CANADA

OCT 31 1979

Br. M. Parlement

Dibliochèque du Parlement



APPENDIX

TO THE

THIRTY-NINTH VOLUME

OF THE

JOURNALS OF THE HOUSE OF COMMONS

DOMINION OF CANADA

SESSION 1904



OTTAWA
PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST
EXCELLENT MAJESTY
1907

APPENDIX

LIST OF APPENDICES, 1904.

- No. 1.—Report of the Special Committee to whom was referred Bill No. 113, an Act respecting the Inspection of Grain; also the Evidence taken in connection therewith.

 Not printed.
- No. 2.—Report of the Select Standing Committee on Agriculture and Colonization.

 Printed herein.

REPORT

OF THE

SELECT STANDING COMMITTEE

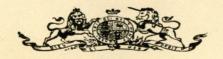
ON

AGRICULTURE AND COLONIZATION

FOURTH SESSION, NINTH PARLIAMENT

1904

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

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

1904

TABLE OF CONTENTS

MEMBERSHIP OF THE COMMITTEE	XI.
THE COMMITTEE'S FINAL REPORT	XIII

EVIDENCE

PART 1

AGRICULTURE

Professor J. C. McLennan, University of Toronto.

THE METRIC SYSTEM, p p. 13-27.

Tr. 1 1 D 1	PAGE
Historical Development	13
Units of length and mass in the metric system	17
The names of the metric units	17
Comparative scale diagram of given measures of length	17
Tables of weights and measures in metric and British standards. 18	-22
Reasons advanced for the adoption of the metric system throughout the	
British Empire 23	-26
Calculations by the metric and British Systems respectively, compared by	
examples	24
List of countries which have adopte dthe metric system	26
OR. W. SAUNDERS, Director Dominion Experimental Farms	00
W. Chernbaus, Director Dominion Experimental Farms	29
PROGRESS IN AGRICULTURE, 29-55.	
Influence of Temperature on Ripening Grain	29
Wheat crop of the North-west	30
Efforts to improve the quality of wheat in Great Britain	31
Origin of Preston and Percy Wheats	33
Some inferior varieties grown in Ontario.	34
Best soils for wheat.	35
Spring and Fall wheats	36
Grain crops in Canada and Great Britain, compared	37
	38
	40
	43
trained of Refficis on a single plant	40

	4 EDWARD VII.,	A. 1904
		PAGE
	The ploughing under of clover	43
	The selection of seed for sowing	44
	Difficulties in obtaining uniform results	
	The exchange of seed	48
	Quality of Barley in Canada	49
	New hardy apples for the North-west	51
	Journeys through the North-west	53
	Applications for samples of Seed and Bulletins	. 54
	R. JAMES FLETCHER, Entomologist and Botanist	. 57
	ENTOMOLOGY AND BOTANY IN AGRICULTURE, pp. 57-84.	
	Value of entomological and botanical investigations	. 57
	Work in the division of entomology and botany	. 57
	Nature Study	58
	Weeds	. 60
	Summer fallowing	. 60
	The fertility of the North-west	. 61
	Mixed farming:—Harrowing growing grain	. 62
	Dirty seed grain	. 64
	Stink weed	67
	Ball mustard	. 68
	Wild mustard—Peppergrass	. 69
	Fcdder plants—Brome grass	. 70
	Tucerne or Alfalfa	. 73
	Dandelions	. 74
	Brome grass versus other fodder plants—Insect pests	. 76
	San José scale Orchard pests	. 77
	Oyster-shell bark louse	. 78
	Pear-tree flea-louse—Pear-tree blister mite	. 19
	Fall web-worm-White-marked tuskock moth	. 79
	Maple soft-scale—Cattle horn fly—Cattle warbles—Cattle lice	. 80
	Cabbage caterpillar	. 82
	Codling moth	
H	FRANK T. SHUTT, M.A., Chemist, Central Experimental Farm.	
	CHEMICAL RESEARCH IN AGRICULTURE, pp. 85-112.	
	Scope and Character of the work in the Chemical Division	. 85
	Improvement of soils through growth of legumes	. 86
	Legumes in the rotation and as cover crops	. 86
	Posterial life of the soil	. 81
	TI A source of nitrogen	. 88
	Manual A valuable source of humus and nitrogen	. 88
	Swamp muck—A source of humus and nitrogen	. 89
	Value of legumes for enriching the soil. Hairy vetch—Table of constituents	. 91
	Gis beans Horse beans—Clover and Alfalfa	. 94
	Equivalents to barnyard manure in humus and nitrogen	. 96

Composition of various feeding stuffs	102
Cotton seed meals	107
Gluten meal and gluten feed	
Molasses and pulp feeds	109
Improved molasses cattle food—Analysis of	110
Table, showing the average composition of the usual feeding s	tuffs 112
Mr. W. T. MACOUN, Horticulturist	110
Mr. W. T. MACOUN, Horticulturist	113
FRUITS, VEGETABLES, TREE CULTURE, pp.	113-136
Severity of the winter of 1903-4	13
Principal experiments conducted by the Horticulturist	115
Experiments with Fruits	
" vegetables	
" with forest trees	
Arboretum and Botanic garden	
Top grafting	116
Grafting wax	118
Experiments in growing grapes at Ottawa	124
Leading varieties of grapes for cultivation	129
Experiments in top grafting apples	130
The farm vegetable garden	
Directions for proper cultivation of vegetables	
List of best vegetables for farmers to grow for domestic use	134
CHARLES E. SAUNDERS, Experimentalist Dominion Experimental	Farms 137
EXPERIMENTS WITH CEREALS, pp. 137-	146.
The crossing of cereals	137
Variations in cross-bred cereals.	101
	128
Proper method of selection	140
Proper method of selection. Natural crosses—Changes in Fife wheats	
Proper method of selection. Natural crosses—Changes in Fife wheats Grafting on injured fruit trees	
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat.	
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests.	
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats.	
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names.	
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats.	
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats.	
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names.	
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats. Mr. J. H. Grisdale, Agriculturist.	
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats.	
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats. Mr. J. H. Grisdale, Agriculturist.	140 142 143 143 144 145 145 146 147 NS pp. 147-206.
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats. Mr. J. H. Grisdale, Agriculturist. FEEDING CATTLE STOCK—METHODS AND RATIONALE.	140 142 143 143 144 144 145 145 146 147 NS pp. 147-206.
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats. Mr. J. H. Grisdale, Agriculturist. FEEDING CATTLE STOCK—METHODS AND RATIONAL Consess in silos versus losses in shocks. Causes of losses in silos.	140 142 143 143 144 145 145 146 147 NS pp. 147-206. 147 148
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats. Mr. J. H. Grisdale, Agriculturist. FEEDING CATTLE STOCK—METHODS AND RATIONAL Consess in silos versus losses in shocks. Causes of losses in silos. The loss in other foods than ensilage.	140 142 143 143 144 145 145 146 147 NS pp. 147-206. 147 148 150 150
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats. Mr. J. H. Grisdale, Agriculturist. FEEDING CATTLE STOCK—METHODS AND RATIONAL Consess in silos versus losses in shocks. Causes of losses in silos. The loss in other foods than ensilage. Clover and clover hay making.	140 142 143 143 144 145 145 146 147 NS pp. 147-206. 147 148 150 150 152
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats. Mr. J. H. Grisdale, Agriculturist. FEEDING CATTLE STOCK—METHODS AND RATIONAL Consess in silos versus losses in shocks. Causes of losses in silos. The loss in other foods than ensilage. Clover and clover hay making. The silo.	140 142 143 143 144 145 145 146 147 NS pp. 147-206. 147 148 150 150 152 153
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats. Mr. J. H. Grisdale, Agriculturist. FEEDING CATTLE STOCK—METHODS AND RATIONAL Causes in silos versus losses in shocks. Causes of losses in silos. The loss in other foods than ensilage. Clover and clover hay making. The silo. Materials for ensilage.	140 142 143 143 144 144 145 145 146 147 NS pp. 147-206. 147 148 150 150 152 153 159
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats. Mr. J. H. Grisdale, Agriculturist. FEEDING CATTLE STOCK—METHODS AND RATIONAL Causes in silos versus losses in shocks. Causes of losses in silos. The loss in other foods than ensilage. Clover and clover hay making. The silo. Materials for ensilage. Clover for ensilage.	140 142 143 143 144 144 145 145 146 147 NS pp. 147-206. 147 148 150 150 152 153 159 163
Proper method of selection. Natural crosses—Changes in Fife wheats. Grafting on injured fruit trees. The milling value of different varieties of wheat. Analyses showing the results obtained by milling tests. New varieties of oats. Old varieties under new names. Other new varieties of oats. Mr. J. H. Grisdale, Agriculturist. FEEDING CATTLE STOCK—METHODS AND RATIONAL Causes in silos versus losses in shocks. Causes of losses in silos. The loss in other foods than ensilage. Clover and clover hay making. The silo. Materials for ensilage.	140 142 143 143 144 144 145 145 146 147 NS pp. 147-206. 147 148 150 150 152 153 159 163

vi	TABLE OF CONTENTS	
	4 EDWARD VII., A	. 1904
		PAGE.
	Roots versus corn for feed	170
	Methods of feeding roots	170
	Dairy records 179	186
	Experimental farm dairy herd	174
	Amount of milk—Quality of milk	174
	Amount of butter—value of butter and skim milk	175
	Values of cattle and progeny	176
	Cost of producing 100 pounds of milk.	176
	Cost of one pound of butter Improved molasses cattle food	177
	Table—Milk and butter record.	179
	Stee loose versus tied	101
	Long and short straw for bedding.	190
	Steer feeding experiments	203
	Pig feeding experiments	204
	Inside feeding compared with outside feeding—Results	204
M	r. A. G. Gilbert, Poultry manager	207
		201
	FARM POULTRY BREEDING, pp. 207-245.	
	Inquiries upon poultry breeding	207
	Best breeds of fowls for the farm	201
	Selection of good stock for the pen	211
	Proper housing of hens	213
	Essential conditions to profitable poultry raising	220
	Rules to preserve the flavour of eggs good for marketing	223
	The egg and poultry trade	224
	Different styles of poultry houses	225
	How to have eggs in winter and superior poultry in summer	237
	Rations.—For morning, noon and afternoon	239
	Production of superior quality of poultry flesh	240
	Incubator-hatched and brooder-raised	241
	Essentials to production of superior quality.	243
	Care of chickens to make them suitable early market types	244
	Illustration cuts of model poultry houses	226
M	r. John Fixter, Apiarist	247
	PROFITS FROM BEE CULTURE, pp. 247-280.	
	Use of means to stimulate the bee industry	947
	Hulled seed preferable to unhulled	250
	Cultivating the soil	251
	The bee industry as an occupation	258
	Kind of bees to purchase	259
	Introducing a queen	259
	Kind of hive to purchase	259
	Value of queen excluder	260
	Self spacing frames	260
	Section honey	201
	The uncapping knife	265
	Swarming and after swarming	267

	PAGE
To prevent swarms going away	267
Wax extractor	267
Showing cushion for damp and cool cellars	272
Feeding bees in winter quarters	
Insulating hives for outside wintering	
Dampness in wintering	
Dampness in cellars	280
Mr. A. P. Stevenson, Forester	281
FORESTRY AND FRUIT RAISING, pp. 281-308.	
Forest tree growing in Manitoba	281
The benefits of shelter belts	281
The system adopted to aid tree planting	282
Distribution of trees and planting regulations	283
Growing fruit trees in Manitoba	291
Variety of small fruits grown in Manitoba	291
The native western plum—Cultivation of	293
Successful cultivation of the crab apple tree	295
Growing standard apples in Manitoba	296
Eight varieties of apples grown in Manitoba	297
The chief apple pest peculiar to Manitoba	298
Sources from which apple trees best suited to Manitoba are got	299
An absolute necessity to successful apple growing in Manitoba	300
Probabilities for the successful growing of apples in Manitoba	300
Results obtained from top grafting	300
The annual growth of various trees	301
Results from hardy root grafting	302
Mr. SAMUEL M. GENEST, Department of Interior	309
FARMING RESULTS FROM IRRIGATION, pp. 309-320.	
Irrigation in Southern Alberta	309
The North-west Irrigation Act	310
Irrigation companies formed	310
Bow river irrigation canal	311
System of disposing of water supply to settlers	311
Water supply, how distributed	312
Comparative yields of field crops	313
A cubic foot of water as applied to irrigation	315
Production of sugar beet by aid of irrigation	316
Conditions adopted to foster irrigation	318
Areas covered by applications granted under the Act	318
Government exploratory irrigation surveys	319
Mr. Angus McKay, Superintendent of Indian Head, Experimental Farm	321
FARMING IN WESTERN CANADA, pp. 321-338.	
The experimental farm at Indian Head	321
Cultivation of the soil in the North-west	
Summer fallowing and grain raising	
Acreage yield and quantity of grain crops	

	PAGE.
Experiments with depths of sowing wheat	330
Expenditure and net receipts	331
Fattening steers	334
Length of period for housing cattle	335
Noxious weeds	336
Droppingson Town Miggary A ' D' D' D' D D D D D	
Professor John Macoun, Assistant Director and Naturalist, Geological Surv Canada	rey of
Canada	339
EXPLORATIONS OF THE NORTH-WEST, pp. 339-361.	
The exploration party of 1872	339
Exploration of the Peace River District in 1875	340
Altitudes and Latitudes	219
Productions of cereals and vegetables at Vermillion	342
Peculiarity of climate in reference to situation	343
Great Slave Lake—Situation and productions	343
Addendum—	
Dr. Dawson's Exploration and Report of the Peace River country in 1879	356
Extracts from Report of Prof. John Macoun, on the lower Peace River and	
Athabaska River, in May, 1876	358
Mr. Elihu Stewart, Dominion Superintendent of Forestry	0.00
Delivery Del	363
FORESTRY ON DOMINION LANDS, pp. 363-379.	
The area of timber lands under control of the Dominion Government	363
A further exploration Northwards urgently required	363
An estimate of the quantity and value of timber limits under the Dominion	
Government	364
Timber on the Hudson Bay coast	367
Recent increase in the value of wood.	370
Recent great expansion in the value of timber.	371
Necessity for forest reserves. Systematic guarding of forests against fire.	373
Areas of certain timber reserves	374
How Dominion timber is acquired by applicants	276
And given to Settlers towards planting forest trees	377
Enlarged aid towards increase in forest plantation	378
Mr. I. L. HAYCOCK, Inspector of Binder Twine	381
BINDER TWINE INSPECTION pp. 381-403.	
Operations under the Binder Twine Act	381
Seizures under the Binder Twine Act	382
Course pursued after seizure of twine—details of seizures	
List of holders and fines paid	387

APPENDIX No. 2	
	PAGE
Honourable Senator W. D. Perley	405
SEEDING GRAIN IN WESTERN CANADA, pp. 405-409.	
Length of residence in the Territories	405 406
Mr. James M. Macoun, Naturalist	411
THE PEACE RIVER DISTRICT, pp. 411-579.	
Examination of Mr. James M. Macoun on his exploration of the Peace River District, in 1903	-579
PART II.	
IMMIGRATION AND COLONIZATION.	
Mr. W. D. Scott, Superintendent of Immigration	583
Mr. James A. Smart, Deputy Minister of the Interior	616
TOTAL IMMIGRANT ARRIVALS AT ALL POINTS OF ENTRY INT CANADA, AND THE COLONIUATION OF 1903-'04, pp. 583-704.	0
Immigration agents in the United States	583
Deportation of immigrants	587 590
Distribution of literature	595
European agencies and allowances	607
How steamship booking agents are paid	616
People deported from Winnipeg, number and nature of disease in 1902-'03	630
Loan to the Doukhobors	640
1902-'03	645
Immigrant arrivals of miscellaneous nationalities during the fiscal year 1902-'03, other than the last above	646
List of sub-immigration agents in Great Britain	646
List of local commission agents in the United States, 1902-'03	651
Number immigrants entered Canada from the United States in 1902-'03 Total Canadian immigration agents in the United States and salaries	660

4 E	DW	ARD	VII.,	A.	1904
-----	----	-----	-------	----	------

Lands purchased by American Syndicates Settlement by the Saskatchewan Valley Land Company The Order in Council, upon which contract was made between the Government and certain parties for the purchase of lands in the Saskatchewan District Homesteading in the United States, with letter Report from Mr. Speers upon settlement upon lands by the Saskatchewan Valley Land Company within the limits of the company's grant Examination of Mr. Smart upon the fulfilment of their contract with the Government, by the Saskatchewan Valley Land Company as to placing settlers upon the granted lands Table showing the number of Homestead Entries in Townships selected by the company.	672 678 681 683
APPENDIX	706
RESOLUTIONS ADOPTED BY THE COMMITTEE	708
INTERIM REPORTS	713

THE COMMITTEE.

(JAMES M. DOUGLAS, Esq., Chairman.)

Angers. Armstrong, Ball, Bazinet. Beith. Bell. Blain. Blanchet. Bourassa. Bourbonnais, Boyd. Broder. Brown, Bruce, Bureau. Calvert. Calvin. Carbonneau. Carscallen Charlton. Clancy, Clare, Cochrane. Davis, Delisle, Desjardins, Donnelly, Douglas, Dugas. Dyment, Erb. Ethier, Fisher. Fortier, Galliher, Gauvreau, Gilmour, Girard Gould.

Grant,

Guthrie. Hackett. Halliday Harwood, Haszard, Henderson. Heyd. Hughes (King's), Hughes (Victoria), Ingram, Johnston (Cardwell), Johnston (Lambton), Kendall, Kidd, Lang, LaRiviere, Laurier (L'Assomption). Lavergne (Montmagny), Leblanc. Lennox. Leonard. Lewis, Logan, Lovell, Loy, Macdonald, Mackie. Maclaren (Huntington), Maclaren (Perth). Macpherson, McColl, McCool. McCormick, McCreary, McEwen, McGowan, McGugan, McIntosh, McLennan,

Marcil (Bagot),

Matheson.

