and now this gentleman writes to the Minister and urges that something should be done in such a case, because he says he cannot take the milk from this poor man and cannot risk producing dangerous butter or cheese or other products. The result is that this man will probably have to have his farm quarantined under the Contagious Diseases Animals Act, which distinctly provides that when the inspector is informed of the existence of a contagious disease, he shall send a declaration to the Minister and serve a notice to the owner and place the farm in quarantine, to prevent the animals being removed from that farm.

Now, here is the position: The Minister of Agriculture is bound by law to deal with it. He is bound to order me to place that farm under quarantine. That poor man will be prohibited from selling his milk or moving a single animal from his farm, and the Minister of Agriculture can go no further, because he has no funds to deal with it. I claim that this is not fair. Here is a poor man making his living out of his cattle. He is unfortunate; this disease, without his knowing anything about it, without his having done anything to bring it into his herd, is discovered in his herd. His means of livelihood and of supporting his family are taken away by the provisions of the Quarantine Act. Because I do not want the disease from his cattle to be communicated to my family or my herd, and you do not want the disease, is it not fair that you and I should contribute something to indemnify that man for the loss he is put to? You will all agree with this, and yet this is happening daily to myself and to the Minister of Agriculture. We can do nothing but carry out the law, put the farmer under quarantine, and go no further. Now, gentlemen, one very important suggestion I would make to you, is that means be devised by which this subject may be brought tersely and concisely before the owners of live stock throughout the Dominion. I think if we could manage to educate the people, let them know the nature of the disease, let them know how it is introduced, and how dangerous it is to their families and their herds, that will be one step in the right direction, and will simplify very materially the action which must before long be taken by the Government to rid Canada of this its only cattle plague.

There is no question whatever that the British public will not very much longer tolerate the feeding of their people with milk, butter and cheese from tuberculous animals, and there is to-day fifty per cent of the herds in Great Britain affected by this disease. When the time comes when tuberculosis is to be exterminated from the herds of Great Britain where are they to replenish from? Let us get rid of the disease. We can do it in a very few years at a trifling cost, and they will come to Canada, because we will have the very cattle they want. The Scotch farmers knew that, when we were allowed to carry stockers over there. We have imported from Great Britain the very best blood which they have had, and when Great Britain wants to replenish her herds Canada will do it, provided we purge ourselves of this scourge, this plague, the only plague worth speaking of in connection with live stock in Canada.

*By Mr. Wilson:*

Q. It is not very extensive, is it?

A. It is not at all extensive.

*By Mr. Rogers :*

Q. What would you recommend when the herds are quarantined?

A. They would have to be destroyed. If the animals are slaughtered under the supervision of the inspector, he will determine what is fit for food.

Q. Is there a possibility of fattening these animals?

A. Yes; these animals will fatten readily, and it may be impossible to say there is anything the matter with them except by the tuberculin test.

*By Mr. Meigs :*

Q. Does salting the meat kill the bacillus?

A. No; salting does not.

*By Mr. McMillan :*

Q. What amount of remuneration, according to the value of the animal, would you advise?

A. I would advise 50 per cent of the health value of the animal.

*By Mr. Sproule :*

Q. This, then, is the purpose for which you would advise that \$100,000 be set aside?

A. Yes.

Q. Do you think it would be necessary to continue that for a succession of years—three or four years perhaps?

A. Yes; three or four years. I do not think it would take \$100,000 a year. I think, for compensation and administration, \$100,000 would enable us to deal with all the badly affected herds. I may say that I travel almost from ocean to ocean frequently, and I know thoroughly the condition of the health of the animals of the farmers in the different sections of Canada. You would be surprised, if we had any means of giving the statistics of the number of tuberculous herds in Canada, how small a number of affected herds there are; yet we have the disease in Prince Albert district and in Nova Scotia; we have it all over the Dominion, but to a limited extent. I am quite satisfied, if we took out all the badly diseased herds we know of or could trace, we could do that within \$100,000, and the expenditure after that, I am satisfied, could be kept within \$50,000 for a few years. I feel perfectly confident, and could almost stake my reputation that we could rid Canada of this disease for a small amount and in a comparatively few number of years, because we are not like any other country; we have to deal with a far more intelligent class of people. Our farmers from ocean to ocean are, as a rule, educated men, men of intelligence. It is different from some of those Continental countries where the farmers are not educated men. The question of selling tuberculous meat, for instance, was discussed this morning; tuberculous meat would scarcely be bought in Canada. It is sold readily in Germany and France, where there are congested populations, and many poor people in the populous centres, who can only afford to eat meat when obtainable cheaply; but Canadians would not think of eating it, no matter who inspected it, or what assurance they had that there was no danger in eating it. Canadians would never buy that meat; they are too intelligent and too well off.

*By Mr. Sproule :*

Q. What means would you suggest for ascertaining the animals affected in the different herds and stamping out the disease?

A. First, I would take out all the badly affected ones, and make a clinical examination, and then subject the balance of them to the tuberculin test. Take them out and test the herd again in a year, if any more were found; but that must be followed by a thorough disinfection.

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Q. Would it be well to have some compulsory law, making it necessary to test all herds?

A. I do not think it would be advisable to begin with that. I think the intelligence of the people themselves when they get to know it, would render that unnecessary.

*By Mr. McGregor :*

Q. What would be the probable cost of testing an animal with tuberculine?

A. The actual cost of tuberculine is about 15 cents a test, and it would depend upon the number of animals tested. It would go about 50 cents a head probably.

Mr. SPROULE.—This does not seem to be the biggest trouble. One man has a herd of thoroughbred cattle; he is afraid of his life to let them be tested for fear it gets out that there is tuberculous disease in his animals. It stops the sale of them, and without some compulsory law it would be difficult to reach them.

Mr. MCGREGOR.—We had a herd in the county I live in. I saw one of the animals, and I said to the man who owned the herd, that I thought it had tuberculosis. He asked me: "What pay will I get if I destroy the herd?" I said: "I do not think you will get any pay." He smothered it for seven months and then the animals were destroyed. If we paid 50 per cent of the value the owner would not be so liable to cover up the disease. If he gets no pay for any portion of his herd that should be destroyed, there is no doubt he will try to fatten and sell them to the butchers, notwithstanding the disease.

Mr. McMILLAN.—Just before I left home, a case was brought to my notice where an animal had to be destroyed. I think myself that if the disease is to be stamped out, something of this kind must be done to allow the owners to get 50 per cent of the value. The man in question was poor. He was just a tenant living on a rented farm, and was struggling to get along. It would be a great hardship if this man's whole herd had to be slaughtered. Where it is found that there is a diseased animal in the herd, I think it should be imperative that the whole herd be tested. If you would recommend, Professor, that any person purchasing a male, should not only have that animal tested itself, but the dam of the animal and the herd that it came from, I think that would be one of the means of stamping out the disease, for according to the statement of the Professor the disease is generally spread through the male animals brought into the herd.

Mr. MCGREGOR.—If you purchased in England, you would have to waste a great deal of time before you obtained these tests.

Mr. McMILLAN.—I believe that it is in the interest of the country that we should be able to get some of the best blood of the improved breeds of Great Britain. Would it be right to provide that a male animal brought in, should not only be tested; but that the herd from which it came should be tested? If we found that the animal was free from disease, would it be advisable to let the farmer take it home and there quarantine it for a length of time? You cannot get men to purchase improved animals as long as this ninety-day quarantine continues.