Mayrand. Meigs, Morin, Mulock (Sir William) Oliver, Parmelee. Pope, Proulx. Reid (Grenville), Reid (Restigouche), Richardson, Robinson (Elgin), Robinson (Northumberland) Roche (Marquette) Rosamond, Ross (Ontario), Ross (Victoria) Rousseau. Schell. Seagram. Sherritt, Smith (Vancouver), Smith (Wentworth), Sproule, Stephens. Stewart, Talbot. Taylor, Thomson (North Grey), Tobin. Tolm'e. Tolton, Tucker, Turcot. Turgeon, Vrooman, Wade, Wallace. Wilmot, Wilson, Wright.

REPORT.

The Select Standing Committee on Agriculture and Colonization present their third and final report, as follows:—

The investigation of the Committee during the current Session of Parliament included, first, agriculture in all its branches and productions, except dairying, throughout the Dominion of Canada, the preservation of timber and the progress of forestry as conducted in western Canada. Also irrigation in the west, the increase of crops where it is in operation, and the prosperity of the sugar-beet industry when aided by irrigation. The solution of the problem of how to raise apples successfully in Manitoba and the North-west Territories was an item of inquiry that elicited valuable information.

The evidence upon stock fattening and the comparative value of the different breeds and strains of milch cows, forms a valuable compendium of information to farmers in both these branches of stock-raising.

The evidence upon the operations of the experimental farms demonstrates that these institutions are promoting the work of improvement in the cultivation of lands, collowed by an increase of acreage production, in all sections to which their influence extends, and that the scientific researches at the Central Experimental Farm especially are materially increased in their usefulness to farmers, through this Committee, as a medium of sending broadcast to every agricultural constituency in the Dominion, the evidence taken by them, which every farmer can read in his home, and apply to his vocation the facts contained in this literature, set forth by the best of authors upon the science of agriculture.

The evidence taken by the Committee upon all the subjects above referred to is hereby annexed as an essential portion of this report.

The Committee recommend that 20,000 copies of the evidence of Mr. Samuel M. Genest, upon the practical operation and effects of irrigation, as practised in western Canada, be printed in pamphlet form in the usual numerical proportions of English and French as advanced sheets of the Committee's final report; 19,800 to be allotted to members of parliament for distribution, 100 copies to Mr. Genest and 100 copies for the use of the Committee.

The second division of the Committee's inquiry had relation solely to immigration and the settlement of immigrants upon lands. The evidence furnished upon this division was submitted by Messrs. James A. Smart, Deputy Minister of the Interior,

xiv REPORT

APPENDIX No. 2

and W. D. Scott, Superintendent of Immigration. This evidence also is appended to this report, to be printed as an essential portion thereof.

The Committee have had before them and heard Mr. James M. Macoun, Assistant Naturalist of the Geological Survey Branch of the Department of the Interior, upon his observations on the Peace River district of the North-west Territories, to which he was sent by the department in 1903, for observation in relation to its agricultural capabilities. His examination on evidence before the Committee was referred to a sub-committee for consideration and report, the report of the sub-committee was adopted by this Committee as their own, and is as follows:—

- 1. The Committee are of opinion the evidence of Mr. Macoun had better be printed as reported, with such remarks by honourable members as appear therein. Any elimination in our judgment might mutilate the same so as to mar the sense.
- 2. After carefully considering the evidence given by Mr. Macoun, before the Committee, they are of opinion that he was not possessed of sufficient information to make a report upon the Peace River country, and that he was not warranted by the facts within his knowledge in making the report he did, and in arriving at the sweepingly unfavourable conclusion he has. Mr. Macoun spent less than three months in the Peace River country, travelling the greater part of that time on foot. The area covered by his report amounts considerably over twenty million acres, and it is unreasonable to suppose that any man could, within that time, acquire sufficient knowledge to enable him to make the report and give the evidence which Mr. Macoun did.
- 3. The Committee find that Mr. Macoun is in direct conflict in most important particulars, with such eminent authorities as the late Dr. Dawson, the Rev. Dr. Gordon, Professor Macoun (father of the witness), and others. Dr. Dawson says of the Grande Prairie:—

'The soil of the Grande Prairie is almost everywhere exceedingly fertile, and it is covered for miles together by a deep, rich loam which it would be impossible to surpass in excellence.'

Mr. Macoun, in his report, says of this same district in speaking of its soil: 'This loam, as I saw it, varies from four to six inches in depth; it may be deeper in places, but if so, such soil has not been seen by any one whom I have met in the country.'

In his evidence, Mr. Macoun limits the depth of the soil to four or five inches, with an impervious clay sub-soil. Dr. Dawson, in his report, tells us that in the Peace River district there are at least fifteen million acres of good wheat lands, and that the country is well adapted to agriculture. This Mr. Macoun undertakes to dispute. The Committee will not go into the other disagreements between Mr. Macoun and Dr. Dawson and the other gentlemen above mentioned, but the differences are striking and irreconcilable. Mr. Macoun, in his report, cites Mr. Ogilvie in support of his contention that this country is not suited to wheat-raising. Mr. Ogilvie, on the same page that Mr. Macoun quotes from, says:—

'Were it not for the difficulty of getting into and out of that country, stock raising might be profitably engaged in. Hay is abundant and of good quality nearly everywhere; and in summer grazing is excellent.'

Mr. Macoun condemns this country for stock raising, and in his evidence, upon being asked, 'Isn't it good for either cattle or grain?' said, 'That is what I say. I don't think it necessary to make it plainer. If you want it definite, it is less suited for cattle as an industry than for grain raising. It is not only difficult to get hay for winter, but it is difficult to get water.'

4. The Committee are of opinion that it is regrettable that Mr. Macoun's report was ever printed or distributed, and earnestly advise that no more copies of said report be

REPORT

APPENUIX No. 2

given to the public until a careful examination of the country by reliable experts can be made, and in this connection urge that the Government take immediate action to have this country thoroughly explored and reported upon by competent and reliable men.

- 5. The Committee find themselves unable to reconcile the different statements made by Mr. Macoun in his evidence and in his report.
- 6. The Committee consider this matter of vital importance to the interests of Canada, as the report of Mr. Macoun and the evidence given by him before the Committee must necessarily have a very serious effect upon the opening and development of this important section of the Dominion.
- 7. The Committee cannot undertake to decide the differences that exist between Mr. Macoun and the reports of the other gentlemen, but we are strongly of opinion that he had not sufficient knowledge or data upon which to found the conclusions he arrived at.

JAMES M. DOUGLAS, Chairman.

House of Commons, August 3, 1904.

THE METRIC SYSTEM

House of Commons, Committee Room 62, Tuesday, April 12, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 a.m., Mr. Douglas, Chairman, presiding.

The Charman.—We are highly favoured this morning by having with us Dr. McLennan, Professor of Physics in Toronto University, and I am sure you will give him every attention while he endeavours to explain to us the metric system of weights and measures which at no distant date is likely to be adopted by the government of Canada and come in general use. Gentlemen, you know the difficulties of this room in the matter of hearing, and in a lecture of this kind we must have perfect order. No whispering or talking will be allowed in school this morning while the professor speaks.

Mr. J. C. McLennan, B.A., Ph. D., Professor of Physics in the University of Toronto, then addressed the committee as follows:—

Mr. Minister, Mr. Chairman and Gentlemen,—In coming before you this morning to give a lecture on the metric system, I am somewhat at a loss just to determine the scope of my remarks. One could speak on this system perhaps for half a day, but I shall endeavour in a short time to give you a brief succinct account of the development of the metric system. I shall refer to its characteristics, to some of its advantages, and to its introduction in different countries in the world.

THE BRITISH SYSTEM OF WEIGHTS AND MEASURES.

First of all, I shall refer for a few minutes to the system now in vogue, namely, the British system, and I shall refer to its origin. In looking away back many years, thousands of years, in fact hundreds of thousands of years, we find that the unit of measurement in local places was the distance between the end of the thumb and the first joint. That was the first inch The next unit of measurement was the foot, the next was of measurement. the arm-the length of the arm, or to speak more definitely, the length of the King's arm. Further than that, we come to the perch—the rod, pole or perch—which was the distance one could jump over, and then we come to the furlong. That came from the furrow long; and then we had the mile, which is the Latin word for a thousand paces and so on. We had the term 'acre,' which was the Latin word for a field of so many furrow long lengths and so many in width. So that you see here we have the origin so simple and so clear of our measures of length. Now the very simplicity of the origin of these measurements has led to the greatest complexity. It was found that such units were quite satisfactory when you had small communities, but when these communities became enormous and began to enlarge so that there was trading one with another, people did not know whose thumb was referred to or whose foot was taken as the unit of measurement. Further, when the tax collector came around he

found that the inch and foot became longer and longer, because the taxes were levied on that basis. And so it was found necessary to standardize the measures of length. Now, it is manifestly clear that it was impossible to have a great many standards of length, and so the first step was to choose one standard, a convenient standard of length, and then to corelate all these other little standards or units to that one. And so after a long process of evolution and the survival of the fittest, we have the yard taken as the unit of length in the British nation. And then they looked at their feet, and they said we will divide that yard into three, and will say there will be three feet in a yard, and so that was determined. And then they looked at their knuckle, and they said 'we will divide the foot by 12,' that will give approximately a common knuckle, and so they determined the inch in that way. And then, turning to the rod pole or perch, they said, 'five and a half yards will make a rod, pole or perch, and then forty of these will make a furlong and three of them a mile,' and so the linear measurement was developed in that simple and definite way. But you will notice that the yard is the unit of a standard of length in that system. Now that in a simple way will bring to your mind how it was that the British system developed. I might say that this standard yard was not arrived at at once. Different parts of England had different standard yards. They practically had a different standard yard for every county. Similarly, nearly every province in France, and every province in Germany, had their unit of length in precisely the same way. But you had the greatest number of variations, almost a different standard, for every province. Now, similarly, when it came to measures of mass or the quantity of matter, we have the word 'pound,' and we find that the word 'pound' just means a weight, a convenient weight: perhaps something to throw at a dog. The word 'pound' is buried in obscurity. We do not know its origin, but it is the Latin word for weight, a convenient weight. Well, now there are many forms of convenient weights, you see, and so you find in England and in other countries a certain weight as the standard. But there were a number of different weights or pounds, and so you found that they accepted in different parts of England this pound as a standard. They had other pounds in France, they had pounds in Germany, they had pounds in Austria, all different, but approximately something like that. We find that local influences determined the standard to which I have referred. Perhaps it was the merchants had a little influence with the government, or the grocers or the pharmacists or druggists or the goldsmiths. The goldsmiths developed their own system, and it became recognized. They said, 'we will divide a pound into twelve ounces, and each ounce into twenty pennyweights, and each pennyweight into twenty-four grains,' and so we had troy weight established in that simple way. The grocers said, 'we will have another pound as our standard, and we will divide that into sixteen ounces, and that again into sixteen drachms.' And in one place you have 25 pounds making a quarter, and in other parts you will have 28 pounds making a quarter. Then in some places you have four quarters making a hundredweight of 100 pounds, and in other parts 112 pounds. Then you have twenty hundredweights in some parts of the country giving a ton of 2,000 pounds, and in other parts a ton of 2,240 pounds; the long ton and the short ton. You see there the influence of local power in different centres. Different bodies had different powers, and so they impressed the government and the country, and their standard of weights and measures was adopted. It was just the same with apothecaries' weight. They took the same pound as the goldsmiths, but they divided theirs into twelve ounces and the twelve ounces into eight drachms and the eight drachms into three scruples, and that gave them twenty grains, and so on. Twenty grains one scruple, three scruples one drachm, eight drachms one ounce, twelve ounces one pound; and so you see you have as a result of this process in England two sets of pounds and two sets of ounces. One pound is the avoirdupois pound—that is the standard English pound—and the other is the apothecaries pound, which is not now legal. I refer to that to show you the complexity of the system, and to show you how naturally and easily it grew up.

The same influences were at work whilst it was growing up that are at work to-day. Just to show you the absurdity of these things. I recently looked up a book, and found the following still holding sway in England. There the mass of the people of the country are very conservative, and although they have the avoirdupois pound as the legal pound they still maintained their own measurements, and I found in a certain locality they gave 46 pounds for a bushel of corn; in another 72 to 75 pounds; in another 63 pounds; in another 80 pounds, and in another one 240 pounds. Now, these are all in vogue to-day in England, and here is a very interesting thing I found in Cambridge. I was in Cambridge a short time ago, and I found an old housewife selling butter by the inch.

By Mr. Ross (Ontario):

Q. Not the square inch ?

A. No, they take a pound of butter and draw it out like a sausage into a great length, and then they cut it off and sell it by the inch. Now, then, here you see you have this composite system developed in England; certain standards of length and certain standards of weight. I use the word 'weight,' although we usually speak of it in college as a mass. You have in England the yard and the pound. Now, in France in the early days you had similar measures, and in Germany similar measures.

Now, notice the next step in the development. You find England starting colonies. She sent her colonists to America and traded with them—that is why she colonizes—and in order to preserve her colonies to herself she impressed her system of weights and measures on them. Spain does the same and Germany does the same. Now, as long as she could keep her colonists well in hand so that they traded only with her, that system was quite satisfactory, but in time they began to develop, and they wanted to trade with other countries. England herself traded with other countries and here you would have this result. Supposing Englishmen were buying from Germany, if prices went down they would probably deliver a short yard. On the other hand, if prices went up they would deliver the long yard, and so you had endless confusion and endless law suits and disputes continually going on. The same thing took place among scientific men. Discoveries were continually being made, but the Russian would express his results in his numbers, the German in his numbers, the Frenchman in his, and the Euglishman in his, and scientists could not understand; and so for many years science was developed concurrently in different countries, no country knowing what the other country had done, and hence disputes arose as to the priority of discovery and so on. That was the state of things until about the fifteenth century. Then the international spirit set in and people of different countries began to mingle with each other.

ORIGIN AND DEVELOPMENT OF THE INTERNATIONAL METRIC SYSTEM.

They found that fransportation was better and in that way they soon realized that a common international standard was necessary. Now, one of the first to move in this matter was James Watt the inventor of the steam engine. He wrote to the French scientists, who were at that period probably the most brilliant of all the scientists, he wrote to them and suggested some common measure, some common unit of length. The matter stood for some time until in 1789, when the National Assembly met in Paris. It took the matter up, and in 1790 it referred the whole question to the Academy of Science, the great scientific body of France, and it asked that body to elaborate a system of weights and measures that would be applicable to the whole world. The men that composed that academy sent invitations to the learned men of all countries. England was one of the few that refused. The Royal Society of England, which corresponds to the French Academy, refused through jealousy and other reasons to take part in the deliberation of this Assembly. The result of it all was that in 1793

this Assembly elaborated a scheme which they said would do for all nations, and that was the inception, or the birth of the metric system of weights of measures. One of the suggestions that came to them was, why not take the English yard as the unit of length. The Englishmen at that time were the leaders in commerce, and the suggestion at once provoked jealousy on the part of other nations. Some said: 'Why not take the length of a pendulum.' You know if you take a string with a little ball on it and let it wag backwards and forwards the longer it is the more slowly it will vibrate. If you take one about a yard long, or a little longer, it will oscillate at once and divide into seconds. So they said, 'Let us take the length of the second of a pendulum as the unit. But you know the strength of the gravity varies at every point. They said we will take it and decide it in Paris, but at once the jealousy of other countries was aroused and they declared, 'We will not take the second of a pendulum as the unit of length, but we will take something that is common to all people.' So the unit of length in the new metric system is determined from the size of the earth, and we have here on this diagram a little model of the earth. Now, it is found that when you take a quarter of the earth's surface and divide it into 10,000,000 parts, this, approximately, is the length that you would get that bar. It is called the yard; it is nearly equal to the length of the 'second' string and nearly equal to the standard length adopted by all the countries of Europe. And they said that will be a convenient length, and we will call it a 'metre,' and that is about 39 inches, to be accurate 39'37 inches, and that is the unit of length devised by the Academy of Science for the whole world. Then they set to work to construct that, and they figured it out approximately to see it was about that, and they recommended that to the national government, and the government adopted their report. At once they got the support of the scientists throughout the world. De Lambra and Mechanin started to make accurate measurements, because it needed to be very accurate, and so they measured the area of the meridian between Dunkirk, in the north of France and Barcelona in the north of Spain, sured that whole distance by one of the most elaborate and thorough investigations ever undertaken in science. They measured the whole distance. They measured the latitude of the two places, and knowing the latitude of the North Pole was 90 degrees, they ascertained exactly the distance between the equator and the North Pole, and they divided it into ten-millionth parts, and hence this metre. Now, in 1795, a skilled mechanic constructed one of these standards in platinum, and that is preserved in the archives at Paris as the standard metre of the metric system.

The 'next problem was to induce countries to accept this plan, and so scientists everywhere adopted it at once, and at once began to express all their results in terms of that standard everywhere the world over. They have endeavoured to induce the people of the world to adopt that as their standard, and so in 1875 seventeen or eighteen governments really sent their representatives to the convention in Paris, and they there established the international bureau of weights and measures, and that is now located at Sèvres, on a beautiful spot on the banks of the Seine, I had the pleasure of visiting there some years ago.

Now, the first work that the convention did was to make a new metre, a new standard metre, and to make a number of copies of that so that they could supply the different countries of the world with an exact copy of the standard metre. They accomplished that work, and these metres have been distributed throughout the world. I do not know whether you possess one in this country or not; they are generally made of platinum or irridium, and are therefore very valuable things; this one is made of brass and these are distributed to countries when they adopt the metre as their standard of measure.

IN CASE OF LOSS, HOW THE STANDARD METRE CAN BE RECOVERED.

Now, the International Bureau of Weights and Measures said: 'Suppose a fire took place and the standard metre was destroyed, how shall it be replaced? Shall

we go over the laborious series of calculations again ?' And they asked Professor McMichael of Chicago, who was a very skilled scientist in working with light, to give the measures of the metre in terms of ray lengths of light. They thought that for all time the ray lengths of light would remain the same length, and they determined to adopt the ray lengths of light as the standard upon which to base it. So the ray lengths of light, altogether different from the earth, have determined the length of the metre. That was done and we now have the metre expressed in the terms of the green light from mercury. You take it from one of those mercuries I saw on Sparks street this morning, by means of the green ray of light coming from that mercury, the metre has been determined.

Now the question arose, having settled the length of the metre, how shall we divide it, and here I would like to make clear the reasons for dividing the metre. Many opponents of the metric system say that we should have divided it by 12 or multiplied it by 12; that we should have adopted the duo-decimal system. They say that 12 has more divisors, more even divisors than 10 has. Now, the scientific men of the world thought of all that; that was all gone into very carefully, and they looked around to see if the world had adopted any multiplier, and they found that any system of notation was on the basis of 10. The world had accepted that without any difficulty; it had become so common that man had not realized it. Now, if I have the number 1,111, you say that means one thousand one hundred and eleven; but we could have adopted the duo-decimal system and said that we will say 12 units are one dozen, 12 dozen one gross, and 12 gross one great gross, and 1,111 might have represented one great gross, and one gross, 12 dozen and one; then we would have had to have 12 figures instead of ten. But the world had settled the problem that the decimal system; -now, mind you, I have never mentioned the decimal system until this time-I was talking of the metric system—they settled probably that the decimal system was the one the world would approve of. It is quite clear that the one-half, the one-quarter, or the one-eighth very often offered the best numerical qualifications; the world, however, had long before that adopted the decimal system of notation, and they said the world has settled that, and we will adopt that new metric system, and so they divided the metre into ten parts, and they called it a decimetre. Now then, they had to have names for these, and there was a difficulty in selecting the names. The Englishmen said. we do not want to have French terms, the German said the same, and so they said, let us go back to the Latin language, they are all dead, and so we have such names as the metre, and then we have the decimetre, meaning one-tenth. Then there is the centimetre, meaning the one-hundredth part of a metre, and then there is the minometre, which is the same word as the mill, and that is the thousandth of the metre. And then they said, we have used all the Latin words for these, and now we will take the Greek for the multiplier, and so they said 10 metres are a decimetre, and a hundred metres are the hectometre, and then one thousand metres are the kilometre, and beyond that they adopted the word myriametre for 10,000; but that is not used very often. So you see just by these little words they get these different lengths the metre, the decimetre, the centimetre—roughly the thickness of your little finger—and the millimetre, one-tenth of that. You have on the other hand, the decametre, the hectometre and the kilometre. That is how the metric system of length came out. Now, you wish to know what these measurements mean. The centimetre is about two-fifths of an inch, 10 centimetres or a decametre is about four inches. The metre is about 39 inches, about one-tenth longer than the yard; and the kilometre is commonly understood to correspond with our mile. You talk of so many miles in the British system; in the metric system you talk about the kilometres, a kilometre being about five-eights of a mile.

SQUARE MEASURES AND MEASURES OF VOLUME ON THE METRIC SYSTEM.

When you come to square measures, it is also very simple. You talk of the square metre, the square decimetre, the square centimetre, and the square millimetre; and

similarly of the square decametre, the square hectometre and the square kilometre. Those are the terms that are used, and they are all the new words that are added. But when dealing with land, you know we have the acre in the British system. Naturally they selected one word to be used in the selling or transferring of land, a handy measurement that could take the place of the acre. They said, 'Let us take a length about 10 metres long and make that square, about 30 feet to a side; then we will call that the area.' That is the measure of area, and if you take a place 100 metres long and 100 metres wide it is about 100 yards square. They call that a hectare. It is about 21 acres, a quarter of a 10 acre-field. That is the unit in the metric system, about 21/2 acres. So that you see what the measurements I have given you now, represent, if summed up in these words. The centimetre is used as a unit in common practicethe decimetre is not commonly used largely—so we say so many centimetres, just as so many yards, so many feet, or so many inches. They say, so many metres long or so many centimetres; they don't bother generally with the decimetre, and that is a thing I would like you to keep in mind, namely, the centimetre and the metre. Then there is the kilometre. That corresponds to the mile. If you take a carriage in Berlin they will charge you so much a kilometre instead of the mile. The other measurement I wish you to keep in mind is the hectare, about 21 acres.

Now, the next you come to is measurements of volume. In the English system it is bushels and quarts, and gallons and liquid tons, quintals, and so on. One never knows where you are. But when you come to this system it is very simple again: The cubic metre, the cubic decimetre, the cubic millimetre; and on the other hand, the cubic decametre, the cubic hectometre and the cubic kilometre. Again, you pick out two of these for common practical units, and one of these is curiously enough a cubic decimetre—one tenth of a metre. In practice, when you come to measure volume, the cubic decimetre being a mug of beer, perhaps, or of milk or a dipper of water, you find it a handy measure of volume, and it is generally called a unit of volume. Here it is in the form of a cylinder—just about that length (a brass vessel of the capacity of a litre being produced). So you have the cubic decimetre as the unit of volume—that is the volume of a cube containing one-tenth of a meter. It is just about a quart, almost a quart—a little less than a quart. It is given the name of litre. It is one name that stands out in their work when you are measuring. Thus, in the metric system instead of giving a horse a quart of oats you give him so many litres of oats. In buying coal oil you buy so many litres. They do not have any gills or pints or quarts or bushels. They have so many litres. That is the practice. And then, again, they have one-tenth of a litre, and all the divisions down that way. I want to call your attention to this also, that it is based on the unit of length, and a litre is a cube whose edge is one-enth of a metre.

Then there is another unit. For example, in British measure we have the cord of wood. Now, we say perhaps that we cannot measure wood by the litre, nor can you haul gravel by the litre. There is another unit, the cubic metre; not a cubic yard of gravel, but a cubic metre, and a cubic metre is called a stere. These are all in the metric system. The litre is used for small volumes and the stere is used when referring to wood, or gravel, or earth in excavating, and that sort of thing; so many steres, so many cubic metres.

I have gone over the units of length, surface and volume, and you see the whole thing is built up simply on the basis of ten from a metre. Well now, how do you measure mass? What is your unit of mass? Well, now, they thought a great confusion would arise. I venture to say to you that if any of you gentlemen present took up any of these weights which you think is a pound (pointing to brass weights on the table) there will be a great variety of opinions. I myself, although I teach the subject. would have some difficulty in saying when I had a pound weight in my hand. There is no way to measure it in inches, and you would have difficulty in identifying it unless you compared it with a pound of tobacco or something like that. We have no con-

ception of what a pound is unless we think of the little flat weight in the grocery. But there is no necessary connection with the unit of length; and so the members of the academy saw it would be a great thing to connect the unit of weight or the unit of mass with the length, and so they looked around and said: 'Water is an extremely common thing in the world; if we could find a unit of water.' So they adopted the little centimetre, the little cubic centimetre, filled with water at its maximum density, four degrees centigrade, and they said the weight of that we will call the unit of mass, the gramme. So a gramme, that is the weight of a cubic centimetre, and the cubic centimetre is one-one-hundredth of the length of the metre—a little wee cube something like the end of your finger. You can all think of that little cubic centimetre that measures two-fifths of an inch; fill lit with water, and there you have the unit of mass of weight in the metric system. We will divide that by ten and it is called the decigramme, divide it by one hundred and you have the centigramme, and divide by one thousand and you have a milligramme. On the other hand, you have the decagramme, the hectogramme and the kilogramme. The kilogramme is one thousand grammes. You can get a thousand this way: Take a cube with an edge of ten centimetres each way; that would have one thousand cubic centimetres. The weight of a cubic centimetre of water is a gramme, so in a cube of ten centimetres or one decametre you would have a thousand grammes, or a kilogramme. You were thinking of this that in that same volume as this thing, that would contain 1,000 grammes of water, a kilogramme. And so in order to be a convenient unit this is taken as the practical unit of mass or weight—the kilogramme. The amount of water that would fill a cubic decametre, that is the practical standard, although the theoretical standard, remember, is the amount of water that would fill that little thing there (pointing to a small brass vessel), a cubic centimetre, one gramme. This is a kilogramme or 1,000 grammes. You ask me how much is that? Well, there is a pound (pointing to a brass weight on the table), that is one-tenth of a metre. That is about 2'2 pounds. So that the half kilogramme is 1'1 or 1'10 pounds, so that you see if you adopt that system, the kilogramme, the transition is very easy, you will be getting a big pound instead of a little one, one pound and 10 per cent added.

Now, then, I have brought before you the different units of length, of surface, of volume and of capacity and of weight, and I must refer now shortly to the advantages which the system offers. Now, you ask me why should these things be introduced into any country ? What is the object of introducing them ? Well, now, you see how marvellously simple the whole 'thing is. I have taught you this morning the whole metric system, the whole thing, and I think when you recall, as I recall, the hours we spent upon reduction, how we learned these from day to day: '12 pence one shilling, 20 shillings one pound,' and then further on we had 'scruples,' 'drachms,' and 'troy,' and 'avoirdupois,' and all those things, you'see what an enormous labour it entails in the teaching and learning of the old system. It has been estimated, I think, that three-quarters of a year of the 'pupil's life, of the student's life, is actually taken up in learning the system. That time and that energy might not only be saved by the acceptance of the metric system, but also directed to something more useful. Now, I just want to say that the keeping of these things in mind all your life and the reduction of all our measurements in our own business through life entail a continuous strain that might be avoided; the whole thing might be avoided by the adoption of that simple system. It is easily learned, it is the same system for all trades, and you don't have one measure for beer measure, another for wine and another for apothecaries, and Troy and avoirdupois and other weights. The same system would do all classes of commerce. We do not have the cloth measure with 21 inches one-sixteenth, 9 inches one-quarter, and four quarters one yard, and all the other measures that stand out in your mind.

By Mr. Ingram:

Q. What relation has this metric system to the English system ?

A. The metric system is based on one-tenth, where the English system is the duo-decimal or 12 system. You see, the metric system is the simpler of the two. You can take it and quarter it just the same. The people say it is all very well to take a half and a quarter, but when you get down to the one-eighth, the one-sixteenth and the one-thirty-second, you have no conception of what it means in calculation. It is far easier to take the one-fifth, the one-tenth or the one-hundredth. Well, now again, this system has greatly facilitated for the benefit of science. Since the new basis was adopted every scientist measures results by it; at once science became international, universal, and you have all scientific men in one world by themselves. That is largely one reason why science has progressed at such an enormous rate. Further, we are making new sciences every day. Since the metric system was established, or constituted, we have the science of electricity. It has had its birth. For the unit of electricity we have the volt and the ampere and the ohm, and these are all expressed in terms of the metric system, they are all based on the metric system so that if anybody is going to study electricity he must learn the metric system, and any new science that is developed will develop on the metric system, so that you see it is already quite a fact. Moreover, the actual calculation that is saved when you compare the systems is enormous. I have made a few figures on the blackboard to show you what that means. Suppose you have a large box, say 8 feet 4 inches long-about the length of a cord of wood-and 5 feet wide and 2 feet 5 inches deep. Now, suppose I said to you: 'Let us find the volume of that in cubic feet,' see what you would have to do. One foot is 12 inches, thus the box is 100 inches long. You have to reduce all the dimensions to the same unit. It is 5 feet wide or 60 inches, and 29 inches in depth. You see I have taken a simple example; you could not always get figures as easy as 100 or 60 to deal with. If you multiply the 100 by 60 and by 29 you will get 174,000 cubic inches. But we do not express it in that way. You have to divide it by 1,728 cubic inches in a cubic foot, and you get 100 cubic feet and 1,200 cubic inches. Now, let us do the problem in the other way. You measure its length, which is two and a half metres, you put that down 2.5 metres; the breadth is 80 centimetres—a centimetre, you see, is one one-hundredth metre—so that 80 centimetres is '8 of a metre; and when you multiply the 2.5 and the '8 metres, you have two square metres. This multiplied by 1.52 metres, the 29 inches depth, will give you the cubic contents of 3.04 cubic metres. There you have the volume. Further than that, suppose you had that box filled with water and you wanted to find the weight, or filled with earth, making an excavation. Suppose, first, that it is filled with water, well, now, you have got there 100 cubic feet and 1,200 cubic inches.

Well, now you see I have cubic inches; what is next? Now, it just happens that under the pounds system a cubic foot contains 62½ lbs. of water, about 1,000 ounces roughly speaking. Well, then you see the cubic foot contains 1,000 ounces, or 62½ pounds. What will a cubic inch contain? And you make another calculation and you divide the 62½ pounds by 1,728 and you get '039 of a pound, which is the weight of a cubic inch of water, and this here is a cubic inch, and you multiply by 174,000 and you get the result.

Now then, turn it into the other system, you have 3'04 cubic metres. You say, what is a cubic metre? I have forgotten to mention in going over that, that a cubic metre is 1,000 litres. You see this block, which is a cubic metre, it is 10 by 10; that is 100, and then it is 10 deep, which means 1,000 kilograms, like feet. This thing holds water so that a cubic metre is 1,000 kilograms and a kilogram is 2'2 lbs., and you see that 1,000 will be about 2,200 pounds, about a ton, and so that cubic metre under the metric system is one ton. How many cubic metres have you?—3'04, and therefore you have 3'04 tons. You do not need any calculation at all; you know the number of metres, and the thing is done.

Next suppose you had to calculate the pressure of power in that. Here is a vessel full of water. It is 2 ft. 5 in. deep, that is 29 inches. What pressure would that make on the bottom per square centimetre. Supposing you imagine 29 cubic inches of water

to be piled up on top there, we find that a cubic inch of water weights '039 lbs., and you multiply that by 29 and you find the pressure in lbs. per square inch. But turn over to the metric system and you see that it is 80 centimetres deep. Now, if you have the cubic centimetre, that is one gram, and 80 of them gives you 80 grams pressure, it is quite simple. I have given you a simple illustration to show that simplification will be an extremely strong argument for the introduction of the metric system. Its ease in learning and then the great saving of time lost in making calculation under the present system is simply enormous and all that will be avoided if they adopt the system.

COUNTRIES WHICH HAVE ADOPTED THE METRIC SYSTEM.

But further than all that and beyond all academic reasons is the commercial aspect. I made a little investigation and I found that this system has been legalized and adopted in every country in Europe but Denmark and Great Britain, and in every country in North and South America.

Q. Has it been adopted in Germany ?

A. Yes, and in France and Austria, and Sweden and Norway, Austria-Hungary and territories, Belgium, Finland, French Colonies, Greece, Holland, Italy, Roumania, Russia, Servia, Spain, Switzerland, Bulgaria, Portugal Azores and Madeira, and the

Ottoman Empire.

In America the Argentine Republic has adopted it, and I understand that they will not allow a catalogue to enter their country expressed in terms other than the metric system. Bolivia, Brazil, Central America, Costa Rica, Chili, Colombia, Cuba, Ecuador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Peru, Philippines, Porta Rico, Salvador, Santo Domingo and Uruguay. All these have adopted it. In Africa, Egypt has adopted it. The British in their agency there have adopted the metric system. All the government engineers and the British trade engineers have declared they would not return to the other system after having tried it there. In the Mauritius they have it also. Coming to Asia, the system has been adopted in 28 of the ports of China and it has also been adopted in Japan and Java. The countries in which it has been legalized are the United States, Great Britain and Canada. It is legalized but not adopted as the only standard; and those in which it is not legalized are Morocco, Denmark, Persia, Siam, the interior of China and among the African races.

By Hon. Mr. Brodeur:

Q. Legalized in these places you have given us? A. Yes.

By Mr. Ross (Ontario):

Q. Any other standard ?

A. No other standard. The colonies that are in favour of the system are Australia, New Zealand, Cape of Good Hope, Transvaal, Orange River colony, Southern Rhodesia, Gambia, Northern Nigeria, Gibraltar, British Guiana, Trinidad, Leeward Islands and the Windward Islands. Those who are in favour of it, but say the British nation must adopt it first, are Sierra Leone, Southern Nigeria, Ceylon, the Falklands, Hong-Kong, Fiji, British New Guinea, Jamaica, British Honduras, Strait Settlements, Labuan and the Beuchanaland Protectorate. These are a few of those who see what they must do, and it is very important for us to see what that means. Here, in Canada, we are striving to promote trade, I believe, with South America. Germany and France are also endeavouring to promote trade there. As they have adopted the metric system, that shows you that if you are anxious to promote trade there you

must manufacture with their scales. I made some inquiries in Toronto the other day regarding the practice of the German manufacturers, and I find that a dry goods merchant in Toronto buys in Germany according to the British system. The Germans actually maintain two systems, one for internal and one for external trade. If they were all of one system it would be so much money saved.

Further, the whole of Africa in the next fifty years will be peopled with nations, and they will all adopt the metric system. South America has done that. You take Asia, in the next fifty years that continent will all be partitioned, and the nations that will spring up there will establish the metric system. They will all manufacture under that system. And so the countries which have adopted the metric system will be a great advantage in trading with these new nations, and that I take it is something that the manufacturers of every country ought to keep an eye on.

PROPOSED LEGISLATION IN GREAT BRITAIN.

This system has been growing steadily. They are awake, Take Great Britain, they are alive to the problem. I find they have introduced a Bill this session in the House of Lords providing for the adoption of the metric system. It received two readings, and the matter was referred to a select committee, the principle of the Bill being approved without details. The number of members supporting the principle has been steadily increasing. I find that in 1900, 96 members of parliament declared themselves in favour of it. In February, 1901, it was supported by 170; in June, 1901, by 266; in October, 1902, there were 292 prepared to vote for it, and to-day 328 members of parliament have declared themselves in the British House of Commons in favour of the metric system. In the last year there was a Bill before the Congress of the United States to adopt the metric system. It was referred to a select committee, and that committee I think never reported; anyway, there was a lack of time, and the Bill was allowed to lapse. Why? It was found on appealing to the manufacturers of the country that they either expressed lack of interest in it or actually said, a great many manufacturers actually said, and I think they would have said the same thing here in Canada, that they did not see that it would give any personal benefit. That was the view of the manufacturers, Gentlemen, but when you come to such great manufacturers as the Westinghouse people and the Canadian General, who are making machines for foreign trade as well as their own, and so have to keep two sets of patents, one in the metric system and one in the other, they are highly in favour of such a system. And so you will see that all these men who manufacture on a large scale for foreign trade are in favour of the metric system. It is only when the commerce is confined to the country itself that you will find them saying that it does not matter. Further than that, sir, I took pains to look into the introduction of this system. There is no doubt about it, there is a psychological moment for introducing any great measure like this, There was a revolution in France which perhaps accounted for the metric system being devised there. This system was approved of by a national convention in 1793, and it was legalized in 1802, but it was not absolutely adopted, and the old system continued on. This is the point I want to make clear. The old system continued on until 1837. and then when political differences were settled they brought in an Act to make it compulsory in January, 1840, and from that day on the old system was done away with, and they never went back to it. Some people say that to-day they still retain the old system. I have been in Paris, and you hear the pound spoken of, but it is half a kilogramme, not the old pound. You see the sous used, but it is five centimes.