Mr. SPROULE.—They have to be tested now.

Mr. McMILLAN.—Yes; but they never test the herd from which they come.

Mr. SPROULE.—If we want to reach this, there is one way we must reach it, and in the interest of the health of the community it must be considered whether we should make it compulsory to have all herds of dairy cattle tested, especially dairy cows supplying milk to cities and towns. It should be compulsory on every one keeping pedigreed stock, that one of the conditions of the pedigree should be that the animal was tested before sale with tuberculine to show that it was healthy. Then you would reach the source from which stock is supplied and kept up.

Mr. McMILLAN.—Not only the animal but the herd should be tested.

Mr. SPROULE.—When you give a certificate it should be all right.

Hon. Mr. FISHER, DOMINION MINISTER OF AGRICULTURE.—I am sorry to say that I have to go to Council; but before leaving I want to say a very few words on this important subject. I may say that since I have been in office, it has come forcibly to my attention all the time. The attention of the people in the country generally is more turned to this question of tuberculosis than ever it was in times past, and I have large masses of correspondence before me in regard to it. Veterinary Surgeons through the country are constantly reporting cases where they think there is tuberculosis and asking if the law requires, under these circumstances, that they should go and test these animals. I feel myself, strongly, that there is no use of our attempting to go ahead of public opinion in this matter; there is no use of our trying to force public opinion. I am aware, as most of you are, that several local health boards have passed stringent regulations which they have not been able to carry out. You may be aware that in the State of Massachusetts, the Government set apart a large sum and set to work by law, to test all herds of cattle in the State. They began, but had to give it up, for they simply could not do it. I don't think the state of public opinion in Canada is ripe for that. At the same time I think that public opinion in Canada is ready for some action in the matter, tending to bring up cases of this and to tempt people to make the tests and slaughter where necessary, and so try to rid our herds and the cattle of the country of this disease. At present, the law actually discourages our people from finding out whether their cattle have tuberculosis or not.

Now, it seems to me that the first thing to do is to encourage the whole people to find out the condition of their stock in this regard. The proposal to give compensation, is, I think, the only way in which we can do that effectively. The sum proposed by Dr. McEachran is a large one. I think that if this plan was to be started quite on the voluntary system, that is, inviting people to test their herds and find out their condition, we would not require, for the first year at all events, that sum. At first, some people might shrink from that; but if we give a fair proportion of compensation I know many people who would test their herds, and I know also many instances where the number of animals to be slaughtered would be small. I do not understand from those who have studied the disease from a professional standpoint, that because an animal has come in contact with others or rubbed against them, there is a danger to public health. There is a danger, of course, that animals in the same byre or field may have contracted the disease; but the test would show that, and where we would find animals that have not contracted the disease, so far as public health is concerned, they are just as good as any others. We might, in some herds, find a few animals diseased and have them slaughtered, giving compensation for them; but the others would be all right. Take the case that Dr. McEachran mentioned. A poor man had two animals diseased and the other patrons of the factory to which he sent his milk said, "Don't let him send his milk any more," and still the other animals were perfectly safe. In such a case, the man tests the others, and we hope that some of them will be found to be healthy. The milk of those he can send to the factory; but the milk of the others he certainly should not. In this, let me say, I see one of the most important effects of the co-operative dairy. The largest proportion of the milk of this country is now being made up into butter and cheese in co-operative factories. That milk when brought to them is cooled in large vats.

The skim milk or whey taken off after the butter or cheese is made, is put in a common vat, and the milk of one or two tuberculous cows will thus endanger the health of all the herds, because the skim milk or whey is taken back to the farms and fed to calves, and so you never can tell which herd of all the patrons of the factory may receive the bacilli, conveyed in the whey so taken back. I look on this fact as one of the most important in connection with the spread of the disease, and it brings home to us more, than anything before, the absolute necessity of stamping out the disease. I may say that in one district with which I am closely acquainted for years a tuberculous herd took milk to a creamery.

At one time, when a bull was taken into the district some years ago, there was no tuberculosis; but now the district is full of it, and it is evident that milk from that particular herd was brought to the creamery, and the skim milk taken from the creamery spread the disease around.

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The point I want to draw attention to is this: That I don't think public opinion is ready for forced test in all instances; but I think we ought to try and arrange a law, and ask the veterinary profession, and if necessary ask all departments of agriculture in the country, to encourage the work of testing and finding out tuberculous animals, and provide some means whereby their slaughter might be brought about without doing injury to the rural interests of the country at large. How that may be brought about, I have not worked out to my satisfaction. It seems a matter of great difficulty, and while the plan proposed by Dr. McEachran seems fair, I think any elaborate system that would involve such an enormous charge would frighten all those not possessed, as we are, of the necessities of the case. If everyone in the House and in the country thought as we do, it would be all right. Parliament would then readily give \$100,000; but I fear, if we were to ask \$100,000 from Parliament to-day, whether we could pass a vote like that. I am not sure but if we made the matter a question of volunteering, whether we would need such a sum as that. I think perhaps by starting in that way, public opinion and feeling would be aroused on that matter, and we would find that we would be able to accomplish our end; but we would have to go through an educative process.

Mr. SPROULE.—Would you need \$100,000 the first year?

Mr. FISHER.—I don't think so.

Mr. SPROULE.—There is now a schedule made out of compensation where animals are slaughtered. Is tuberculosis included in that clause?

Mr. FISHER.—Compensation can be given; but it is left in the discretion of the Minister of Agriculture. No compensation has been given heretofore, and it would be a new departure; but beside that there is no money voted for it.

Mr. SPROULE.—But the law allows it.

Mr. FISHER.—Yes.

Mr. SPROULE.—My opinion is that we have a law already since ten or fifteen years ago; but it was never acted on. There was no money available and therefore no money paid to any parties whose herds or animals were slaughtered. But it seems to me that it only requires a regulation of the Department of Agriculture to put it in force, and a sum put in the estimates to enable compensation to be given.

Mr. TALBOT.—What would be the protection of a neighbor against his neighbor, where he suspects there are animals affected with tuberculosis?

Mr. FISHER.—Where he only suspects the disease he has no protection; but where he thought there was disease he should report the case and the Minister of Agriculture is bound to investigate it. If a herd or an animal is suffering from tuberculosis, there is a penalty for a man keeping them, under the law. He is bound to the penalty; but I don't think it has been put in force anywhere yet. It is a portion of The Contagious Diseases Animals Act. If he keeps animals at large or sells them, there is a penalty. If he keeps the animals in isolation there is no penalty.

Mr. MEIGS.—Since in cheese kept for three or four months the bacilli die, would it not be the same with salt meat?

Dr. McEACHRAN.—It is supposed to live for fully 3 months.

Mr. MEIGS.—Well if pork is kept three months in salt wouldn't that be all right?

Dr. McEACHRAN.—Yes.

Mr. SEMPLE.—What percentage of compensation is allowed in other countries, where there is such a provision?

Mr. FISHER.—It is different in different places.