By Hon. Mr. Brodeur:

Q. They have not retained the old weights ?

A. The old weights are not retained.

Q. They simply have retained the old name ?

A. Yes, sir, just as in this country we would continue to use the word 'pound.' We would continue the use of the pound, meaning half a kilogramme, 1 1 pound. The point which I wish to make is this: Compulsory legislation is necessary. In Germany, of course, before the confederation of the empire every kingdom had its own system. When the empire was confederated in 1868, an Act was passed for the adoption of the metric system. It was made optional from 1870 on, and in 1872, just two years for the transition period, it was made compulsory, and it then became universal throughout the whole of Germany. In Austria a law was passed in 1871, and it was made compulsory in 1873. In Sweden—and this occurred after the international convention, of which I told you—they passed a law adopting the metric system in 1878; it was made optional, and was introduced in 1881, and was made compulsory in 1889. Eight years was the transition period there. It was introduced into Norway, and Norway adopted it at once. They passed an Act, and said, 'It is compulsory now.' The thing was done at once there. I mention this to show you that in general a transition period is necessary to avoid any disturbance.

Experience has shown that two or three years will suffice, and I think it will be compulsory at the end of 1906, or something like that, in Britain. I would not be much surprised if the United States and Great Britain adopted it; I know that they intend

bringing in legislation on the subject.

By Mr. Robinson (Elgin):

Q. It might be done this year?

A. It might be. Compulsory legislation seems necessary to make the change. All over the United States and in Great Britain, and even in Canada, they are manufacturing according to the metric system. Their pattern is now made on that system. Of course, people all the time are using the old machinery and this needs repairs, and in order to make those repairs the firms find it necessary to keep their old patterns, but there are new inventions and new styles coming up all the time, which necessitate new patterns, and these can be made according to the new system, so that the transition can be gradually accomplished in that way.

By Mr. Ross (Ontario) :

Q. Then you think this an absolutely perfect system ?

A. I think, sir, it has been found to satisfy every requirement of human ingenuity. The pound is half a kilogram; the yard is equivalent to a metre approximately, the ton of the metric system is 2,200 pounds, almost the same as the long ton of 2,240 pounds; if you buy a ton of coal under the metric system, you practically get 40 pounds less than the long ton, and 200 pounds more than the short ton; and the quart is 2.5 pounds, whereas the litre is 2.2 pounds, so that the litre can be introduced as the new quart, quite easily. Professor Ramsay Wright suggests that we should make the cent, instead of having a cumberous copper coin as we have it now, of nickle, as nickle is found in this country more largely than in any other.

By Mr. McLean :

Q. Did I not try to get that done, but could not get ten members of the House to support it, but it is coming all right?

A. This is the scale, it would be in nickle; it is a little thicker than the ordinary

coin, but it weighs one gram and it is equivalent to one cent.

Q. It would be hard to take care of ?

A. So it is now, but it is a cent, and it is a centimetre in diameter and it weighs a gram.

By Mr. Robinson (Elgin):

Q. There is a coin as small as that used in Holland.

A. Now, gentlemen, that is all my story. I have tried to put it before you as clearly as possible.

By Mr. Erb:

Q. In the countries that have already adopted this system have they found it necessary to compensate any interests when the change was being made. For instance, the manufacturers or dealers in scales who might have thousands of dollars worth of these goods in hand, has it been found necessary in those countries to compensate any such interests?

A. I think not. If you look up the report, I have a copy of the proceedings of the committee which dealt with that matter in the United States, you will find there is a report from one of the greatest scale manufacturers in the United States in favour of it. They have already adopted the system. They sell scales now according to the new system of supply.

By Mr. McLean :

Q. All they have to change is the little balance wheel.

A. Certainly.

Having read over the preceding transcript of my evidence, I find it correct.

J. C. McLENNAN.

ADDENDUM

• то

PROF. J. C. MCLENNAN'S EVIDENCE.

ON THE

METRIC SYSTEM OF WEIGHTS AND MEASURES

BEFORE THE SELECT STANDING COMMITTEE ON AGRICULTURE AND COLONIZATION, OF THE HOUSE OF COMMONS OF CANADA, MARCH 29th, 1904,—SUPPLIED BY HIMSELF.

THE METRIC SYSTEM OF WEIGHTS AND MEASURES.

HISTORICAL DEVELOPMENT.

The moment that primeval man emerged from a state of almost animal barbarism, the natural tendency to acquire property made itself manifest. All possessions of value must necessarily bear some relation to each other, and such relation, the base of any system of barter, can only be established by some means of measurement. The simplest form of measurement, of course, is mere enumeration; but the ability to count alone could not long satisfy the needs of the dawning intelligence of men. In consequence our earliest ancestors found it necessary to adopt some standard and naturally turned to objects more or less constant either in size, weight or some other physical property. The lack of intimate association between the early communities necessarily gave rise to diverse standards of measurement, resulting in a confusion which was further increased by a natural tendency to adopt as standards personal measurement, such as the length of the foot and the arm, the first joint of the thumb, &c. Owing to the different stature of men in different localities these standards were very inexact and their elasticity greatly favoured fraud on the part of unscrupulous dealers. As an example of the origin of these diverse measurements, which were in no way related to each other, and which were in every case excessively local in their application, may be cited the origin of the inch from the length of the first joint of the thumb and that of the yard from the length of the king's arm. More indefinite still were such terms as 'furlong,' meaning a furrow long, and 'perch,' derived from the Latin pertingo, to stretch. Standards of weight were fully as indefinite as those of linear measurement, as may be seen from the fact that our familiar 'pound' owes its origin to nothing more definite than the Latin pondus, a weight.

Unsatisfactory as were these crude attempts at measurement, they nevertheless answered the purpose of isolated communities, but soon the exigencies of trade between the different centres of civilization brought a new factor into the field and emphasized the confusion already existing. Furthermore, when national growth manifested itself and organized government appeared, the collection of revenue forced the adoption of something approaching a fixed standard and necessitated a definite relation between the different units of the systems of weights and measures. It is quite natural that buyer and seller should have different ideas of the length of a thumb joint, and we find that this difference of opinion was fully shared by the revenue officers and the importers of foreign goods. It is, however, to the government control of revenue that we owe the nationalizing and eventually the legalization of a system of standards.

Taking Great Britain as an example, we find that the attempts to reduce measurement to a standard proved an undertaking of great difficulty and that five centuries elapsed after the Norman conquest before anything like uniformity was attained. Even to-day many of the early units are clung to with a remarkable persistency. For example, the term 'stone' is still largely used in Great Britain and the expression 'baker's dozen' is frequently heard even in Canada.

It is worthy of note that no attempt has ever been made in the British empire to establish a relationship between the units of mass, length and volume. A possible exception to this statement may be found in the fact that a gallon of cold water is officially recognized to weigh ten pounds.

It is at once manifest that the legalization of the standards in each country tended only to the lessening of the confusion in that particular realm. The standards adopted by the different states were in no way related to each other, and consequently as international commerce and scientific investigation increased the need of a universal system of weights and measures became more and more apparent.

About the beginning of the eighteenth century the creation of a universal system began to be mooted by the leading scientists in Europe. Among the most active of these was James Watt, the inventor of the steam engine, who suggested the universal adoption of the Paris pound as the standard of mass and the length of the seconds pendulum at Paris as the standard of length.

He also proposed that all subdivisions and multiples of these standards should be decimally connected. Watt's proposal for a decimal system of weights and measures was not new, having been made by Sir James Stuart nearly a hundred years earlier, while the suggestion to derive the standard of length from the pendulum had been made by the French scientist, Picard, many years before.

In France especially the want of uniformity in the weights and measures of the different provinces had for a long period been exceedingly embarrassing and trouble-some in the transaction of affairs. Various attempts had been made during the 16th and 17th centuries to establish a uniform system of weights and measures for that country, but it was not until near the close of the 18th century that the question assumed such importance as to warrant legislative action on the part of the National Assembly. In 1789 the assemblage of the States-General in Paris brought to a focus the long-felt discontent at the numberless variations in use in various parts of France and in the following year the Academy of Sciences was instructed to devise a system of weights and measures which would be suitable for all nations. This the Academy undertook to do, and the Royal Society of London was asked to take part in the movement, but declined the invitation, and England accordingly lost any share of the credit for formulating the new system.

The scheme of the Academy of Sciences, known as the Metric System of Weights and Measures, was laid before the National Convention in 1793, and received its endorsation. In this scheme all previous units were abandoned, and, in order to give it

an extremely international character, the standard of length was based upon the length of a quadrant of the earth's meridian. The ten millionth part of this length was called the metre, and on this unit, together with the maximum density of water, the whole system of weights and measures was built up, all subdivisions and multiples of the standard unit, according to Watt's proposal, being decimally connected.

In order to carry out the scheme of the Academy, Delambre and Mechain, two able mathematicians and distinguished scientists, undertook to measure an arc on the earth's surface, from which the total length of the quadrant of a meridian could be calculated. The arc selected extended from Dunkirk in the north of France to Barcelona on the east coast of Spain. Their task occupied about seven years, and at its conclusion their measurements and calculations were submitted to a 'Commission of Weights and Measures,' composed of 22 members chosen from the various countries of Europe, who, after carefully revising all the computations, arrived at a determination of the length of the metre, and proceeded at once to the practical realization of this standard of length. A bar of platinum one metre in length at the temperature of melting ice was constructed with the greatest care by Lenoir under the direction of Borda, and this bar, known as the Mètre des Archives, is still preserved in the Palais des Archives, and serves as the first practical standard of length in the metric system.

In the scheme presented by the Academy of Sciences, the theoretical unit of mass, or weight as it is popularly spoken of, was called the gramme, and was defined to be the mass of distilled water, which, at its maximum density, would exactly fill a cube with an edge one hundredth of a metre in length. This theoretical unit was small, and a larger one, the kilogramme, was adopted for practical purposes. The kilogramme is equal to 1,000 grammes, and is the mass of distilled water which, at the temperature of 4°C, under an atmospheric pressure equal to that represented by a column of mercury 760 millimetres high at O°C, at sea level, and at latitude 45 degrees, would exactly fill a cube with an edge equal to one-tenth of a metre.

A cylinder of platinum was constructed by Borda, with the greatest possible precision, so as to have a mass equal to that of the kilogramme just defined, and was deposited along with the metre in the Palais des Archives at Paris. This standard mass, which is known as the Kilogramme des Archives, and the standard metre referred to above, form the basis of the scheme elaborated by the Academy of Sciences, and they are the two practical units to which all the weights and measures of the metric system are referred.

Such is briefly the history of the origin of a system of weights and measures which, in spite of opposition, has now been adopted by a large majority of the nations of the world, who recognize its value and appreciate its extreme simplicity.

The metric system of weights and measures was made compulsory in France in 1802, but as many opposed its adoption, it was subsequently decreed by the National Convention in 1812 that the old measures, though metrically altered, should still be used. This system of compromise went on until 1887, when a law was passed which prescribed that from January 1, 1840, none but the weights and measures of the metric system should be employed, and that the use of unauthorized measures should be punishable. Since the passing of this law the metric system, and that alone, has been the legal system in force in France.

The agitation in favour of the metric system gradually extended throughout Europe, and soon after the constitution of the German empire it was adopted in that country. An Act passed in August, 1868, made it optional from January 1, 1872, and since then the metric system alone has been legalized in Germany. In 1873 its use was made obligatory in Austria, and somewhat later in Italy. The movement has extended to America, to Africa and to Asia, and at the present time the metric system is the one official and legal system of weights and measures in force in forty-three of the countries of the world. In the United States, in Great Britain and Ireland, and

also in a number of the British dependencies, including Canada, this system has been legalized, but not as yet made compulsory.

In 1867 the International Geodetic Conference, which assembled in Berlin, expressed the view that in the interest of science in general and of geodesy in particular, a unique system of weights and measures, with decimal subdivisions, should be adopted in Europe, that the system selected should be the metric system, that a new metre of length equal to that of the Mètre des Archives of France should be constructed as an international standard, that a number of additional copies for distribution as standards to different countries should be prepared, and that for this purpose an International Bureau of Weights and Measures should be established.

In 1875 an agreement, known as the International Metric Convention, was entered into by eighteen contracting states—since increased by successive adhesions to twenty-two—by which the proposals of the geodetic conference were adopted. In conformity with this agreement an international bureau of weights and measures was established at Sèvres, on the banks of the Seine near Paris, and is now maintained at the common expense of the contracting states.

The first work undertaken by this bureau was the preparation of a new international standard metre and a new international standard kilogramme. In establishing these new international prototypes the old standards of the Archives of France were taken as a basis. Platinum-iridium alloy was used in their construction, and they were standardized by the most approved methods and by means of the most perfect instruments which science and the art of construction have placed at our disposal. They are now kept in a vault underground at Sèvres under lock and key, and are inspected only once in ten years, and even then they are not handled more than is absolutely necessary.

Copies of the 'International Metre' and the 'International Kilogramme' have been distributed as standards to those governments which have signed the convention, and others are being constantly prepared by the bureau for distribution to public institutions, scientific societies, observatories and laboratories, as well as to scientists and to the manufacturers of instruments of precision. All these copies are constructed and verified with the greatest precision, and can replace the international standards in case the latter by any mischance should be lost.

The probability of the loss or destruction of all the standards is very remote, but the possibility of alteration through molecular changes in the prototypes is not to be disregarded. Consequently it was thought advisable to measure the international metre in terms of some physical constant of an absolutely unchangeable nature. The wave length of the light emitted from well defined lines in a spectrum is absolutely constant and depends on the vibrations of the ever-present and unalterable ether. The length of such waves was, therefore, regarded as particularly suitable for the purpose of recording the length of the international metre in terms of a factor entirely removed from the possibility of change with the lapse of time.

In 1892 Michelson was invited to carry out this work at the International Bureau and an extended series of the most careful measurements was conducted by this distinguished scientist with the red, green and blue lines of cadmium as the source of light, and the length of the metre was found to be 1,553,163'5 wave lengths of the red light, 1,966,249'7 wave lengths of the green light and 2,083,372'1 wave lengths of the blue light of the cadmium spectrum.

Advances in methods of measurement and refinement in the construction of instruments of precision have shown us that the international metre differs slightly from one-ten-millionth part of a quadrant of the earth's meridian, and that the mass of the international kilogramme is not exactly equal to the mass of a cubic decimetre of water at its maximum density, but this fact, while it robs us of the sentiment connected with the origin of these prototypes, does not detract in the least from their value as the basis of the metric system.

UNITS OF LENGTH AND MASS IN THE METRIC SYSTEM.

The fundamental units of length and mass in the metric system of weights and measures are the *metre* and the *gramme*, and these, with their multiples and submultiples, which are decimally connected, suffice for the expression of all measurements of length, area, capacity, volume, mass and weight. The multiples of the metre and the gramme are denoted by the prefixes *deca*, *hecto*, *kilo* and *myria*, which are derived from the Greek words *deka*, *hekaton*, *chilioi* and *myrioi*, signifying 10, 100, 1,000 and 10,000 respectively, and their submultiples by the prefixes *deci*, *centi* and *milli*, which are derived from the Latin words *decem*, ten; *centum*, a hundred; and *mille*, a thousand.

The different units of the metric system are presented in the following tables and accompanying them for comparative purposes are the weights and measures commonly used in Canada at the present time:—

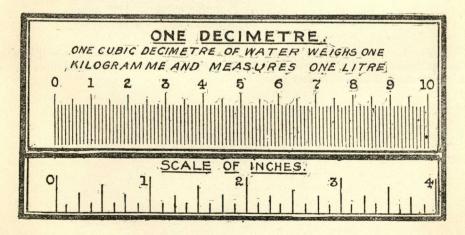
THE NAMES OF THE METRE UNITS.

	Prei	ixes.		Units Length.	Mass (Weight).	Capacity
Sub-multiples Multiples	Milli. Centi Deci Deka. Hecto. Kilo. Myria.	= = = = = = = = = = = = = = = = = = = =	$\begin{array}{c} \frac{1}{1000} \\ 1\\ 1\\ 0\\ 1\\ 0\\ 1\\ 0\\ 0\\ 1,000\\ 1,000\\ 10,000 \end{array}$	Metre.	Gramme.	Litre.

THE METRE.

Or about 1-10th longer than the British yard.

The following diagram represents a decimetre graduated in centimetres and millimetres, and beneath it for comparison is a scale of inches.



LINEAR MEASURE.

10 millimetres = 1 centimetre 10 centimetres = 1 decimetre 10 decimetres = 1 metre 10 metres = 1 decametre 10 decametres = 1 totometre 10 hectometres = 1 kilometre 10 kilometres = 1 myriametre 10 kilometres = 1 myriametre 11 lines = 1 inch 4 inches = 1 hand 7 92 inches = 1 surveyor's link 12	Metric		L	Titish.
	10 centimetres = 10 decimetres = 10 metres = 10 decametres = 10 hectometres = 10 hectometre	1 decimetre 1 metre 1 decametre 1 hectometre 1 kilometre	4 inches = 7.92 inches = 12 " = 12 " = 3 feet = 6 " = 5½ yards = 100 links (Surveyor's) 100 links (Engineer's) 40 rods = 8 furlongs = 1.158 statute m	= 1 hand = 1 surveyor's link = 1 engineer's link = 1 foot = 1 yard = 1 fathom = 1 rod = 1 chain (66 ft.) (Surveyor's) = 1 chain (100 ft.) (Engineer's) = 1 furlong = 1 statute mile iles = 1 nantical mile

Measurements now expressed in yards will, under the Metric System, be expressed in metres; those expressed in feet will be decimetres, and centimetres will take the place of fractions of an inch. For all practical purposes of comparison 1 yard may be taken as 0.9 metres, 1 foot as 3 decimetres, 1 inch as 25 millimetres, and one kilometre as five-eights of a mile.

SURFACE MEASURES.

METRIC.

BRITISH.

The Surface Units are the Linear	144 square inches	=	1 square foot
Units squared	9 square feet	=	1 square yard
For Land Measure the unit of measure-	30½ square rods	=	1 square rod
ment is the Arc, which is equal to	40 square rods	=	1 rood
100 square metres	4 roods	=	1 acre
100 centiares = 1 are	640 acres	=	1 square mile
100 ares = 1 hectare.			

Surveyor's Measure.