Hon. Mr. DRYDEN, PROVINCIAL MINISTER OF AGRICULTURE, ONTARIO, being present, was called on and addressed the Committee, as follows:—

Mr. Chairman, I am much obliged for your kindness in asking me to say a word as to this question. It interests me very much, for two reasons, first as the Head of the Department of Agriculture in the Province most affected, and secondly being a farmer myself I am personally interested in this matter. I have been very much interested in the remarks made by Dr. McEachran. I do not think he has sought to minimize the danger. It rather occurred to me while he was talking that the wonder was that any of us were alive if the dangers were so great as he represented. We have these diseases because we have cattle. He is right in saying that we have probably less in proportion to the number of cattle than you will find in Europe, Great Britain or possibly the United States. Perhaps the conditions under which our cattle are kept may have something to do with it. The desire to exterminate or prevent the spread of this disease is a laudable one and the legislature should lend its influence to the accomplishment of this object. How to do it is the question. I do not wonder that the Minister, (Hon. Mr. Fisher,) has not been able to formulate any scheme that would work out successfully without doing injury to other interests.

As to the question how does it spread I think Dr. McEachran has stated the case correctly. It spreads in several ways. Young animals do not inherit the disease from the dam as frequently as we have been led to suppose. The milk does sometimes give it to the off-spring. I think the chief causes are, personal contact and inhaling the germs of the disease breathed or coughed up by the animal in an adjoining stall in the same stable.

Dr. McEachran has correctly spoken of the bulls carrying it to some of the herds. My own observation has led me to suppose that is the case. The question is can we, by some scheme—some educative scheme probably—induce our people to take such steps as will in the near future rid the country of this disease. You cannot do it without the use of tuberculin, but the trouble is that this test is neither absolute nor definite. Sometimes animals that have the disease and are subjected to the test, will not react. It is claimed that sometimes reactions take place from some other cause. I believe there is a small percentage of cases where the test is not absolute, yet it is sufficiently absolute to warrant us in depending upon it largely, but still it is not definite as to the advanced stage of the disease. Animals which have just received the germ of this disease will respond to the test, yet the animal is not certainly sick in any sense. I have seen animals killed after they had the usual reaction to a considerable extent, and were, we thought, diseased in an advanced stage, and when the animal was killed and examined by experts with microscope they failed to discover any disease at all.

#### A PROCESS OF EDUCATION OF STOCK RAISERS.

In one case an animal was sent from the Agricultural College at Guelph to Dr. Smith at Toronto, to be dissected by his students. It was a young two year-old heifer tested two or three times and showed a very high reaction. They wanted a suitable subject, and we thought this would be one. The animal was taken there and slaughtered, and experts were called together, and on examination they failed to find any trace of disease, but they did find one of the glands in the neck which did not seem to be really healthy. It was taken away to one of the laboratories, and when the expert applied a more powerful microscope he discovered the germ of the disease. Why should that animal be thrown away? The disease might never have developed. It might never have amounted to anything, although the animal lived for years and years, unless it was thrown into special circumstances that would cause the development of the germ. So, my judgment is that to try by tuberculin test, to determine the slaughtering of every animal which responds to this test would be wilful destruction of people's property, and one would not feel warranted in taking such steps as you propose to exterminate by slaughter in this way.

*Disinfection.*—As Dr. McEachran has stated, and he did not place as much emphasis on it as I would, unless you attend to the disinfection of stables and avoid mixing healthy and diseased animals, you will find that in the end you will have to resort to more severe measures of protection. Some stables will become so infected that you must burn down

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your buildings to clean it out. I have thought a better plan would be to adopt a process of education among the people. I do not like to frighten the people. If you publish the statements of Dr. McEachran, many people will become unduly alarmed and afraid to drink milk, eat meat or use butter, and all that sort of thing. There is not so much danger as we might be led to expect from hearing these alarming statements. At the same time, it is desirable to rid ourselves of this disease. If in doing so it is desirable to use this test, there is no reason why every intelligent farmer should not use it for himself, taking the temperature before the injection, and after making the injection of the tuberculin as well. It is a very simple process, and we should encourage our farmers to undertake to provide the test themselves. Suppose I get an official to test them and he finds among a herd of 40 or 50 animals one or two which show reaction, what happens? No one will come to me to buy an animal at all. My business is destroyed when there is no real occasion for it. That is the reason why our people do not call in a veterinary, and do not do it themselves, because of this fear. If we can do away with this, and encourage them to make the test with a view of discarding diseased animals, it is a desirable thing to do. So strongly have I felt in this matter, that I ask for a little increase of the grant from the Ontario Legislature, for the purpose of manufacturing tuberculin. My theory is, if our farmers will do as I have suggested, I will undertake to give them this tuberculin free of cost so as to make it as easy as possible. I do not see why the whole country should not assist the farmer in this way, to get rid of the disease. I think our farmers should have information given to them, in the form of bulletins or something of that sort, showing all these dangers of contamination, the points the Doctor has brought out, and by these means to get rid of the disease.

Education has done a great deal, even in Great Britain. I have a little bulletin published in Great Britain giving details of what has been done in one of the prominent herds of that country, where a considerable portion of the animals were diseased, showing reactions where the tuberculin was injected. This man, who is a prominent man and a member of Parliament, has by the use of the tuberculin himself, been able to get rid of the disease in the entire herd. He first separated the animals which showed a reaction. Some of them by clinical investigation showing an advanced stage, he destroyed at once. The others were left in a separate place, and he took the calves away from their dams, kept in two distinct stables, one diseased and one not. Out of 11 calves from these diseased cows every one of them was brought up, some of them are two and three years old, and are perfectly healthy, having been tested two or three times. Professor Bangs' experiment showed the same thing, that the disease is not inherited by the calves except in occasional cases, and that a large percentage of the calves, if kept separate, would grow up healthy. If this is true should we not allow the farmers to try to rid their herds of the disease in this way? Your law would make it compulsory. Suppose I tested it in my own herds. You can easily tell when an animal is in an advanced stage. If I am to be pounced on by that law, and told you must not dare sell any of these animals, destroy them, burn, get them out of the way, I am going to suffer. I think there is no reason for that, because many of them are as good for beef as they would have been before the germ was received, unless the disease is so far advanced as to affect the organs of the animals, there is no danger to any one eating meat of this sort. Of one thing I am certain, we eat it every day. There is no reason why I should be put in a different position if I want to test the animals myself.

If you are going to undertake a general inspection your \$100,000 will not go very far. I think there are a good many inspectors wanting jobs, and you will find a good many reports of that kind, received by the Minister, from people who report the disease in order to get the job of examination. Our farmers have difficulty enough to get along as it is, and it is not desirable to impose any further burdens than is absolutely necessary. They have intelligence and public spirit enough to aid you in getting rid of the disease by working along this line. I have been frightened of your law, Mr. Minister. If it was not for that I could send the veterinary at Guelph College out with the tuberculin to make tests, where the farmers wish it

themselves, and I would do it free of cost, but I do not, if the cattle show reaction, like the idea of you taking these men by the throat compelling wholesale slaughter, and thus doing what seems to most people to be a wilful destruction of their property, without even then accomplishing the end in view.

Now, you must have disinfection if you are going to get rid of the disease; the separation of the animals, the healthy from the diseased, ought to be attended to, and if we can get our people to do it at once, so much the better. There will be people who will not do this, and if so, I do not see why you should not go on with your law. This will be a good thing that has been suggested, that I should not be allowed to sell a male animal to go into another herd unless he has been tested. Perhaps we might go further and say that all breeding animals should be tested. If you take that ground, you will compel people, without doing it directly, to use the tuberculin and test their cattle in this way. These are some of the directions in which, in my judgment, we ought to go in this country, and I believe in the conciliatory way, or, as one of your great leaders has taught, that conciliation is better than coercion. I think it is in this case, and I think we will get on better and faster if we adopt this course, than if we adopt the extreme course of compelling people to slaughter their animals wholesale, which will mean such a burden to the country that a good many people will be found crying out against it.

Mr. TALBOT.—Do you think that the proposal that no breeding cattle should be sold from a herd unless tested is advisable?

Mr. DRYDEN.—I did not propose that we should do that now. I proposed now that you might give information and conduct an educative process, and that in the course of a few years when they had their herds in shape, you might adopt this law. I do not think it is desirable now. If I find one animal in my herd that shows a reaction, and it is published abroad, then my business is destroyed. There is no need of that. It is not doing any good particularly, and I don't think that you ought to take any course which would have a tendency in that direction.

Mr. MCGREGOR.—You can have an animal tested in your herd without it being made public. For instance, if Dr. Douglass wanted to take an animal into the Northwest, he would say, "I would like to have that animal tested." You could send a veterinary to test the animal without doing your herd any great harm.

Mr. DRYDEN.—I do not think so. The trouble is this: Suppose a veterinary goes into my herd to test it. He will tell his wife or some one, and it gets out. Then some friend will say, "You were up to Dryden's testing one of his animals. How did it turn out?" The veterinary would reply: "I do not want to say anything about it." That is enough. If a man makes an answer like that, it is suggestive enough, and the next man will say: "I guess this animal has tuberculosis." Thus the rumour gets out, and is spread abroad.

Mr. TALBOT.—The fact of the veterinary going there is quite sufficient for the neighbours to surmise upon.

Mr. DOUGLAS.—Why not enact a statute to compel all breeders to use a certificate of examination declaring their stock to be free from this disease. That would do away with any suspicion, because if every breeder was compelled to furnish that certificate, no one would be at all curious to find out if a veterinary had tested a certain herd, because the law would require it in all cases. That would be a step in advance, and do away with the objection that has been hinted at, of arousing suspicion and doing injury to the herd. Make no discrimination. Where men are in the business, as many are in this country, of producing animals for breeding purposes, if this were applied to all such herds there could be no suspicion awakened by the visit of the veterinary under such circumstances.

Mr. FISHER.—I do not think we will need any law to be adopted. In less than six months or a year from now no man will buy an animal that has not been tested. Public

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opinion will supply the remedy. I think that what Mr. Dryden has said is very valuable advice in regard to this matter. I am very glad to hear that he has an arrangement with the Guelph Agricultural College for supplying tuberculin. I have instructed Dr. McEachran, as chief veterinary inspector, wherever cases are brought to his attention to treat these animals at the Government's expense. We have been paying for that out of the quarantine vote. I think it is a step in the right direction, and certainly ought to be extended further. The arrangement made with the United States, by which animals for breeding purposes, or dairy purposes, going into that country require to be tested before they go there, has already caused the testing of a large number of herds in our country. Of course, what Mr. Dryden says about the reputation of a man's herd being affected if one of his animals is tested, is a point to be considered; but I do not think that he will suffer if full publicity is given to the test. I had my herd tested the other day. I found, fortunately, that every animal in the herd was all right, and I published it plainly to everybody around. If I had found that two or three were not all right, I would have slaughtered them, and then I would have been able to say that the rest are all right.

Mr. MCGREGOR.—Mr. Dryden would never have bought from your herd.

Mr. FISHER.—Yes, he would; because he would have known that the animals in question had been slaughtered, and that the rest of my herd had been tested and were all right.

Mr. WILSON.—But these infected animals would have been associating with the others.

Mr. FISHER.—That might be, but if they were taken away from among the others they would be all right. The fact that one tuberculous animal had been in the byers before would be no proof of the disease, as the stage and duration of the disease can be ascertained by the veterinarian.

An interesting experiment occurred the other day. A man bought an old cow, passing along the road, for two dollars. He put that old cow into his barn, where he had ten other cows. The old cow died in a little while. He called in an inspector, and nine of the other animals were found to be tuberculous; and the inspector said that all these animals had been infected within a month or two. The veterinarians can tell the stage of the disease, or nearly so, in every instance.

Mr. DRYDEN.—You could not tell without slaughtering them?

Mr. FISHER.—No; but having slaughtered them he could tell. That merely shows that the reaction takes place in the earliest stages of the disease. I think, Professor McEachern, that is a fact? It is well known that the reaction is sometimes the most effective in cases where the disease is slight. The amount of the reaction is not in keeping with the amount of the disease.

Mr. McMILLAN.—There is one suggestion that is being thrown out, and I think the farmer will take advantage of it. That is, having young men who intend to follow farming, acquaint themselves with the method of applying the test. Supposing a man were to send his son to the Agricultural College at Guelph, would he get lessons in the method of administering the test?

Mr. DRYDEN.—Yes; but the teaching of any intelligent man will not take half an hour. I would not like everybody to make an official inspection. This is only for educational purposes; for a man's own private use.

Having examined the preceding transcript of my evidence, I find it correct in so far as my own remarks are reported.

JOHN DRYDEN.

*Minister of Agriculture, Ontario.*

COMMITTEE ROOM 46, HOUSE OF COMMONS,  
Wednesday, May 26th, 1897.

The Select Standing Committee on Agriculture and Colonization met this day at 10.40 o'clock a.m., Mr. Bain, Chairman, presiding.

Dr. McEachran, Chief Inspector of Quarantines for the Department of Agriculture was present by request, and by invitation addressed the Committee as follows:—

INTERNATIONAL QUARANTINE RECIPROCITY.

Mr. Chairman and Gentlemen of the Committee:—As I was not informed as to the special subject I should take up this morning, the Chairman has suggested that I should state the nature of the changes recently made in the regulations regarding quarantine between Canada and the United States. Since the establishment of the quarantine between Canada and the United States there was lost to the breeders of thoroughbred stock in Canada a very large and valuable market, because animals intended for the United States had to be placed in quarantine on their entry into that country, and kept there three months. It was represented strongly by exporters of cattle and by the owners of steamship lines that the condition of affairs existing prior to December last, barred our railways and vessels from carrying a large number of live stock to be shipped to Great Britain from the United States, through our ports. Representations were also made to the government of Canada as to the necessity for some amelioration of international quarantine regulations, and it was decided by the Government that the Minister of Agriculture should visit Washington for the purpose of discussing the matter with the Secretary of Agriculture there. I was requested by the Minister to accompany him to Washington, and the visit resulted in an agreement under which quarantine has been entirely removed, and cattle can now enter the United States without being subjected to the ninety days quarantine which, up to December last, they were required to undergo. Nothing, however, has been left undone in these regulations to provide for the absolute safety and the prevention of the introduction of disease from Canada to the United States, or from United States to Canada. In the case of thoroughbred cattle or cattle for breeding purposes, it was arranged that they must first be subjected to the tuberculin test before importation. If not they are detained for fifteen days on either side and subjected to the tuberculine test. Cattle for ranching purposes and for export—comprising the large bulk from Canada—pass into the United States on simple inspection, thus making it possible for breeders of thoroughbred cattle to regain the large market in the United States, and for American exporters of live stock to use Canadian ports and steamships, which is considered a very great advantage.

The basis of the arrangement was well discussed by the Minister and thoroughly understood before going to Washington, and the agreement was drawn up very largely on the suggestions made by the Minister and myself. In fact, the American Secretary of Agriculture was extremely courteous to us in the matter and gave us almost everything we asked. The arrangement is of course for the mutual benefit of both countries, but we had a feeling that if either country had the better bargain, Canada had, and that is now known to be pretty generally the case. The agreement was published in the press last January, and I have a copy of it here, and if the Committee desire it, I will read it.