625 square links 16 square rods	=	10 square rods
10 square chains	=	15 square chains (surveyor's) 1 acre
640 acres 36 square miles	=	1 square mile 1 township

In surface measurements the square metre and the square decimetre will replace the square yard and the square foot. For land measures the practical unit is the hectare, which is approximately equal to 2.5 acres.

VOLUME AND CAPACITY MEASURES.

METRIC.

BRITISH.

Metric cubic units are the linear units	Volu	ame Measure.
cubed, e.g., cubic metre. The practical unit of capacity is the Litre which is equal to one decimetre.	1728 cubic inches 27 cubic feet	= 1 cubic foot = 1 cubic yard
10 millilitres = 1 centilitre 10 centilitres = 1 decilitre 10 decilitres = 1 litre	42 cubic feet 128 cubic feet	= 1 ton (of shipping) = 1 cord (firewood)
10 litres = 1 decalitre 10 decalitres = 1 hectolitre	Capa	city Measure.
10 hectolitres = 1 kilolitre	4 gills 2 pints	= 1 pint = 1 quart
The practical unit of volume is the Stere which is equal to 1 cubic metre.	4 quarts 2 gallons	= 1 gallon = 1 peck
10 decisteres = 1 stere 10 steres = 1 decastere	4 pecks	= 1 bushel
	8 bushels 5 quarters	= 1 quarter = 1 load
	Apothe	ecaries' Measure.
	20 minims 3 fluid scruples	= 1 fluid scruple = 1 fluid dram

1 quart 2 pints 4 quarts = 1 gallon *(1 fluid ounce of distilled water at 60°F weighs 1 ounce avordupois).

=

=

_

1 fluid ounce*

1 pint

Under the Metric System measurements now expressed in cubic yards will be made in cubic metres. The bushel, peck, gallon, quart and pint will disappear, and measurements made in gallons and quarts will be made in litres. The stere will replace the cord in the measurement of firewood, and the cubic yard in the measurement of stone, gravel or sand. For practical purposes the cubic foot may be taken as equal to 28 cubic decimetres and the litre is approximately equal to the quart.

8 fluid drams 20 fluid ounces

TABLES OF WEIGHT.

METRIC.

BRITISH. (1) Apothecaries'

10 milligrammes	=	1 centigrame
10 centigrammes	=	1 decigramme
10 decigrammes	=	1 g amme
10 grammes	=	1 decagramme
10 decagrammes	=	1 hectogramme
10 hectogrammes	=	1 kilogramme
10 kilogrammes	=	1 myriagramme
10 myriagrammes	=	1 quintal
10 quintals	=	1 ton (metric)

20 grains	=	1 scruple
3 scruples	=	1 dram
8 drams	=	1 ounce
12 ounces		1 pound

(2) Troy.

24 grains	=	1 pennyweight
20 pennyweights	=	1 ounce
12 ounces	=	1 pound

(3) Avordupois.

16 drams	=	1 ounce
16 ounces	=	1 pound
25 pounds	=	1 quarter
4 quarters	=	1 hundredweight
20 hundredweight	=	1 ton
* The long hundred-		
weight	=	112 pounds
and the long ton	=	2,240 pounds

Under the Metric System measurements in pounds will be made in kilogrammes and grammes and decimals of a gramme will be used instead of ounces and grains.

The metric ton, which differs but slightly from the ton now in use, will replace the latter. The kilogramme is approximately equal to 2'2 pounds and the pound is, therefore, but slightly different from one-half of a kilogramme. For practical purposes the ounce, avordupois, may be taken as 28 grammes and the apothecaries' ounce as 31 grammes.

CUSTOMARY WEIGHTS AND MEASURES HAVING MORE THAN ONE VALUE.

Ling =7'92 inches (Gunters' or surveyors') and 12 inches (engineers').

Chain =66 feet (surveyors') and 100 feet (engineers').

Mile =5,280 feet (land measure) and 6,080 feet (nautical measure).

Dram =27.344 grains (Avoirdupois) and 60 grains (Apothecaries').

Ounce =437.5 grains (Avoirdupois) and 480 grains (Troy and Apothecaries').

Pound=5,760 grains (Apothecaries' and Troy) and 7,000 grains (Avoirdupois).

Ton =2,000 pounds (short ton) and 2,240 pounds (long ton).

APPROXIMATE BRITISH EQUIVALENTS.

Metric Measures.		Equivalents.	Approximate equivalents.
			(In measures at present in use.
1 kilometre	=	0.62137 miles	\$ths of a mile.
2 kilometres	=	1.24274 miles	a mile and a quarter.
1 metre	=	39:37 inches	1 yard.
1 hectare	=	2.4711 acres	2½ acres.
1 hectare	=	1.2356 acres	1 acre.
1 litre	=	1.76 pints	1 quart.
1 kilogram	=	2.2046 pounds	2 pounds.
½ kilogram	=	1.1023 pounds	1 pound.
1 ton	=	2204.6 pounds	1 ton.
1 stere	=	1.307954 cubic yards	1 cubic yard.

From this table it will be seen that in the transition stage it will be quite practicable to apply a few of the names of the weights and measures now in use to some of the more common of the new metric measures.

EQUIVALENTS OF MERTIC WEIGHTS AND MEASURES IN TERMS OF IMPERIAL WEIGHTS AND MEASURES FOR USE IN TRADE.

Legalized by the Queen's Most Excellent Majesty in Council, May 19, 1898.

Metric to Imperial.

LINEAR MEASURE. 1 Millimetre 0.03937 Inch. 1 Centimetre 0.3937 1 Decimetre 3.937 = 39 370113 " Metre (m.) 3.280843 Feet. 1.0936143 Yards. 1 Decametre = 10.936 Yards. Hectometre = 1 Kilometre 0.62137 Mile.

```
SQUARE MEASURE.
                                                          0·15500 Sq. Inch.

15·500 "

10·7639 Sq. Feet.

1·1960 Sq. Yards.

119·60 Sq. Yards.

2·4711 Acres.
1 Square Centimetre
                                                 _
1 Sq. Decimetre
1 Sq. Metre
                                                 _
                                                 =
  Are
                                                . --
1 Hectare
                                                 =
                                                 _
                                CUBIC MEASURE.
                                                             0.0610 Cubic Inch.
1 Cubic Centimetre
                                                            61.024
1 Cubic Decimetre
                                                 =
                                                            35.3148 Cubic Feet.
1 Cubic Metre
                                                           1.307954 Cubic Yards.
                            MEASURE OF CAPACITY.
                                                             0.070 Gill.
1 Centilitre
                                                 _
                                                             0.176 Pint.
1.75980 Pints.
1 Decilitre
                                                 =
  Litre
                                                 _
                                                             2.200 Gallons.
  Dekalitre
                                                 =
                                                             2.75 Bushels.
1 Hectolitre
                                                 =
                            MEASURES OF WEIGHT.
                                                                  Avoirdupois.
                                                             0.015 Grains.
1 Milligramme
                                                             0.154
                                                 _
  Centigramme
                                                             1.543 Grains.
                                                 =
1 Decigramme
                                                            15 · 432 "
5 · 644 Drams.
                                                 =
1 Gramme
                                                 ...
1 Dekagramme
                                                             3.527 Ozs.
                                                 =
1 Hectogramme
                                                             2.2046223 Lb. or 15432.3564 Grains.
  Kilogramme
                                                 =
                                                            22.046 Lbs.
1.968 Cwt.
1 Myriagramme
                                                 -
1 Quintal
1 Tonne
                                                 =
                                                             0.9842 Ton.
                                                 =
                                                             Troy.
0.03215 Oz. Troy.
1 Gramme
                                                           15.432 Grains.
                                                             Apothecaries.
0.2572 Dram.
0.7716 Scruples.
1 Gramme
                                                           15 432 Grains.
```

EQUIVALENTS OF IMPERIAL AND METRIC WEIGHTS AND MEASURES.

Imperial to Metrical.

LINEAR MEASURE.

1 Inch	_	25.400 Millimetres.
1 Foot	=	0.30480 Metres.
§ 1 Yard	=	0.914399 Metres.
1 Fathom	=	1.8288 Metres.
1 Pole	=	5.0292
1 Chain	=	20.1168 "
1 Furlong	=	201.168 "
1 Mile	=	1.6093 Kilometres.

STHE IMPERIAL YARD.

It was enacted by the British Parliament (18 & 19 Victoria, c. 72, July 30, 1855) 'that the straight line or distance between the centres of the transverse lines in the gold plugs in the bronze bar deposited in the office of the Exchequer shall be the genuine standard yard * at 62° Fahrenheit, and if lost it shall be replaced by its copies.'

The authorized copies here referred to are those which are preserved at the Royal Mint, the Royal Society of London, the Royal Observatory at Greenwich, and the New Palace at Westminster.

^{*}By 42 Victoria, c. 1684, the Dominion Standards of weight and measure are the yard and the pound as represented by a certain bronze bar and a platinum-iridium weight (copies of the British Standards) deposited at the Department of Inland Revenue in the custody of the Minister of Inland Revenue.

SQUARE MEASURES.

1 Square Inch	_	6.4516 Sq. Centimetres,
1 Sq. Foot	_	9.2903 Sq. Decimetres.
1 Sq. Yard	=	0.836126 Sq. Metre.
1 Perch	. =	25.293 Sq. Metres.
1 Rood	=	10.117 Ares.
1 Acre	=	0.40468 Hectare.
1 Sq. Mile	=-*	259.00 Hectares.

CUBIC MEASURE.

1 Cubic Inch	=	16.387 C. Centimetres.
1 Cubic Foot	=	0.028317 Cubic Metres.
1 Cubic Vard		0.761553 Cubic Metros

MEASURES OF CAPACITY.

1 Gill	_	1.42 Decilitres.
1 Pint	=	0.568 Litre.
1 Quart	=	1.136 Litres.
† 1 Gallon	=	4.5459631 Litres.
1 Peck	=	9.092 Litres.
1 Bushel	_	3.637 Dekalitres.
1 Quarter	=	2.909 Hectolitres.

APOTHECARIES' MEASURES.

1 Minim	_	0.059 Millimetre.
1 Fluid Scruple	=	1.184 Millimetres.
1 Fluid Dram	=	3.552 "
1 Fluid Ounce	=	2.84123 Centilitres.
1 Pint	=	0.568 Litre.
1 Gallon	=	4.5459631 Litres.

AVOIRDUPOIS WEIGHT.

	1 Grain	=	0.0648 Gramme.
	1 Dram	=	1.772 Grammes.
	1 Oz.	=	28:350 "
1	1 Pound	=	0.45359243 Kilogrammes.
	1 Stone	=	6.350 Kilogrammes.
	1 Quarter	=	12.70
	1 Hundredweight	=	50.80
		_	0.5080 Quintals.
	1	_	1.0160 Tonnes or
	1 Ton	=	1016 Kilograms.

TROY WEIGHT.

1 Grain	=	0.0648	Grammes.
1 Pennyweight	=	1.5552	Grammes.
1 Troy Ounce	=	31.1035	11

APOTHECARIES' WEIGHT.

1 Grain	_	0.0648 Grammes.	
1 Scruple	=	1.296 Grammes.	
1 Dram	=	3.888 "	
1 Oz.	-	31.1035 "	

THE STANDARD POUND.

By the Act cited above, a weight of platinum marked "P. S. 1844, 1 lb.", deposited in the office of the Exchequer, 'shall be the legal and genuine standard measure of weight, and shall be and be denominated the Imperial Standard Pound Avoirdupois, and shall be deemed to be the only standard measure of weight from which all other weights and measures having reference to weight shall be derived, computed and ascertained and one equal seven-thousand part of such pound avoirdupois shall be the grain, and five hundred seven hundred and sixty such grains shall be and be deemed a pound Troy. If at any time hereafter the said Imperial Standard Pound Avoirdupois be lost or in any manner destroyed, defaced, or otherwise injured, the Commissioners of Her Majesty's Treasury may cause the same to be restored by reference to or adoption of any of the copies aforesaid, (1) or such of them as may remain available for that purpose.

+THE IMPERIAL GALLON.

The Imperial Gallon by an Act of the British Parliament, 5e, G. IV, chap. 74, which came into effect on Jan. 1, 1826, was defined to be a measure which contains exactly 10 pound avoirdupois of distilled water weighed in air at the temperature of 62° Fahrenheit with the barometer at 30 inches. The Imperial Gallon was also further defined to contain 277.274 cubic inches.

REASONS ADVANCED FOR THE ADOPTION OF THE METRIC SYSTEM OF WEIGHTS AND MEASURES IN CANADA AND THE BRITISH EMPIRE GENERALLY.

The advocates of the metric system of weights and measures claim the following advantages for that system :—

- 1. The metric system is orderly, methodical, clear and extremely simple. In the metric system there is one specific word for each unit, and this word exclusively designates the one thing it is meant to represent. From this one word, to which can be prefixed particles which are the same for all units, every multiple and sub-multiple can be expressed. In this regard the metric has the advantage over the British system, which is complicated, unscientific and anomalous.
- 2. In the metric system there are no specific trade tables. The same weights and measures are used for all purposes in all trades and industries.
- 3. The metric system of weights and measures, like our system of notation in arithmetic, which is universally adopted by civilized nations, is a decimal system and involves but the single ratio '10.' For this reason, all reductions in the system are made with the minimum amount of labour, and with no more effort than that involved in the expression of a number. The advantages of the decimal system in the coinage and money of Canada are manifest, and it is claimed that it would be just as convenient to use a similar system in our weights and measures.
- 4. The adoption of the metric system would materially assist education by facilitating the teaching of arithmetic and setting free a considerable amount of time which would be devoted to more useful subjects than the learning and practising of our complicated and confused tables of weights and measures. Estimates made by committees of inquiry show that the work of at least two-thirds of a year in the life of every child would be saved by the adoption of the metric system of weights and measures.
- 5. The universal adoption of the metric system of weights and measures by scientists has greatly facilitated the development and spread of scientific knowledge.
- 6. The international system of electrical units is based upon the metric system. All British and American electrical engineers and workmen must, therefore, work with it, and as long as the British system of units is retained in machine construction, so long will those connected with enterprises involving a knowledge of electricity be put to the inconvenience and unnecessary labour of keeping in mind two systems of standards. It will be seen that the argument has increased force when it is realized that, as new fields of knowledge are opened up and new systems of work evolved, the claims of science will make it imperative to adopt the metric system as a basis.
- 7. Another claim urged on behalf of the metric system is that it is exceedingly simple in calculation. As each measure of quantity can be written down at once as a decimal or multiple of ten of the standard metrical unit, tedious reductions are avoided and computations are confined to operations involving only the simple rules of arithmetic.

The tiresome process of multiplying or dividing a quantity of tons, hundred-weights, quarters, pounds, &c., by a number, or the still more difficult task of performing a similar operation with an area containing acres, roods, square yards, &c., are well known to every one. The same problems in the metric system are done easily and quickly. The saving in energy consumed by a nation in a year or two in calculations rendered necessary by the use of our present system of weights and measures alone would warrant the universal adoption of the metric system.

The following calculations, which are typical, illustrate the simplification which will be gained by the adoption of the metric system :-

CALCULATIONS.

1. Reduction of measures to a common denomination.

METRIC SYSTEM. Reduce to millimetres the following distance:- BRITISH SYSTEM.

8 kilometres

7 hectometres 8 decametres

9 metres 6 decimetres

1 centimetre 2 millimetres

Reduce to inches the following distance:— 5 miles $\frac{4}{9} \text{ furlongs}$

7 rods 3 yards 2 feet 9 inches

Multiply by the ratios of the successive units, adding in the number of each unit stated in the problem.

5 miles

x 8 40 furlongs + 4 furlongs 44 furlongs x 40 1760 rods +7 rods 1767 rods $x \cdot 5 - \frac{1}{2}$ 8835 883.5 9718 5 yards +3 yards 9721 5 yards x 3 29164.5 feet + 2 feet 29166.5 feet x 12 349998 · 0 inches + 9 Answer. =350,007 inches.

No calculation necessary.

Answer=8,789,612 millimetres.

METRIC SYSTEM.

BRITISH SYSTEM.

2. Find the contents of a tank

```
11 feet 4 inches long.
5 feet 2 inches wide.
2 feet 5 inches deep.
1. Reduce to inches and multiply—
11 feet 4 inches=11x12+4=136 in.
5 feet 2 inches=5x12+2=62 in.
2 feet 5 inches=2x12+5=29 in.

136

269
      3½ metres long.
      1.56 metres wide.
      82 centimetres deep.
1. Multiply direct-
                                 3.5
                                   .82
                                      7
                                 2.80
                                                                                                                  x 62
                                                                                                                    272
                                 2.87
                                                                                                                  816
                                 1.56
                                                                                                                  8432 sq. in. in area of base of tank.
                                 1722
                                                                                                                  x 29
                                1435
                                287
                                                                                                                75888
                              4.4772 cubic metres.
                                                                                                               16864
                                                                                                     244528 cubic inches.
1728) 244528 (141 cu. feet.
                                                                                                               1728
                                                                                                               7172
                                                                                                               6912
                                                                                                                 2608
                                                                                                                1728
                                                                                                                  880 cu. in.
                                                                                                                  Answer 141 cu. feet 880 cu. inches.
```

METRIC SYSTEM.

BRITISH SYSTEM.

3. Find the weight of water contained in the above tank.

Capacity = 4:4772 cubic metres No calculation. Answer = 4.4772 metric tons.

Capacity = 244,528 cu. inches. Multiply capacity by weight of a cu. inch of water—
1 cu. foot of water weighs 62 5 pounds.
1 cu. inch weighs 62 5 ÷ 1728 pounds.
1728) 62 5 (036 pounds. 5184

10660 10368 292

Contents = 244528 cubic inches.

Cu. in. of water weighs .036

> 1467168 733,584

2090) 8803008 (4 tons. 8000

803.008 pounds. Answer = 4 tons + 803.008 pounds.

4. What is the pressure on the bottom of the tank when filled with water, depth being 2 feet 5 inches (82 cms)?

METRIC SYSTEM.

BRITISH SYSTEM.

No computation. Answer = 82 grams per sq. cm. Multiply number of inches in depth by weight of cubic inch of water-29 inches. 2 ft. 5 in. = 1 cu. in. of water = '036 lbs.

> 174 87

Answer=1.044 lbs. per sq. in.

5. If the tank described above weighs 1700 pounds (771'12 kilogrammes) what volume of water will it displace if it be floated on a lake or river?

METRIC SYSTEM.

BRITISH SYSTEM.

No computation.

Answer = 771.12 cubic decimetres.

Multiply weight of tank by the number of cubic inches occupied by 1 pound of water—
62.5 lbs. of water occupy 1 cu. ft.
62.5) 1700 (27.2 cu. ft.

Answer 27 2 cubic feet.

8. It is also claimed by the advocates of the metric system that it would be an advantage to British and to Canadian manufacturers also to adopt this system, because if they are making goods for home consumption and also for export to countries using the metric system as well as to British and American markets it is necessary for them in many cases to have two sets of patterns or dies, whereas if the metric system were adopted in the British Empire and also in the United States, one set would suffice. It is also of importance to note in this connection that manufacturers are always making improvements and alterations in their articles of manufacture which necessitate the continual preparation of new patterns, models and designs, and it is just as easy to adopt the new system in new patterns as to continue the use of the older system.

9. The supporters of the metric system also claim that its adoption by the British Empire, including its dependencies, would greatly assist in preserving our foreign trade, and also constitute a most valuable means of extending it. Our consuls have frequently reported that we lose trade in consequence of our weights and measures not being understood in other countries. At the present time forty-three of the countries of the world have adopted the metric system as their sole official and legal system of weights and measures. Among these are the republics of South America, Egypt and Mauritius in Africa, Japan, Java and twenty-eight ports in China in Asia, and all the countries of Europe with the exception of Great Britain and Denmark. The metric system has been legalized in Great Britain and Ireland, and in most of the British dependencies, as well as in the United States, but it has not yet been exclusively adopted by these countries.

It is highly probable that the time is not distant when the whole of Africa will be opened up to commerce. Stable governments will be established there, and these will almost certainly adopt the metric system. The same process will go on in China and in other portions of Asia. The commercial interests of the British Empire and of the United States are sure to be affected by the development, and the maintenance of the present system of weights and measures by these nations will more and more be found

to be a serious drawback to the extension of their foreign trade.

1. The metric system has been adopted by the following forty-three countries:-

Europe.

Austria-Hungary and Territories,
Belgium,
Finland,
France,
French Colonies,
Germany,
Greece,
Holland,
Italy,

Norway and Sweden,
Roumania,
Russia,
Servia,
Spain,
Switzerland,
Bulgaria,
Portugal, Azores and Maderia,
Ottoman Empire.

America.

Argentina,
Bolivia,
Brazil,
Central America,
Chili,
Colombia,
Costa Rica,
Cuba,
Ecuador,
Guatamela,

Hayti,
Honduras,
Mexico,
Nicaragua,
Peru,
Porto Rico,
Philippines,
Salvador,
Santo Domingo,
Uruguay,

Africa.

Egypt,

Mauritius.

Asia.

China (28 ports), Java. Japan,

- 2. The metric system has been legalized in Great Britain and Ireland* and in most of the British dependencies, including Canada.
- 3. The metric system has not been legalized in the following countries: Denmark, Morocco, Persia, Siam, interior of China, and Central Africa.

For these reasons, Mr. Chairman and gentlemen of the House of Commons, I do not hesitate to solicit your best endeavours towards the adoption by the Dominion of Canada of a system which I venture to think has so many practical advantages and which will advance the interests of the commercial and industrial none the less than the scientific pursuits of the country.

^{*}At the Coronation Conference of the Colonial Premiers, held in London, in 1902, the following resolution was adopted:—

^{&#}x27;That it is advisable to adopt the metric system of weights and measures for use within the Empire, and the Prime Ministers urge the Governments represented at this Conference to give consideration to the question of its early adoption.'

On the 23rd of February, 1904, a Bill for rendering compulsory on and after the 5th day of April, 1906, or such later date as His Majesty may by Order in Council fix, the use of the system of weights and measures commonly known as the metric system, received its second reading in the British House of Lords and was referred to a Select Committee.

PROGRESS IN AGRICULTURE

House of Commons, Committee Room 34, Tuesday, March 29, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, Chairman, presiding.

The Charman.—The committee will now hear Dr. Saunders, Director of Experimental Farms.

Dr. Saunders.-Mr. Chairman and gentleman, when I had the honour of appearing before you last year I presented some facts in reference to the great wheat-growing interests and wheat-growing possibilities of Canada, and urged the importance of our using every endeavour to secure for the settlers in Canada and to distribute amongst them such varieties of wheat as are specially adapted to the conditions of climate found in different parts of the country, combining high quality with productiveness and early ripening habit. The conditions of the past season have emphasized the great importance of growing early maturing sorts, since in many of the northern districts in the North-west the wheat was not fully matured when frost came, and as a consequence the grain was injured. Fortunately in these northern localities the loss to the settlers from such injury is not so great now as formerly, as the feeding of stock and swine is much more general, and injured grain is now fed by many farmers and fair prices realized in this way. In our endeavours to surmount difficulties it is well to look on them from every side. By so doing in this case we find some factors which result in late crops are to some extent controllable, while others are not controllable. Early sowing is a great help. The land should, of course, be well prepared, and the grain should be got into the ground as soon as possible after the land is fit to receive the seed, and thus have all the chance which the season can give it. In choosing varieties of grain for growing, it is well to select early maturing sorts, provided they have the requisite quality and productiveness. But early ripening sorts are not always within the reach of the settler, and then he is obliged to use for sowing such grain as he can get. Fortunately, in a normal season if the farmer has sown early most varieties will ripen, but in a season such as that of 1903 many disappointments will naturally occur.

INFLUENCE OF TEMPERATURE ON RIPENING GRAIN.

The ripening of grain in 1903 was much retarded by continued low temperatures. At Brandon the average mean temperature for the growing season from April 1 to September 1 was 55'20, while the average for the four previous seasons was 56'99, a lowering in the average temperature of 1'79 degrees for the whole period. That is, a temperature of nearly 2 degrees less than last year than for the previous four years. At Indian Head the average mean temperature for the same period was 53'90, while that for the previous four years averaged 55'50, a drop of 1'60 degrees. The effect of such an average reduction in the temperature for the whole growing

period is a lengthening of the time required for ripening a crop. At Indian Head, in 1901, when the mean temperature for the growing period was 56'44, five acres of Red Fife on fallow ripened in 113 days from the date of sowing; 11 acres of Banner oats ripened in 100 days, and 5 acres of Mensury barley in 87 days. With the low temperatures which prevailed in 1903, a field of Red Fife required 130 days from sowing to harvesting; Banner oats 107 days, and Mensury barley 99 days. While the average temperature for the growing period in 1903 has been 55'20 at Brandon and 53'90 at Indian Head, it has been 53'44 at Battleford, 52'74 at Edmonton, 51'30 at Prince Albert and 51'28 at Saskatoon. The more northerly points have some advantage over Brandon and Indian Head in the greater length of the day, but with such low temperatures prevailing it is not surprising that much of the grain should have ripened imperfectly. These are conditions over which the farmer has no control whatever.

By Mr. Ross (Ontario):

Q. Would your remarks apply to Ontario?

A. No, sir. I am speaking now of the North-west. In Ontario we have nothing to fear in the way of frost before harvest. We have no difficulty in ripening grain. I have never known of any instance in old Ontario of grain having been caught with frost in harvest time. Edmonton has been about 1 degree lower than the average for the four preceding years, and Prince Albert a little more than 2 degrees lower. While such an unfavourable season may not occur again for many years, the growing season is at all times short enough, and every point of vantage obtainable from the use of earlier ripening sorts of good quality should be made the most of. In a cold and backward season the early ripening varieties of grain show themselves relatively earlier than usual. In 1903 the Preston wheat, which during the past nine years has ripened on an average from 4 to 6 days earlier than the Red Fife, was fully 10 to 12 days earlier; and in some instances the advantage was fully two weeks in favour of the Preston. The same result was shown with other early ripening sorts. These earlier ripening varieties seemed to have the power of maturing more rapidly than the later sorts in low temperatures, thus demonstrating their great usefulness when most needed. Although 1903 was much less favourable for wheat growing in the Canadian North-west than the two preceding years, the results compare very favourably with those of our neighbours across the line.

WHEAT CROP OF THE NORTH-WEST.

The total area of wheat in Manitoba in 1903 was 2,442,873 acres, which returned a crop of 40,116,878 bushels, an average of 16 bushels 42 pounds per acre. The latest returns from the North-west Territories give an acreage of 837,234, and a total crop of 16,029,149 bushels, which is equal to 19 bushels per acre. This gives a total from the Canadian North-west of 56,146,027 bushels, which added to the Ontario crop of 22,584,443, makes 78,730,470 bushels. Adding the smaller production of wheat from the other provinces, it will probably be safe to place the total wheat crop in Canada at over 80,000,000 bushels, all grown on about 5,000,000 acres. The wheat crop in the United States for 1903 was 637,821,835 bushels, all grown on a litle less than 50,000,000 acres of land.

By Mr. Wright:

Q. Do you include Manitoba in the North-west Territories ?

A. I speak of the North-west generally, including Manitoba. The average yield of spring wheat in the United States for this whole area was 14 bushels, and the aver-

age yield of winter wheat was 12'3 bushels. The crop in Minnesota averaged 13'1 bushels per acre, in South Dakota 13'8 bushels, and in North Dakota 12'7 bushels.

By Mr. Ross:

Q. That is spring wheat, I suppose ?

A. Yes, the wheat crops in these North-western states are entirely spring sown.

Q. Those are low yields?

A. Yes, they are. Taking the average of a ten years record, we find the showing made by Canada still more favourable. The wheat crop of the United States for the past ten years, including the winter and the spring wheats, has averaged 13'53 bushels per acre. The winter wheat in Ontario for the past ten years has averaged 21'52 bushels and spring wheat 16'64 bushels. In Manitoba the average for the same period has been a little over 20 bushels per acre. The average yield per acre of wheat in Minnesota for the past ten years has been 14'33 bushels; in South Dakota, 10'67 bushels; and in North Dakota, 12'87 bushels.

By Mr. Clancy:

Q. Are those statistics regarding Manitoba and the North-west Territories collected there?

A. They are collected by the agricultural departments of Manitoba and the Northwest Territories who employ a number of people in every district who report on this subject and the final estimate is based on the returns from the threshers; so that these returns are regarded as quite reliable. These larger yields in Canada are very encouraging. They are, no doubt, partly due to the land being more productive; partly to a more favourable climate—although perhaps that is a statement some of our neighbours might object to; and in some measure, to better farming. With such an immense area of land in the North-west to open up, it is of the highest importance that every advantage obtainable from the use of the earlier ripening sorts of grain should be made the most of, and the sowing, at least of part of the acreage of wheat on each farm, of early ripening varieties should be more general, especially where the ripening of the later maturing sorts is uncertain, provided always that the high quality of the grain grown be maintained.

EFFORTS TO IMPROVE THE QUALITY OF WHEAT IN GREAT BRITAIN.

During the last three years a good deal of interest has been awakened in Great Britain to the possibilities of improving the quality of British wheats by the introduction of seed of the best wheats grown in Canada and other countries. Three years ago the Millers' National Association of Great Britain took up this subject. The idea was to practically test on British soil what varieties of wheat might be most profitably cultivated in Great Britain, with the view of producing wheats of higher milling value. Experiments were begun in 1902 with wheats obtained from different parts of the world. A request came to the Central Experimental Farm, asking for a supply of some of the best Canadian sorts, and a two-bushel bag each of Red Fife, Preston and Percy was forwarded. Other Canadian wheats obtained were No. 1 Hard Manitoba, from commercial sources; and No. 1 Northern Manitoba. From the United States No. 1 Northern Duluth, No. 2 Hard Kansas and a sample of Minnesota wheat sent by Professor W. M. Hays, of the Minnesota Experiment Station, Wheats were also obtained for this purpose from Northern Russia, Roumania, France, Hungary and New Zealand. These wheats were grown in experimental plots kindly

furnished by various agricultural colleges and similar institutions in England. A fund was provided by the Board of Agriculture of Great Britain, supplemented by the Millers' National Association, to defray the necessary expense, and a committee appointed to carry on this work. The first report of this committee was made to the Millers' National Association, on June 9th to 12th, 1903, at their twentieth convention, held at Folkestone, England, the proceedings being published in the Miller of July 6th, 1903. In this report the committee states that 'Home grown wheat is satisfactory enough as to colour and flavour, but is deficient in strength, and has in the last twenty years, owing to the sacrifice of quality to quantity, degenerated in this respect. Almost invariably the market is over supplied with weak wheat and under supplied with strong, so that the latter is generally by far the dearer. The demand for strong flour is increasing, and whatever the price may be the English miller must have strong wheat. If he cannot supply strong flour the foreigner can. We recognize most fully the desirability of encouraging the production of home-grown wheats, and are prepared to use them much more freely if their quality will admit of it. As it is many of us use none, most of us a restricted quantity, although the lowness of their price is an inducement to use more. From many points of view, therefore, an improvement in quality is much to be desired.' As a result of the experiments of the first year the committee speak highly in commendation of the Canadian wheats. They gave good crops the first year and graded much higher than the English wheats, while the baking strength of the average English wheat is placed at 60, the Red Fife, Percy and Preston are all rated at 80. The average English gave 9'9 per cent of dry gluten, the Red Fife 12'5; Percy, 14, and Preston 12'1. The Canadian samples are said to be those which have given the greatest satisfaction in the experiments which the committee have been conducting. A number of additional experiments were planned for 1903, but no full report of these has yet been received. In a letter from Dr. A. D. Hall, Director of the Rothamsted Experimental Station, under date of March 8, 1904, he says 'I cannot yet give you all the 1903 results. The crops are recorded and the wheats are now going through the mill. So far, the strength of the wheats has been maintained, although grown now in England for two seasons.' That is a point which we had not expected. A diminution in the strength of the wheat when grown in the English climate was looked for. 'None of the varieties give crops quite equal to our standard English sorts-24 to 32 bushels against 40 bushels or so yielded by such varieties as Square Head's Master, Stand Up, &c. I will send you full details when they are put together. We have about reached the conclusion that our only hope lies in cross-breeding, and Mr. Biffen, at Cambridge, who is doing this part of the work, has crossed both Preston and Percy on several English wheats. I hope in a few years to be able to return you some of our crosses out of your own, for trial in Canada.'

An account has just reached me through the press of the proceedings of the last monthly meeting of the Royal Agricultural Society of England, held at Hanover Square, London, the Earl of Derby, president, in the chair. Among the subjects discussed was that of 'Canadian wheat culture in England,' concerning which the following statements were made: 'Some interesting experiments have been carried out during 1903 under the supervision of the Royal Agricultural Society with the growing of Canadian wheat in England. The report just issued states that the general conclusion of the consulting chemist of the society is that while the yield was considerably below that of English wheat the Canadian wheat was stronger, more nitrogenous, and produced a loaf which from the baker's point of view was the more satisfactory. Moreover, although the Canadian wheat had been grown for two successive seasons in England, it had been found to retain in a large measure its original characteristics.'

These experiments have brought the subject of Canadian wheats very prominently before the British public, and the high quality which these wheats possess has been commented on, to the advantage of Canadian wheats in the British market.

By Mr. Wright:

Q. I am rather astonished at the information you have given. One would almost infer from your statement that the wheats did not deteriorate.

A. It is said that they did not.

- Q. When we bring seed wheat from Manitoba it does not give good results the first year at all, and so we cannot recommend it with any confidence to the farmers to sow.
 - A. In our experiments at the Central farm we find that Red Fife-

Q. I am speaking of Red Fife.

A.—maintains its quality very much more fully than we expected. From accurate determinations by the Minneapolis experts and reports from our own chemist, we find that the deterioration is not so great as we anticipated. In the report of the Millers' National Association, it is stated that the first year's wheat grown from the Canadian samples when made into flour and baked by experts was found to be equal to the very best flour made from hard wheats in London.

By Mr. Ross (Ontario):

Q. Red Fife then is the best wheat ?

A. Red Fife is one of the best; the general belief is that there is no better. Where Red Fife can be grown successfully there is no need to look for anything better, as it combines productiveness with very high quality.

ORIGIN OF PRESTON AND PERCY WHEATS.

By Mr. Richardson:

Q. Where did those types of wheat—Preston and Percy—originate?

A. The Preston is a cross of Red Fife with Ladoga, and the Percy a cross of White Fife with Ladoga—produced at the Central Experimental Farm. They get their quality largely from the Fifes, and their earliness in ripening from the Ladoga. They ripen from four to six days earlier, and have, as I showed the committee last year, much of the quality of Red Fife.

Q. As distinct types, did they originate at the Experimental farm here ?

A. They were produced here by cross-breeding. They originated at the Experimental Farm in a single kernel in each case, and from the multiplication of these they have now reached a point when we have thousands of bushels distributed all over the country.

In my evidence before the committee last year, I called attention to one of the newer crosses named Laurel, which had shown itself in a test of five years to be unusually productive, somewhat exceeding Preston in that particular, and considerably higher in yield than Red Fife. I gave then the particulars of the milling test of this wheat, which showed that it was very close in quality to Red Fife. We have since had another milling test made of this wheat by a Chicago expert of considerable fame, and the particulars he gives confirm the report given by the Minneapolis expert, Mr. Julicher. This wheat is a cross of Red Fife on Gehun, an East Indian variety, obtained at an elevation of 11,000 feet in the Himalayas. The Gehun is a wheat of good quality, nearly equal to Red Fife. The Laurel is only about 2 days earlier than Red Fife, but the head is longer, and also beardless, and when well filled is a very striking wheat. At present we are growing in Ontario and the eastern provinces considerable quantities of spring wheats, which are of very poor quality. Indeed in one of the English milling reports I came across not long ago some of this eastern wheat

was spoken of as rubbish. This is perhaps rather a strong word to use, but compared with the hard wheats grown in Manitoba the eastern wheats are very inferior, and we may hope that this Laurel can be largely introduced to take the place of these inferior cereals.

By Mr. Ross:

Q. In Ontario ?

A. Yes. Owing to its large yield and its high quality it would give to our eastern-grown wheats a better name.

By the Chairman:

Q. The fact that it is beardless would make it more popular?

A. I think it probably would. The Preston is a bearded wheat, and is sometimes objected to on this account. The Stanley and Percy, however, are beardless. The Stanley has the same origin as the Preston—that is, they were both produced from one kernel of cross fertilized wheat. That kernel the first season produced a plant with bearded heads, and when the grain from these was sown next season some of the plants produced beardless heads and some bearded. The bearded and beardless heads were selected and grown separately.