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ARTICLES OF AGREEMENT IN RELATION TO INTERNATIONAL ANIMAL QUARANTINE, ENTERED INTO BY THE HONOURABLE SYDNEY FISHER, MINISTER OF AGRICULTURE FOR THE DOMINION, REPRESENTING THE GOVERNMENT OF CANADA, AND THE HONOURABLE J. STIRLING MORTON, SECRETARY OF THE DEPARTMENT OF AGRICULTURE AT WASHINGTON, REPRESENTING THE GOVERNMENT OF THE UNITED STATES, SIGNED ON THE 18TH DECEMBER 1896.

Each country to accept the veterinary certificates of the other, but only from inspectors who are regular graduates of recognized Veterinary Colleges.

The Chief of the Bureau of Animal Industry, and the Chief Inspector of Stock for Canada, will mutually inform one another of any outbreak of contagious disease in either country, so that necessary precautions may be adopted to prevent the introduction of disease, from the infected district. They will also inform one another of the discovery of any disease in animals, imported from either country, so as to enable the source of infection to be traced.

A quarantine of 90 days shall be enforced by both countries upon all cattle imported from Europe or from any country in which contagious pleuro-pneumonia is known to exist; a quarantine of 15 days shall be enforced upon all ruminants and swine imported from countries in which foot-and-mouth disease has existed during the six months preceding such importation; and a quarantine of 15 days shall be enforced upon all swine imported from all countries other than the United States and Canada.

Animals shipped to either country for exportation or other purposes will be subject to all the local regulations applying to the animals of that country.

### BREEDING STOCK.

*Cattle.*—All cattle to be admitted for breeding purposes shall be accompanied by:—

(a.) A declaration made by the importer that they are actually for breeding and no other purposes.

(b.) A certificate signed by a government veterinarian that they have been subjected to the tuberculin test, and found free from tuberculosis. Such certificate must show the date of testing and chart of reaction with a description of the animal, giving age and markings. The importer may be required to swear that the certificate refers to the animal represented.

(c.) When not accompanied by such certificates the animal or animals must be detained in quarantine one week and subjected to the tuberculin test.

(d.) Should they be found tuberculous they must be returned to the country from which shipped or slaughtered without compensation.

### FAT CATTLE AND CATTLE FOR FEEDING, INCLUDING RANGE CATTLE FOR STOCK RANCHES.

This class of animals shall be accompanied by a certificate of inspection, signed by an official veterinarian showing that the animals are free from contagious disease, and that no contagious disease of cattle (excepting tuberculosis) exists in the district whence they came.

### CATTLE IN TRANSIT

Will be admitted to any part of the United States and Canada for transit to any part of the United States and Canada in bond, and cattle will be admitted to Canada in bond for transit to any Canadian port for exportation by sea, to Europe or elsewhere. Such cattle to be subject to inspection at the Canadian port of shipment. Cattle will be admitted to the United States in the same manner for export from Portland, Me., Boston and New York.

## SETTLERS' CATTLE.

Settlers' cattle, when accompanied by certificates of health to be admitted without detention ; when not so accompanied they must be inspected. Inspectors may subject any cattle showing symptoms of tuberculosis, to the tuberculin test, before allowing them to enter.

Any cattle found tuberculous to be returned or killed without indemnity.

## CLEANSING CARS.

No cattle or other species of animals covered by this memorandum are to be allowed to be placed on board cars till the litter from the previous load has been removed and the car whitewashed with lime and carbolic acid—one pound of commercial carbolic acid to 5 gallons of lime wash. Shippers may object to place their animals on uncleaned cars, and may lodge a complaint with the nearest Inspector who will cause such cars to be cleaned as above at the expense of the railway company, or prohibit their use till this regulation is complied with.

## SHEEP.

Sheep for breeding and feeding purposes may be admitted subject to inspection at port of entry and must be accompanied by a certificate signed by a government inspector, that sheep scab has not existed in the district in which they have been fed, for six months preceding the date of importation. If disease is discovered to exist in them they may be returned or slaughtered.

Sheep will be admitted for transit in bond from one port to another in each country.

Sheep for slaughter will be admitted without certification or inspection. Sheep will be admitted to Canada for transit to any shipping port in Canada for export by sea to Europe or elsewhere, but will be subject to inspection at the shipping port ; they will be admitted on same conditions to the United States for export from Portland, Boston and New York.

## SWINE.

Swine may be admitted for breeding purposes subject to a quarantine of fifteen days. Swine may be admitted to Canada for slaughter, in bonded cars, to bonded slaughter houses, without inspection. Swine may be admitted to the United States for slaughter on inspection at port of entry. Swine may be admitted when forming part of settlers' effects, when accompanied by a certificate that swine plague or hog cholera have not existed in the district whence they came for six months preceding the date of shipment ; when not accompanied by such certificate they must be subject to inspection at port of entry. If found diseased to be slaughtered without compensation.

## HORSES.

Horses may be admitted for transit in bond from one United States port to another without inspection, and from one Canadian port to another in the same manner. Horses may be admitted to the United States and Canada for transit in bond, to any shipping port for export by sea to Europe or elsewhere, subject to inspection at the shipping port.

Horses may be admitted for racing, show, exhibition or breeding purposes on inspection at the port of entry.

Horses may be admitted for temporary stay, teaming or pleasure driving at points along the frontier for a period not exceeding one week, on permit by the customs officer at port of entry, such permit may be extended for one week but no longer. Should he observe nasal discharges or other evidence of disease he may detain the animals and report the circumstances to the district inspector who will decide whether the animal will be admitted or not.

## Agriculture and Colonization.

Horses may be admitted for general purposes, for sale, or for stocking ranches ; and also cow ponies for cattle ranches, or horses which form part of settlers' effects, on inspection at port of entry only.

Horses used for riding or driving to or from points in Manitoba, North-west Territories or British Columbia, on business in connection with stock raising or mining, and horses belonging to Indian tribes may be admitted without inspection, but must report to customs officer both when going out and coming in.

Horses may be admitted for pasturing or winter feeding, on inspection at the port of entry.

The foregoing regulations regarding the exportation of all cattle and live stock from the United States into Canada and from Canada into the United States have been thoroughly examined by the undersigned, and they hereby certify that they will officially recognize and enforce the same to the best of their ability.

(Sgd.) J. STERLING MORTON,  
*Secretary of the United States Department of Agriculture.*

(Sgd.) SYDNEY FISHER,  
*Minister of Agriculture for the Dominion of Canada.*

Dated at Washington, D.C., December 18th, 1896.

With regard to the third paragraph enforcing quarantine upon cattle imported from Europe or any country in which contagious pleuro-pneumonia is known to exist, I may say that in Great Britain pleuro-pneumonia has been discovered on three occasions within the last six months, and only recently discovered near London.

Referring to the paragraph respecting fat cattle and contagious disease, we subsequently by correspondence added to the tuberculosis exception, actinomycosis, as, owing to the prevalence of actinomycosis in various parts of Canada, it was found necessary to deal with it under the Contagious Diseases Animals Act, and in order to make it correspond to our action, the American Government also placed it under their Contagious Diseases Animals Act. With regard to cattle in transit, which are admitted to the United States for export from Portland, Boston and New York, that paragraph has since been modified so as to include all American ports.