By Mr. Gould:

Q. They continued to breed the same as they did in the second year ?

A. Yes, the beardless continued to breed beardless and the bearded to breed bearded varieties.

SOME INFERIOR VARIETIES GROWN IN ONTARIO.

By Mr. Ross:

Q. Can you name some of those poor varieties we have in Ontario?

A. Colorado is perhaps the poorest of them all. The White Russian is much better, but is not believed to be equal with Laurel.

Q. It is a semi-hard wheat, is it not, the White Russian ?

A. That depends much on where it is grown. In the North-west it soon becomes quite hard in texture, but does not possess the quality of the Red Fife.

By Mr. Robinson:

Q. Is the Goose wheat considered a poor wheat ?

A. It is a very poor wheat for bread-making. In fact, the millers as a rule will not use it.

By Mr. Ross:

Q. They use some of it now ?

A. They are said to be beginning to use it in some places.

Q. They are beginning to bring in a No. 1 hard and mix the Goose with it.

A. It produces a very poor quality of gluten, and I do not think there is much mixing of that kind done in the best grades of flour. I think it is mostly used for making macaroni and vermicelli, for which it is specially adapted.

Q. Is there any difference between what we call Goose wheat and what is raised

in Kansas as Macaroni wheat ?

A. The Goose wheat is a form of Macaroni wheat. There are many other varieties, some of which the United States Department of Agriculture have imported from Europe during the past two or three years, and distributed through the western states. We have some of these varieties here, and find they are all of the same hard brittle character as the goose wheat, but there are differences in the form of the head and the productiveness of the grain. But none of these Macaroni wheats are much used for bread-making.

By Mr. Ross:

Q. One of the qualities of the Goose wheat is a tendency to accumulate tares. Tares grow in it extensively, and they reproduce very rapidly. It is one of the difficulties if you let it go, to get rid of tares. Have you tried any experiments?

A. We have a few tares unfortunately on the farm which we find it very difficult to eradicate, but we can separate the wheat from the tares by the fanning-mill by setting the sieves properly. Tares are very difficult to get rid of, because they ripen and shed their seed before the wheat is ripe.

By an Honourable Member:

Q. Tares then are a great nuisance to any variety of wheat ?

A. I think so. We do not find them a particular trouble in the Goose wheat, although we find them there the same as in other varieties. It may be in the particular instance referred to that the growth of the Goose wheat may afford the tares some advantages which they do not get in the growth of other grain. I am sure you will agree with me that it is of the greatest importance that the good name which Canada has attained for the high character of her food products should be maintained at every point.

By Mr. Ingram:

Q. Are you leaving the wheat subject just now to take up some other?
A. I was just closing it up.

BEST SOILS FOR WHEAT.

Q. With respect to the influence of climate and soil, what is the best climate, and

what is the best soil for raising spring wheat?

A. Spring wheat generally succeeds best on a clay loam with more or less sand mixed with it, but where the soil is too light it does not usually give as good results. Wheat can be grown in almost any soil, although the heaviest crops are had from the richer alluvial soils. We get the heaviest crops from soil such as we have at Indian Head, N.W.T., where it is a rich clay loam, with a small proportion of saud, and contains a great deal of plant food.

Q. My reason for asking is that I find in some counties very little spring wheat

is raised while there is a good deal of fall wheat produced.

A. I think any land that will produce good fall wheat will produce good spring wheat also.

Q. Climatic conditions will also affect it I presume ?

A. Yes, climatic conditions are very important. Fall wheat usually gives larger crops, and hence it is a great temptation to farmers to raise it.

By Mr. Ross (Ontario):

Q. Most of the fall wheat grown in Ontario is raised west of Toronto ?

A. So I understand. I may say that the same remark which has been made with reference to spring wheats holds good also with regard to fall wheats. They are found to vary in proportion of gluten when analysed from 6 to 7 per cent to 9 or 10 per cent, and some varieties are very much better than others. It would be wise to eliminate the poorer sorts as fast as it is practicable to do it. We are making preparation, in connection with the work of the Central Experimental Farm, to provide means for testing all the varieties of wheat that are grown in Canada, both fall and spring, in order to determine their quality, so that we may be able to give such advice to farmers as will be most useful to them.

Q. You have red and white winter wheat ?

A. Yes. At the Central Experimental Farm the experiments with winter wheats are not very satisfactory, because it often happens that they are killed out. Ottawa is not a good fall wheat locality.

SPRING AND FALL WHEATS.

Q. I would suggest that you carry on your experiments on a good farm west of Toronto, because a large quantity of the fall wheat is grown west of that city; probably three-fourths of the crop of fall wheat in Ontario is grown west of Toronto.

A. That is a good suggestion. I may say that a little has been done in that direction by sending samples of fall wheat which it was desired to test to farmers who are known to be good fall wheat growers, but we have not carried on that work as fully as I would like to have done, on account of the difficulties met with. It is difficult to get farmers to carry out the instructions you give them when raising grain on their own land unless they are well paid for such work. We have carried on experiments for many years at Ottawa with all the leading varieties, and in some seasons they do well and we get excellent crops. But about one year in three the grain is more or less killed by winter.

By Mr. Robinson (Elgin):

Q. Many years ago in the west we could grow spring wheat very successfully but we cannot do it now. What is the cause?

A. I expect the real cause is that the farmers have found that fall wheat is more profitable. That is one reason why we want to get the Laurel wheat in their hands, which will give them a better quality, and we hope, better results, and if we can do that I think we will find spring wheat growing in many places where it is not grown now to any great extent.

By Mr. Cochrane:

Q. How do you account for the fact that where we used to be able to grow hard wheat we cannot do it now, the soft spring wheat is not near as good?

A. Some times that perhaps is largely a matter of opinion, and not a matter of real test. Has any one taken the trouble to get hard wheat down from the North-west to test it?

By Mr. Ross (Ontario):

Q. Yes, they have in our section, and they are beginning to get hard wheats.

By Mr. Cochrane:

Q. I never heard any trouble about that question at all in my boyhood days, and now the millers say they cannot make good flour out of the wheats we grow?

- A. Are they the same wheats, you know there is a great deal of difference in varieties of wheats, and the standard for the best flour is much higher than formerly.
 - Q. Yes, they are Fife wheats.
- A. Then I must admit that I am unable to throw any light on this subject. It may be perhaps due to the soil.
 - Q. Is it not that perhaps the soil is exhausted?
- A. Perhaps the soil may have become exhausted of some of the elements necessary to produce a wheat crop. That perhaps is the most likely explanation of the difficulty, but it is not one that I can suggest any immediate remedy for.

By Mr. Smith (Wentworth):

Q. I think in our section the trouble is because of the change in varieties; we used to grow Red Fife until a few years ago, and now no one grows it?

A. Red Fife in some parts of Ontario does not give as good crops as some other sorts. White Russian I think usually gives more than the Red Fife, taking the country all through. Although the results of tests we have made with Red and White Fife have generally given good results.

GRAIN CROPS IN CANADA AND GREAT BRITAIN, COMPARED.

Since the subject of the higher yield of winter wheat in Great Britain has been referred to, it may be of interest to give the figures for the average crops of wheat, oats and barley there for the past two years, and to compare them with the corresponding crops for the same period in Ontario. In these figures the English bushel of barley has been calculated at 56 lbs. and converted into Canadian bushels of 48 lbs., and the bushel of oats at 42 lbs. has been converted into bushels of 34 lbs. The comparison is as follows:—

Wheat.	-	Bushs.	Lbs.
Great Britain 1902		32	83
Great Britain, 1903		30	13
Ontario, 1902		27	0
Ontario, 1903		25	54
Oats.		Bushs.	Lbs.
Great Britain, 1902		52	23
Great Britain, 1903		48	28
Ontario, 1902		42	20
Ontario, 1903		41	24
Barley.		Bushs.	Lbs.
Great Britain, 1902		40	30
Great Britain, 1903		37	26
Ontario, 1902		33	5
Ontario, 1903		34	14

These figures are encouraging, and serve to show that we are not so very much behind the mother country in the average crops we are obtaining.

By Mr. Ross (Ontario):

Q. Is the heft of grain produced in Great Britain due to the soil or the climate? Or what is it due to? For instance, their barley is 56 pounds to the bushel; ours is 48. We cannot produce 56 pound barley in this country.

SEVERAL HONOURABLE MEMBERS.—Yes, yes.

Mr. Ross.—We cannot produce a 42 pound oat in this country; not as a rule. We produce an oat of 32 pounds more ofter than we do 42 pounds in Ontario.

A. There is an oat of 461 pounds, and that was grown at Indian Head.

Q. That is not the usual commercial experience? The standard of the average production for the greater part of Ontario and Quebec is usually a little fraction below the standard of 34 pounds. Is that due to the climate, the soil or the production, or what?

A. I think the greater weight of the oats in Britain is largely due to the climate. The ripening is usually slower, and the grain has more time to fill out, and this

results in a plump kernel.

By Mr. Cochrane:

Q. The moisture has something to do with it ?

A. Yes.

Q. And the drainage of the land ?

A. Yes, and they feed their land regularly, so it is not so apt to run short of any of the particular constituents necessary for the crop, as in our own lands.

By Mr. Ross (Ontario):

Q. Have those oats been clipped ?

A. Yes, they have passed through the clipper. That would make about two pounds difference to them. Here is a sample of the Thousand Dollar oats, 41½ pounds, and here are some varieties which we have distributed to farmers this year (producing samples in bottles). Goldfinder is 38 pounds; Tartar King is 40 pounds. By the way, the Tartar King is objected to by the oatmeal millers. Then there is Wideawake and Banner; the Banner goes 42¾ pounds.

Q. That is about the best variety ?

A. Yes, I think the Banner is about our best.

The Chairman.--How about Ligowo ?
A. It weighs about 46 pounds per bushel.

Q. They did very well with us; we had 100 acres of them last year.

A. As showing the attention that is being paid to Canadian agriculture in Great Britain, I was gratified the other day to find the London Times give a closely printed column to the results of our Experimental Farm work and drawing attention to the benefits it was conferring on agriculture in this country. Years ago a small paragraph of notice was regarded as very encouraging, but now we are the subjects of more liberal comment. The efforts being made to bring Canadian food products under the notice of the English people are helping to swell our annual trade with Great Britain, and are a benefit to us in every way. I may say that the figures I have given you for the crops of Great Britain are for the whole country, including England, Scotland, Ireland and Wales.

DISTRIBUTION OF SEED GRAINS.

The distribution of grain among farmers for the improvement of seed is again going on. Samples of wheat and barley are being sent out this year weighing five pounds each, and the samples of oats four pounds each, a sufficient quantity in each case to sow a plot of $\frac{1}{20}$ th of an acre. Including the work of to-day, the output for this season is about 20,000 packages, and there are nearly 10,000 more which have been promised. The quantity of grain already distributed is about 45 tons, and about half as much more material will be needed to complete the work. The wheat going out this year consists of the varieties I have brought here for

your inspection, namely, Red Fife, Preston, White Fife, Percy, and Laurel. Of Laurel we only had a limited quantity, about 700 five-pound bags. Most of this has gone to different parts of Ontario and to the east; a few were sent to the North-west to find out how it will succeed there.

Q. The Laurel, Preston and Percy are all wheats of your own production ?

A. Yes.

By Mr. Smith (Wentworth):

Q. What is the system of selecting the persons to whom they are sent ?

A. All who apply within the limits of time named, that is, before March 1, receive samples, and instructions are given to the officers in charge of the work as to the parts of the Dominion where certain varieties are to be sent. As many of the letters as I can get over are marked by myself with the name of the variety best adapted to the locality, but in the busiest part of the season it is not possible to adopt this plan generally. For example, in February we had an average of 800 letters a day for the whole month.

Q. Requests ?

A. Yes, about two-thirds of them were requests. For example, I gave instructions about the Laurel wheat, to spread the samples out over Ontario, the Maritime Provinces and Quebec, so that it might be tested everywhere in the east, and occasionally in the North-west and British Columbia. I find on looking over the localities the samples have gone to that the instructions have been very well carried out.

Q. Do you expect each of these applicants to send a report as to the test?

A. We ask for it, but we don't expect it from every person. We get replies from 30 to 35 per cent of them. That gives us about 10,000 reports every year to compare and work up, and by the time we have gone over that many we have a good general idea of the results of the testing of each variety in every part of the Dominion.

By Mr. Robinson (Elgin):

Q. Do you grow any Laurel wheat here?

A. Yes, we have grown it for five years at this farm, and it is a very promising variety. We expect to grow five acres of it at Brandon and the same quantity at Indian Head during the coming season, so as to have enough for distribution next year.

Q. Did you introduce that wheat yourself?

A. Yes, this is one of the crosses originated here. It has an unusually large head and produces a heavy crop.

By Mr. Clancy:

Q. Is all that grain sent out to farmers grown on the farm here?

A. Most of it is grown at the Indian Head Farm, some of it is grown here and some at the experimental farm at Brandon. For instance, the Banner oats distributed this year are from a field of five acres that gave 119 bushels to the acre at Indian Head. We prefer to get them from very prolific strains rather than to send them out from fields here where the crops are much smaller, as the probabilities are that the yield from such grain will be better. Last year the total number of samples distributed from the Central Farm was 29,636 and from the branch farms 3,777, making a total of 33,413. With your permission I will give you a few extracts from recent letters showing how this grain distribution is appreciated and how rapidly these best varieties of high quality are being multiplied.

EXPERIENCES WITH SAMPLES OF GRAIN, &C.

John Howlett, of lot 36, Prince Edward Island, writes: 'I have got myself into a good variety of seed grain by the samples you have sent me. I find the Ligowo a very

fine, white oat, and I had over 400 bushels last season.'

R. C. Brown, of Dauphin, Man., writes as follows: 'I have been requested by my brother to inform you of the result obtained from the seed oats "Abundance" sent us from the farm two years ago. The sample bag gave us the first year five bushels. This year we sowed them on two acres and we got 217 bushels. We purpose making a further test next year and hope for still better results.'

T. J. Hamilton, of Laurel Post Office, Ont., says: 'We got a sample of Improved Ligowo oats from you about six years ago, and they gave us great satisfaction. The people about here think they are the greatest oats around, and now there are thousands of bushels of them and farmers are coming for 20 miles around for seed. I have them so heavy that a common bag averages 3½ bushels. The straw is good and stiff, and the oats ripen a week earlier than other kinds.'

By Mr. Robinson (Elgin):

Q. What variety is that?

A. Improved Ligowo.

Mr. D. W. Macmillan, of Piedmont, Pictou County, Nova Scotia, writes: 'The Waverly oats, of which a sample was received two years ago, proved an excellent variety. I had 420 bushels last year, they yielded 74 bushels to the acre. Also Uncle Sam potatoes last year yielded 650 bushels from 1½ acres. Thanking you for those high-classed varieties of seed.

(Sgd.) D. W. MACMILLAN.

Q. Who was that from?

A. From Mr. D. W. Macmillan, of Piedmont, Pictou County, Nova Scotia.

Mr. John Melville, of River John, Pictou County, Nova Scotia, writes on February 20, 1904, as follows:—

'Much obliged for bulletin 44 you mailed me. I prize it. You have sent me different grains, peas, 1901; oats, 1902, and barley last spring. All have good returns, much superior to the seed we used to sow. Would like if it is not asking too much of you, who have helped me so much already, to send me a sample of wheat any kind you think best.'

Mr. A. F. Stewart, of Carleton Place, writes:

'I may say that the Improved Ligowo oats that I got from the farm some years ago has been worth a great deal of money to me in increased yield and increased price, as I have sold quite a quantity for seed.'

The CHARMAN.—I would like to add my testimony to the success of the Ligowo oats, on the north bank of the Qu'Appelle river. Some years ago we received samples from the experimental farm here, and now for the past three or four years we have had 75 to 100 acres and they have been a marked success. It is true they do not grow to the acre as many bushels as the Banner, but they are altogether superior as to quality.

By Mr. Ingram:

Q. In that first letter you read, the man said he raised five bushels from five pounds, did he not?

A. From four pounds of seed. Four-pound samples of oats have been sent for the last two years; and five-pound samples of wheat and barley, which provides enough seed in each case for one-twentieth of an acre.

Q. Well then, with regard to the five bushels, are we to understand that they

yielded 217 bushels?

A. Yes, the four pounds yielded the first year five bushels, and the next year these five bushels were sown on two acres, which produced 217 bushels, or a little over 100 bushels to the acre.

Q. My reason for asking that question was that some farmers were complaining that the number of pounds sent out in the samples to the farmers was not sufficient to enable them to get any satisfactory results. Of course, I can understand that they are complaining of the difficulty in keeping these small plots separate from their other crop, and that so much care and attention was required for the small amount of grain that it was not worth bothering about.

A. We have had some cases of that kind, persons writing and telling us that it is too much trouble. We generally let them know how other people have managed, and advise them that if they will only take the trouble for one year they will get over that difficulty, but if they will not, some one else will, and sell them the grain in larger lots

thereafter for seed at an advanced price.

Q. These farmers suggest that the grain might be sent out in larger quantities, sufficient for 12 or 13 farmers, and that it be sent to one man, who will experiment for

the benefit of the 12 or 13. This they think would avoid that difficulty.

A. We know that is done in some districts, but it must be the farmers themselves who arrange that. It would not do for us to attempt to do that. We send one sample to each individual; on any other basis we could not supply the 30,000 or 35,000 people who send for samples. Neither could we send it by mail, as we do now, owing to the weight of such package it would have to go by express, which would necessitate further expenditure.

By Mr. Wright:

Q. Do you send samples for test to each individual who applies?

A. Yes.

Q. And if twelve farmers apply for samples in one county or district they will get 48 pounds between them, and they can put it together and make one test of it if they like?

A. That is a matter for them to arrange.

Q. These men that were making that suggestion that all the grain might be sent to one man might apply individually for what they want. One might apply for oats, another for wheat and another for barley, and so on.

A. They can do that under the present system.

By Mr. Blain:

Q. Did I understand you to say that a good part of the wheat you sent out came from Indian Head?

A. Yes, and part from Brandon.

- Q. Would that kind of wheat be adapted for Ontario, coming from western Canada?
- A. We do not find any difficulty with regard to what we use as seed on the farm here.