I may say with reference to settlers' cattle which are admitted without detention, that strong representations were repeatedly made from those cognizant of the difficulties experienced by settlers bringing cattle into the North-west. These people are generally poor and may own a few head of stock, and it may take them all the money they can scrape together to get into the country, and to detain their cattle ninety days, had the effect of debarring many of these people from coming as settlers. The chief of the Bureau of Animal Industry and I discussed this matter thoroughly and decided that there was no necessity for this quarantine at all. These cattle would be exposed to hardships, driven long distances, and not likely to be diseased. Besides they must bring certificates of health and if they have no certificates they will be detained for inspection.

*By Mr. Cochrane :*

Q. The cattle are not always driven in ?

A. No. They are very often brought by railroad ; but frequently they come from Idaho and other distant points.

Q. Have not diseased cattle been brought from England ?

A. Yes.

With reference to the cleansing of cars, I may say that by order of the Minister of Agriculture and at the suggestion of the authorities at Washington, all cars coming into Canada have to be cleansed and the litter removed, and they must be washed and disinfected with carbolic acid before being sent back to the United States, and the same is done in the United States before the cars are sent back to Canada. This is to prevent the possibility of contagion being carried by cars. This is considered particularly necessary in the case of swine cars.

*By Mr. Wilson :*

Q. Who sees that these regulations are enforced ?

A. There is a special inspector for this purpose, and customs officers are utilized, when possible, to enforce quarantine regulations. The special inspector travels all through the country, and then, too, the railway companies co-operate heartily.

Q. Is there a penalty for infractions of the regulations ?

A. Yes, against any one contravening the Act, but not specially against the railway companies.

*By Mr. Cochrane :*

Q. Are live hogs allowed into the United States to be slaughtered in bond ?

A. There is an inspector at the port of entry where it is found necessary to inspect, because there are no bonded slaughter-houses in the United States. In this country it has been found necessary to allow pork, for shanty and other purposes, which could not be supplied by the home producer in sufficient quantities, to be imported, but it is all imported in bonded cars, goes into bonded warehouses, and can only be taken out of there under customs inspection.

Q. Do you know this fact, that the proprietor of a bonded warehouse may import hogs in bond, slaughter them, and they are taken out of bond and sold to Canadians, thus evading the duty, and sending that amount out of the country ?

A. Would that not be fraud ? The quarantine regulations have nothing to do with matters of that kind ; that is a matter for the customs.

Q. I thought the quarantine regulations allowed them to come in bond ?

A. Yes.

*By Mr. McMullen :*

Q. Do I understand that under the present regulations, hogs are permitted to come in in bond ?

A. Yes.

Q. And, of course, the product of those hogs has to be exported again in bond ?

A. Yes.

Q. Now, when that pork reaches the other side of the Atlantic, the consumers will not be in a position to say whether it is Canadian fed or American fed pork ?

THE CHAIRMAN,—I am afraid you are drifting into a customs discussion.

*By Mr. McMullen :*

Q. Is there any particular brand to be put on it when exported ?

A. I could not answer.

*By Mr. Bell :*

Q. Is that solution of carbolic acid mentioned in your regulations for cleaning cars the best ?

A. It is well mixed with lime, one pound of carbolic acid to five gallons of lime.

Q. Is that sufficient ?

A. I think so, because we have the cars washed thoroughly with water and carbolic acid first, scraped and cleaned, and then lime and carbolic acid put over them.

*By Mr. Roddick :*

Q. I fancy that solution would not be strong enough for active germs. Don't you think a solution of something like bichloride of mercury would be better ? I doubt whether lime would be sufficient.

A. The objection to the sublimate is a very potent one, where a poison such as corrosive sublimate is used for woodwork where animals lick and gnaw the wood, accidents

## Agriculture and Colonization.

from poisoning would be sure to occur. It is too poisonous to entrust to labouring men to clean cars with. Sometimes there will be 100 cars or more to clean at one time, which would require a large quantity of this expensive poison. It is too dangerous for common use. If there is any special contagious disease among the animals carried, then we use corrosive sublimate and carefully afterwards wash it all off. The subject of disinfection is well understood by the Department, and there need be no anxiety on this score. So long as no contagious disease is known to exist whence the animals come, the disinfectant used is quite sufficient. Even this is costly enough and puts the railway companies to considerable expense, and is considered ample under the present circumstances. If the exigency arises and a virulent disease should appear, then a strong disinfectant would be used

*By Mr. Bell:*

Q. What kind of carbolic acid is used?

A. Crude—the cheapest kind.

Mr. FEATHERSTON.—They practise this every day at Toronto.

Mr. MCEACHRAN.—They use it in Germany, France, Britain and the United States.

*By Mr. Roddick:*

Q. We have your assurance that in the event of contagion you would prefer sublimate?

A. We would use stronger disinfectant.

Mr. RODDICK.—It penetrates the wood rapidly, and I fancy the danger from gnawing would be very slight.

With reference to the regulations regarding horses which are subject to inspection at the shipping port, I may say that when the Hon. Mr. Montague, then Minister of Agriculture, was in England, a report got up that some Canadian horses suffered from glanders at Liverpool, and some parties strongly urged upon the British Government, then, the scheduling of Canadian horses as well as Canadian cattle. Mr. Montague cabled out to make preparations to have horses for export inspected. That has been carried out by the present Minister, and horses are thoroughly inspected before going on board ship, to prevent the shipment of any suffering from glanders and also to prevent the spread of disease at sea. Sometimes horses suffer from nasal catarrh, which develops into pneumonia, and they die at sea or shortly after landing. The result of the new regulation has been that more attention has been given to these matters and the number of sick animals has been reduced, because the owners of these horses will not start with them unless they are well. Of course, it is not an absolute prevention, because they will take ill on board ship, but I think it is of considerable value to the horse industry.

*By Mr. Martin:*

Q. The inspection is at the shipping port. They can, therefore, travel all over Canada before being inspected. Would it not be as well to have them inspected at the port where they come in? Is that done?

A. No; it is not considered necessary. It would be merely delaying traffic. They come in in bond and are carried right through to the shipping point. They cannot get out of the cars and there is no risk; and, besides, there is little disease in horses.

*By Mr. Featherston:*

Q. Are they not stabled in Montreal with Canadian horses?

A. Yes.

*By Mr. Bell:*

Q. Is there a case of glanders in Canada?

A. I have not heard of one recently, except in the North-west Territories. There is very little glanders in Canada.

*By Mr. Talbot :*

Q. When horses are shipped this inspection is carried out at the expense of the government?

A. Yes.

Q. If it was done by the shippers it would be done at their expense. Would it not be better for the shipping companies to do that inspection instead of the government?

A. They could not be trusted to do it.

With reference to the permit for one week admitting horses for a temporary period, this refers to the territory along the border line where people will drive over to visit or to do business, and it is intended to act as a certain amount of control. The regulation immediately following that, where horses may be admitted on inspection at the port of entry only, that refers more particularly to the North-west.

*By Mr. Featherston :*

Q. Where animals suffering from sheep scab have been slaughtered, is there any compensation allowed to the owner?

A. Yes. The Contagious Diseases Animals Act provides this. Diseased animals which are slaughtered are paid at the rate of one-third of the health value, and those slaughtered in contact three-fourths of the value, but there are very few sheep ordered to be slaughtered for scab.

Q. When a man is ordered to take charge of sheep and doctor them, and they die, is there any compensation?

No.

Q. A veterinary surgeon took charge of some sheep near where I lived and most of them died?

A. He had not carried out the treatment recommended by the Department. I may say with reference to sheep-scab that we have issued simple directions by which any farmer if he will follow them will get along very well with his sheep. His attention is also called to the provisions of the Contagious Diseases Animals Act. Parties applying to the Department can get copies of these.

*By Mr. McMullen :*

Q. Is there any arrangement now, whereby the owners of stockers in the United States can send their cattle to the North-west, feed them on ranches under quarantine, and take them back to the United States?

A. Yes, that is quite possible. Under the United States law it was decided over a year ago, that cattle can be taken into a foreign country and brought back free of duty. This was more particularly with reference to Mexico, but it also applies to the North-west, and to any part of Canada.

Q. Does our government permit regulations of that kind? Can cattle be brought into Canada in the spring, be fed on our prairie grass during the summer and returned to the United States in the fall?

A. That is a matter which has to be taken up by the Minister of Agriculture, shortly.

*By Mr. Talbot :*

Q. I thought you just read it in the regulations?

A. Yes, that is at present the regulation, but some steps will have to be taken to protect our grazing grounds. At present, these cattle are permitted to come into Canada and the American law allows them to go back. Of course it will scarcely work, but if it does, the Canadian government will have to take steps to prevent it.

*By Mr. Martin :*

Q. Is there any inspection in such cases?

A. They must bring certificates of health and freedom from disease in the district whence they came.

## Agriculture and Colonization.

*By Mr. McMullen :*

Q. I suppose it is early in the year yet to ascertain if advantage is taken of this regulation ?

A. Yes, a little early. I have no doubt the Government will adopt some means of preventing free grazing of large numbers of American cattle—either a customs duty or a poll tax; and I think this Committee will do well to make some suggestion to the Government as to what in their opinion should be done. That is a question that will have to be dealt with by the Department. No scheme has as yet been formulated.

*By Mr. McGregor :*

Q. The only district affected will be the North-west ?

A. Yes. That is one of the questions in regard to which I hope the Department will receive some assistance from the Committee. It may be necessary to adopt some plan of dealing with it, although I think the stock raisers of Alberta are unnecessarily alarmed on this subject.

*By Mr. Cargill :*

Q. Do you consider this tuberculin a sure test in cases of disease in cattle ?

A. It is sure when properly conducted, in 98 per cent of the cases, and as I stated on Friday, our experience is that, in all the cattle killed by the Department's officers, we found tuberculosis in the post mortem. Where a reaction was produced by tuberculin, it did not mislead us once.

*By Mr. Richardson :*

Q. What do you mean when you say properly conducted ?

A. When it is conducted by men who are accurate in all they do. In the first place they have to get an accurate statement of the temperature of the animal before it is applied. The temperature has to be taken every three hours for a period of twelve hours before it is applied, and that reading will give a fairly accurate idea of the temperature of the animal. In tuberculosis we have no rise of temperature resulting from the disease. He commences to take the temperature at six o'clock in the morning; and the tuberculin is injected at nine o'clock that evening. Before doing that, the skin has to be washed with a 5 per cent solution of carbolic acid. The instruments should be kept in an antiseptic solution and the operators hands washed with it and the tuberculin kept from the light and from extremes of temperature. It is injected under the skin, and commencing at six o'clock the next morning, the temperature is taken every three hours. At first you will get a slight rise of temperature, which will gradually go up like an arch and come down again, so that at nine or ten o'clock at night, it is normal again. It requires a man of some experience, and one who is accurate in all he does, to apply the test properly

*By Mr. Cargill :*

Q. Do you get any indications as to temperature before injection ?

A. No, there is no rise in temperature from tuberculosis.

Q. What effect would it have on an animal that was sound ?

A. None whatever. Tuberculin is a sterilized glycerine extract made by taking the tubercule bacilli, cultivating them in a bouillon, soup, which is then diluted and experiments made on guinea pigs until it is sufficiently diluted. It is sterilized by heat, and then percolated through porous ware so as to exclude every extraneous matter. There is nothing living in it. The living germs are destroyed by the percolation process and by the heat. There is only the toxine, almost you would say a distillation from the bacilli, and this has been found by Koch to produce a rise in temperature when tuberculosis is present. He noticed this rising temperature after the injection and experimented, and found that in 98 per cent of the cases, it would show whether tuberculosis was present or not without danger to the animal, because there is nothing living in it.

*By Mr. Featherston :*

Q. Doesn't the temperature of an animal differ at times ?

A. Yes, if a cow is in heat you will have a higher temperature or if the weather is hot, or if she is worried and teased by flies, or if it is unusually cold and the animal has recently been fed and the digestion is in an active condition, or suffering from inflammation or any disease attended by fever.

*By Mr. Richardson :*

Q. Nearly half of the farmers do not conform to the safeguards you mention. I know the tests at Winnipeg have been simply a farce ?

A. The Minister is aware that many who have been doing inspection work are not efficient, and ordered me to hold examinations of veterinary inspectors at London, Toronto, Kingston, Montreal and Quebec, and on the seventh of June I will hold an examination in Winnipeg. Examinations will also be held in other provinces, so as to get a knowledge of the men from whom the Minister can make his selection when men are required to do this work. In the regulations which I have just read to you, I read we require the test to be applied to animals sent from the United States to Canada, to be made by United States officials and they require the testing of Canadian animals to be done by Canadian officials. These veterinary inspectors are made officials for this purpose. They are not paid by salary and for the purpose of preventing over-charges the Minister has regulated the scale of fees to be charged in these cases.

*By Mr. Cargill :*

Q. Inspectors have been appointed in different parts of the country. Is it any part of their duties to make periodical visits to breeders of cattle for the purpose of testing the herds for tuberculosis ?

A. No.

*By Mr. Wilson :*

Q. Has this Government made appointments of that kind ?

A. A great many appointments had to be made to deal with the swine plague in the county of Essex and the sheep scab in the county of York, but no general appointments have been made and none will be made, I understand from the Minister, except from among those who have passed the examination.

Q. The late government made certain appointments of inspectors and they were cancelled ?

A. Yes.

*By Mr. Cargill :*

Q. In the case of disposing of cattle for breeding purposes, the shippers would have make application to an inspector for the test before they were shipped ?

A. Yes, if he is one of the men appointed by the Minister to do so, otherwise the certificate would not be accepted by the Bureau of Animal Industries, at Washington. A list of our inspectors is sent to Washington and by the Bureau to the Customs Inspectors of United States ports and they refer to this list to find out if they can accept the certificate which accompanies the animal.

*By Mr. Featherston :*

Q. Under what authority were these veterinary inspectors appointed by the late government ?

A. The United States require for the exportation of sheep from Canada to the United States, a certificate from a local veterinarian that sheep-scab did not exist in the district from whence the sheep came, and it was found necessary to make a number of appointments to allow the sheep to go to the United States.

## Agriculture and Colonization.

Q. How were they paid ?

A. Some were paid \$8 a day at the beginning, but that was reduced to \$5, and then only when they were engaged in the work.

Q. I thought they had unlimited power to go out and inspect and get their pay ?

A. No. We had trouble with some who thought that, but we soon stopped it.

### CONDITIONS IMPOSED ON FOREIGN CATTLE BROUGHT INTO THE NORTH-WEST TERRITORIES, FOR GRAZING.

Mr. McMULLEN,—On that point of allowing cattle to be brought in from the United States and range them on our North-west grazing lands and returned to the United States, I think this Committee should present their views, and the Minister of Agriculture should be urged that some charge should be made, so that this business should not be carried on without compensation to us.

Mr. MCEACHRAN,—They have to pay the customs duty when coming in, but we expected they would have to pay the customs duty on going back, but they do not.

*By Mr. Cochrane :*

Q. I understood that they came in in bond and that your quarantine regulations provided for their coming here in bond, and being fed on our prairie grass and returned without paying duty.

A. No, you are mixing up the regulations for the East with those of the West. They can come in in bond for shipment out of the country to Britain or elsewhere.

*By Mr. Talbot :*

Q. I thought you said that applied to the North-west ?

A. No, they come in, but they have to pay the duty. On going back they do not have to pay the American duty.

*By Mr. Featherston :*

Q. They are not herded in bond ?

A. No, that could not be.

*By Mr. McMullen :*

Q. Is there a very large number taken in under these regulations ?

A. None, so far, this year.

*By Mr. Cochrane :*

Q. Why did you raise the point that the Minister had under consideration that something should be done if the Canadian duty is paid, because the Minister cannot prevent the introduction of American cattle. Why should there be any alarm at all in connection with it if the duty is paid.

A. The alarm is raised by the ranchmen there. They suppose that American ranchmen would bring large herds. There was talk of tens of thousands. The duty is a trifling matter. For instance, on yearlings 20 per cent would not amount to anything, and under the present regulations in the United States they can keep these cattle in Canada several years and return them without paying any duty.

*By Mr. Wilson :*

Q For how long ?

A. For two or three years. That is the point that we will have to consider.

*By Mr. Featherston :*

Q. It has not been done as yet ?

A. No.

*By Mr. Wilson :*

Q. What about Mexico ?

A. Yes, they feed them considerably in Mexico and do a large business.

CANADIAN VERSUS UNITED STATES HOG PRODUCTS.

*By Mr. McHugh :*

Q. Do the condition under which hogs are fed in this country produce better pork than the hogs fed in the Western States, and is this not due to the fact that we mix vegetables with the corn fed, contrasted with hogs fed altogether on grain ?

A. I quite agree with Mr. McHugh, and more, the breeds used in Canada produce hogs and hams more of a size to suit the English consumer.

I might say that the wholesale growing of hogs, particularly in the corn-feeding districts of the Western States, has rather prejudiced the British public against American hogs. The common practice is to drive large droves of cattle from the south north to Kansas and other corn-growing states, and turn in one hog to every five cattle, and they eat up the droppings, and in that way they have got to be a coarse kind of flesh. I think that Canadian pork will always command a higher price in Great Britain, than American-fed pork.

Having examined the preceding transcript of my evidence of the 21st and 26th May, I find it correct.

D. McEACHRAN,

*F.R.C.V.S., V.S. Edin., D.V.S. McGill,  
Dominion Veterinary Inspector.*

Agriculture and Colonization.

APPENDIX



# Agriculture and Colonization.

## RECOMMENDATIONS BY THE COMMITTEE.

The following resolutions were adopted by the Committee as recommendations for the promotion of the agricultural interests of the Dominion :—

### No. 1.—TO TAKE DOWN EVIDENCE.

Moved by Mr. Sproule, seconded by Mr. McGregor,—“That the Committee ask authority from the House to employ a shorthand writer to take down such evidence as they may deem proper.”—Adopted.

COMMITTEE ROOM 46,  
12th April, 1897.

### No. 2.—PRINTING OF EVIDENCE ON COLD STORAGE ARRANGEMENTS, FOR PUBLIC DISTRIBUTION.

Moved by Mr. Sproule, seconded by Mr. McMillan,—“That the Committee ask the House to authorize the printing of 40,000 copies of the evidence of Mr. J. W. Robertson, Commissioner of Agriculture and Dairying, before the Committee, on the 6th May current, for immediate publication, in the usual numerical proportions of English and French.”—Adopted.

COMMITTEE ROOM 46,  
7th May, 1897.

### No. 3.—IN RELATION TO A LETTER, FOLLOWING, LAID BEFORE THE COMMITTEE AT A SESSION HELD ON THE 4th JUNE.

Moved by Mr. Sproule, seconded by Mr. Douglas—That the letter of the Wm. Davies Company, Limited, Pork Packers, be printed in the appendix to the report of this Committee.—Adopted.

COMMITTEE ROOM 46,  
4th June, 1897.

*The following is the letter referred to in the last preceding resolution, No. 3 :—*

#### THE WILLIAM DAVIES COMPANY, LIMITED,—

PORK PACKERS AND EXPORT PROVISION MERCHANTS.

TORONTO, 20th May, 1897.

We have this morning received cable message from London pointing out the serious danger that threatens the Export Bacon Trade. The superiority of Canadian bacon over American, arises from one simple cause. Speaking generally, the American hog knows nothing but Indian Corn from the time he is weaned till he meets his fate ; the result is, he is a mass of fat which in cooking boils out or fries out—this is a condition that Englishmen abhor. The Canadian hog, on the contrary, is fed on peas, barley and refuse wheat, the result is a carcass with plenty of lean, and what fat there is, is of a firm texture.

These qualities have given Canadian bacon on the English market an enviable position as compared with American, and as a result we are paying to-day \$5.20, live weight, for choice bacon hogs, while yesterday's quotation in Buffalo was \$3.90, and in

Chicago \$3.75. The danger that threatens the business is cheese factories supplementing the whey with corn, as we hear is being done. We write this to urge the feeders to set their faces against this. It has taken many years to get Canadian Bacon into the advantageous position in England it now has, and if that is ever lost, it will take years to recover it.

To emphasize the above, our correspondent adds, the Danish feeders are making the same blunder. We in Canada should profit by their experience.

Yours truly,

THE WM. DAVIES CO. (Ltd.)

No. 4.—COMPLIMENTARY VOTE TO THE CHAIRMAN.

Moved by Mr. Sproule, seconded by Mr. Semple,—That the thanks of this Committee be now tendered to Mr. Bain, Chairman, for the ability and uniform courtesy with which he has conducted the business of the Committee during the current session of Parliament.—Adopted amid cordial approbation.

The preceding resolutions are true copies as recorded in the minutes of meetings of the Select Standing Committee on Agriculture and Colonization, on the respective dates specified.

J. H. MACLEOD.

*Clerk to Committee.*

# Agriculture and Colonization.

## INTERIM REPORTS.

### FIRST REPORT.

Mr. Bain, 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 grant them authority to employ a shorthand writer to take down such evidence as they may deem proper.

THOS. BAIN,  
*Chairman.*

HOUSE OF COMMONS,  
14th April, 1897.

### SECOND REPORT.

Mr. Bain, from the Select Standing Committee on Agriculture and Colonization, presented the Second Report of said Committee, which is as follows :—

The Committee recommend that the House authorize the immediate printing of forty thousand (40,000) copies, in the usual numerical proportions of English and French, of the evidence of Mr. J. W. Robertson, Dairy Commissioner, before the Committee on the 6th May current, in relation to the arrangements made by the Department of Agriculture, for the export of readily perishable food products of the Dominion, to Europe, and that said issue be distributed to the Members of the House of Commons, in order that this information may reach producers and exporters of such products, at the earliest date practicable.

THOS. BAIN,  
*Chairman.*

HOUSE OF COMMONS,  
7th May, 1897.

# Agriculture and Colonization.

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