Q. Does the same apply to other grains?

A. Yes, it applies to spring wheat, oats and barley. We received this year two car-loads from Indian Head and one from Brandon, in addition to what was grown on the Central Farm here.

Q. Wheat and oats and barley that are successfully grown in the North-west Territories are suitable for Ontario and other parts of Canada?

A. Yes, in our experience we have found them very suitable.

By Mr. Smith (Wentworth):

Q. I suppose you are not able to send out any winter wheat ?

A. No, because we are not able to grow it in a large way at any of the experimental farms, we have sent out from time to time a few samples grown on experimental plots here.

By Mr. Larivière:

Q. What is the name of that oats that proved so very successful?

A. The Abundance. Mr. Thomas Corner, of Pefferlaw, Ontario, wrote a few days ago as follaws:—

By Mr. Gould:

Q. That is in North York ?

A. He says: 'From the experimental farm I have received "Abundance," "American Beauty," "Improved Ligowo," "Wide Awake," "White Schonen," and "Tartar King" oats.' He gives me an account of what he has been doing the last few years. 'Abundance,' he says, is a good oat; on first crop of one-tenth acre he had seven bushels, and he grew this variety for three years and it averaged fifty bushels per acre. He was one of those who got an eight-pound sample such as were sent out some years ago for a one-tenth acre plot to a limited number of farmers who took a special interest in this work. He continues ; 'Just here I may say that I seldom grow oats of the same variety more than three or at most four crops, as on our soil they deteriorate. "American Beauty" grew for four years; one-tenth acre, first crop seven bushels seventeen pounds; second crop,' by which I think he must mean the third crop, 'got about 2,400 bushels on forty acres. "Always Successful" stood up well at all time, and one of the best oats I ever tried, "Improved Ligowo," received eight pounds in 1900, sowed on one-tenth acre. Just when oats were heading my dog killed a ground hog in centre of plot, destroying a good many. Also somewhat hurt by fowls; but with these disadvantages yielded nine bushels twenty pounds. Have since grown them in 1901, 1902, 1903, and have averaged on forty acres not less than sixty bushels per acre. Our local miller says they make the most meal of any oat coming to the mill; that is ordinary chop for feeding, somewhat tough in husk, and require to be well ground. "Tartar King": First crop from four-pound package, two bushels. These two bushels in 1903 yielded from one acre of land eighty bushels. The crop seemed thin on the ground; think they would stand thicker sowing. I ordinarily sow 2½ to 3 bushels to an acre. They stood up well. The eighty bushels were drawn into the barn in one load, not a large looking load either. A thresher feeding them told me afterwards they were the finest looking oats he ever put through a machine. In regard to selling for seed, we have no difficulty in finding sale for all our surplus stock at a slight advance, five cents a bushel over market price. Of course we feed all we can. This year I have had to refuse several farmers already.'

These letters clearly show that these small samples are not to be despised. Those

who look after them soon get into stock and make money out of them.

By Mr. Stephens:

Q. How far are they to be sown from those of other varieties?

A. As all these varieties practically fertilize themselves, there is no danger in sowing them close together. We sow our plots at the Central farm from two to four

feet apart, and we have had no evidence of crossing in any instance. The flower of the grain is so closely covered by the two layers of tightly fitting chaff that it is scarcely possible for outside pollen to find its way into the enclosure.

NUMBER OF KERNELS ON A SINGLE PLANT.

By Mr. Ross (Ontario):

Q. In the reproduction of these oats, how many grains grow from one kernel?

A. This varies very much, probably from 100 to 150 from a well grown plant in a field, but when oats are grown as single plants, they sometimes stool very freely, and produce a large number of heads and a corresponding number of kernels. I counted on one occasion 3,539 kernels from one oat, so that the possibilities are very great for multiplication where the plants are given room to develop.

Q. Is there great stooling then that way with all sorts of grain ?

A. I have never found a single wheat plant produce that many kernels. 1,292 kernels in a single plant is the most I have ever found in wheat, and 1,892 kernels in a single plant of six-rowed barley.

By Mr. Gould:

Q. Which is the best for yield in barley, six-rowed or two-rowed ?

A. As a rule six-rowed.

I have several letters with me referring to the results obtained from samples of wheat. Regarding Percy wheat, Francis Cozens writes from Steep Creek, Prince Albert: 'I wish to tell you that the Percy wheat you sent me a year ago last spring did well with me last summer. It seems to mature much quicker than Wellman's Fife. I noticed a decided difference from the time it came out of the ground. although it was sown in the same field a week later than Wellman's Fife, it soon got ahead of it, and was ready to harvest a week earlier. This, I think sir, is a very important consideration in such a season as last, when ice as thick as a shilling was found on August 27. The straw of the Percy seems also to make better feed.'

Another farmer, A. Kroder, writes from Balgonie, Assa.: 'I have grown Preston wheat now for four years, with the best results. It has again this year given more

than Red Fife, and resists frost better than all other kinds.'

By Mr. Stewart:

Q. What is the name of that place?

A. Balgonie—not far from Regina.

The CHAIRMAN—Between Indian Head and Regina, on the main line. I think this grain has been grown in large quantities in the Moosejaw district, and sold and graded No. 1 hard some two or three years back.

THE PLOUGHING UNDER OF CLOVER.

Permit me to present some testimony in favour of the practice of the seeding of clover with grain, and ploughing it under in the autumn, as recommended by the experimental farm. It is from Edwin Christian, of Sundridge, Ont.: 'I have been sowing Banner oats for three years. In 1902 a five-acre plot gave me 300 bushels, or 60 bushels per acre. For 1903, I used the same piece of land, but I had put in eight pounds of clover seed per acre with the grain in 1902, and I ploughed under the growth of clover in the fall, and the yield in 1903 without anything else put on the land, only

ploughing under the crop of clover, was 85 bushels per acre. This year I am going to

use ten pounds of clover seed per acre instead of eight pounds.'

Mr. George A. Fawcell, writing from Upper Sackville, N.B., says: 'I have read carefully Bulletin No. 40 on clover, with very much pleasure indeed. Allow me to thank you very sincerely for the bulletins and reports you sent me from time to time. I am sure we are very much better farmers on account of them, and very many are the ideas received from their perusal. I am just now lifting a great crop of turnips from land handled in just the way you suggest with clover turned under. On another piece right beside but just manured the crop is not nearly so big. The clover piece had just the same manure as the other, but with the previous crop of grain, clover was sown thick, and it made a famous growth after the grain was cut, then it was turned under. The other piece had no clover; that was all the difference. I do believe that a farmer who reads and thinks, and uses a little common sense, can live off his farm and have something to the good.'

By Mr. Ross (Ontario):

Q. It is not necessary to comment on that.

A. I have here with me many appreciative letters with regard to the great usefulness to farmers of the reports and other publications of the experimental farms, but I fear there is scarcely time to read any of them this morning. They show that the good work we are doing is very highly appreciated.

By Mr. Henderson:

Q. I presume you are now just closing or you have closed your remarks as far as grains are concerned?

A. Yes.

Q. I would remind you, doctor, that last year just at the close of your address a question was raised by myself and others who took part in the discussion, and in order to bring the subject to your recollection, I will read the question which I submitted to you:—

THE SELECTION OF SEED FOR SOWING.

Mr. Henderson.—I would like very much indeed if you would continue the experiment of selecting the seeds which, I understood, had been carried on for some five or six or seven years on the farms, and be able in another year to bring down a report showing the gradual increase if there is an increase, from seed that has been selected as compared with the old-fashioned system of changing the seed every four or five years.'

You answered:-

'I shall be very glad to continue these experiments, and gather all the informa-

tion I can for the information of the committee, and submit the facts.'

I think from that circumstance, it would be very interesting to the committee to have you give the results of those experiments. I have no doubt you have borne it in mind, and have the statistics with you to show the advantage, if there are advantages, for the system of the selecting of seed each year, and sowing them on the same soil, as against what I here termed the old-fashioned system of changing the seed every four or five years. It is an interesting subject, and if you have the statistics for six or eight years, I am sure it would be very interesting indeed to the committee, and also to the people throughout the country to read these reports and these statistics placed in their hands in the annual report?

THE WITNESS.—Last year I gave the results obtained from selected seeds over a series of years as compared with screened seed, and showed that there was an advan-

tage of almost 5½ per cent in favour of the use of selected seed, and we have continued the selecting of the heads; but we have not at Ottawa had plots alongside with which we could compare these with what Mr. Henderson calls the old-fashioned system of changing seed every four or five years. In fact, I do not just for the moment see how it would be practicable to make a comparison between the results from the changing of seed with the results from the selecting of these heads with the present area of land available at Ottawa. It would require a duplicating of our plots, which could not be done without abandoning much other important experimental work.

The sowing of our plots with grain from selected heads is a great advantage. By this means we gain the increase referred to, and get every variety strictly pure. At the Experimental Farm at Brandon some comparative experiments have been conducted in continuation of the work reported on last year, between selected and unselected seeds, the particulars of which I have not with me, but they will appear in the

annual report of the experimental farms.

Q. In making these selections, do you make them continuously from the seed grown on the same soil ?

A. We make the selection from year to year; but we cannot grow the grain

always on the same soil, nor always on similar soil.

Q. To avoid a change of seed over a series of years how long do you suppose, how many years do you suppose you have been testing in that way? Will it be three or four or five years?

A. I think it is about nine years since we began to test the varieties of grain in the uniform trial plots at all the experimental farms, and we have carried on these plots all that time without much changing of seed. Originally we started with the same sample, a portion of which was distributed to each experimental farm, and as a rule we have grown our own seed from that original sample on each farm, but we cannot control the seasons, and occasionally we have had unfavourable weather or the grain has rusted badly and the grain has been so inferior that it has been thought best to send to one of the other farms and have it renewed. During the past season, owing to continued wet weather, our seed peas have been so badly injured that very few of them are fit for sowing.

By Mr. Cochrane:

Q. With your experiments on that line, how do you get your selection of seeds?

A. The heads are picked on the plots or fields, selecting the largest and best.

These are threshed and the grain afterwards screened and the larger kernels reserved for sowing.

To bring together all the facts needed for a session of this committee requires considerable time, and I did not know I was coming before you so soon until last Friday morning, and therefore I am not prepared to go more fully into this particular

subject at present.

Q. If you did not carry on the experiments, you could not have given us the information if you had known you were coming a month before. Let me make myself clear. I understood from you, Sir, that that mode of selecting the best heads of any kind of seed was a great advantage. Well now, if you have not in your experiments when you selected the seed for years, produced a quantity of wheat which must be superior on that theory, if you have not experimented with one kind of seed continuously, how do you know the benefit you have derived from selecting heads year after year, if you have not had in opposition to that a different crop growing continuously from one kind of seed without selection?

A. We have grown selected and unselected seed side by side, and in my evidence last year I gave the results of 123 experiments conducted during the past three years. That I thought was sufficient to establish the fact that selection of seed is very useful and valuable. These experiments have been continued at the experimental farm at

Brandon, where the soil is much more uniform than it is at the Central Farm, and the particulars of these experiments will soon be available in the annual report.

Having shown that the selected seed from selected heads had produced better results as a whole than the screened grain, I thought this part of the question was fairly well settled.

By Mr. Henderson:

Q. The evidence you gave was a comparison between selected heads and screene: grain, but I did not understand that the results you gave us last year were the results of experiments which I have referred to. What I mean is this, that a farmer takes ten acres of wheat, he goes through it, and selects the finest and plumpest heads he can get. So, until he has collected two bushels of grain; he sows that grain and again from the field he selects two bushels of prime heads, he continues that selection year after year for three or four years until he has reached the time when he thinks he can fairly sow his whole crop with the result of this selection. Now the idea is that he should select always from the grain grown on the same soil, that he should not go away ten, fifteen or twenty miles and even get selected heads from there, but that he should continue to sow grain selected from the soil on his farm, so that no change of condition would have to be overcome by the grain in its production. Now, where experiments of that kind have been carried on for 6, 8 or 10 years, they would, to my mind, demonstrate fully to the farmers of this country whether they are adopting the most correct principles, or the better plan, by changing their seed every four or five years. I admit that in the section of the country where I live, the farmers change habitually their seed, not growing the same seed more than four or five years. They go to the southern part of the county where there is a clay soil, and bring it to the northern part of the county, where they sow it on a clay loam. Almost invariably, the first, second or third year, they will have better results than if they had continued to sow their own grain. It seems to me that can be explained as the first year the effort is needed to overcome the changed conditions and to assimilate itself to the new conditions which seem to give better results. Gradually in three or four years those results die out, and the farmer has to change his seed again. Is it possible by continuing to select year after year and always having prime seed to sow, instead of coming over 20 to 25 bushels with a change of seed, and then going back to 20 again, the farmer will start at 20 bushels, and go on to 30 perhaps, and perhaps more, the crop gradually increasing by reason of always sowing the same grain, on the same soil, and using the system of selection to get a fine class of seed, rather than the system of change. That was what I thought you would bring before us this year, the result of the system of selecting the best heads as compared with that old system. Perhaps you have misunderstood my question and I hope in another year if you do experiment on that line you will collect the figures, and I am sure it will be quite interesting. I have known very interesting discussions in my part of the country on that very question.

DIFFICULTIES IN OBTAINING UNIFORM RESULTS.

A. If we could get the uniform conditions of soil and climate which would be required to carry out the series of experiments which Mr. Henderson has so clearly outlined, the result would be most interesting. But Dame Nature does not act in the same way every year. I began a series of experiments in the selecting of grain sixteen years ago. I selected every kernel in that case, of wheat, and weighed a given number chosen for sowing, and they were the largest and best kernels I could find of the variety. That year they gave a crop of kernels which had increased in weight from 20 to 30 per cent. This result encouraged me in this work, and I thought I would soon be able to demonstrate a great advantage from selecting. The year following rust struck the grain

just when it was beginning to ripen, and I found that my kernels at the end of the second year's growth were not half as big as I had had at the start. I cite this to show how difficult it is to demonstrate any uniform or regular advance along this line by any one practice where we have so many different factors to deal with. Our experiments have shown that a careful selection of seed brings good results and pays well for the effort, but this is only one of the conditions which lead to good results. The choice of a productive variety of seed for sowing is in our experience equally important. The character of the soil, its thorough preparation, the manuring of the land, and early sowing, all largely influence the results of the harvest, and how much of the success we have is due to any one of these conditions it is almost impossible to demonstrate. But with close attention to all these details we are still at the mercy of the season, and if that is unfavourable, the crop is disappointing. The question of season really has more to do with the character of the crops than the question of seed or the question of manures. I have had several instances where farmers in the North-west have sent me samples of wheat that would not grade higher than chicken feed, and asked my opinion as to the use of such grain for seed. I have told them it was not fit to use for seed; after harvest they would send a sample of the wheat grown from that grain, as good and plump as any I have seen in the country. When one has had experiences of that sort he realizes strongly that there are other factors besides good seed which influence the crop.

By Mr. Henderson:

Q. I scarcely see it in that light, as I think the same unfavourable season would operate against them in the one case as in the other, no matter how the season is?

A. I shall be only too happy to undertake any experiments which this committee may suggest. At the same time there are difficulties in the way of reaching a satisfactory conclusion from experiments on this line, which at first sight may not be easily realized.

Q. I am of the impression that the college at Guelph have been experimenting in

that way for six or eight years, and that they have given the results?

A. They have experimented with small seed and large seed, but I am not aware that they have ever conducted any series of experiments on the relative advantages of the selecting or changing of seed.

By Mr. Wright:

Q. There are some kinds of soil which grow better grain than others? Pease on clay soil, for instance, will not deteriorate for a long time, but on sandy soil they will deteriorate in a very few years, so it becomes necessary to get good seed from some other locality.

A. If it was a simple thing to determine accurately what benefit in increased crop was gained by selecting the seed from year to year this would no doubt have been de-

termined long ago.

By Mr. Cochrane:

- Q. I do not understand the experiments, but I understood you to say that is what you have been doing for years?
 - A. Yes.

Q. Well now then, if you have experimented and satisfied your mind that it is a beneficial mode of procedure, what are the exact advantages of it?

A. I have just said we have satisfied our minds that an advantage has been obtained in this way even though we have not always determined the exact amount of it.

By Mr. Henderson:

Q. Do you select continuously from the same soil, and sow on the same soil, and

continue that for a period of eight or ten years?

A. There are no two fields on the Central Farm that have exactly the same soil, and we have to rotate our crops. We have three different fields for the experimental crops; and the soil of these fields varies considerably. At Indian Head where the soil is very uniform, we have been able to sow on the same kind of soil every year, and the results have been very satisfactory there.

By Mr. Ross:

Q. Have climatic conditions any relation to the results?

A. Yes, to a very large extent.

By the Chairman:

Q. Wherein does the method that Professor Robertson has pursued, and in connection with which he is offering prizes for the selection of grain, differ from the method we have just been discussing or the method that Mr. Henderson has been discussing?

A. I am not sufficiently familiar with the methods that Professor Robertson is carrying on. He has offered prizes for selected grain, but I understand these have been

discontinued.

THE EXCHANGE OF SEED.

By Mr. Stephens:

Q. Wouldn't you advise the farmers to exchange seed?

A. I would, provided the seed obtained is superior to what the farmer has been growing. I believe the common consensus of opinion among farmers favouring that is founded on experience.

By Mr. Henderson:

Q. I don't think the consensus of opinion carries always very great weight. We are all conservative in that sort of thing, and I believe we should step out and try and

discover something else.

A. I quite agree with you that we should investigate in every direction, and that is what we have been doing at the experimental farms, but where the field is so large and the problems so complicated, it will be a long time before all the work can be overtaken. I think that the good crops we are getting every year on the experimental farms is partly due to the fact that we have selected the best seed every year.

By Mr. Wright:

Q. The same as the best sires in every animal?

A. Yes, but occasionally we have to make an exchange of seed after an unfavourable season.

By Mr. Smith (Wentworth):

Q. Wouldn't it be an interesting experiment some year if you had a pure quality of seed; sow it alongside the seed from some other source, so as to prove the benefit of selection?

A. That is what we have been doing, but one great difficulty in the way of accuracy in results is that it is almost impossible in commerce to find strictly pure seed, and where the seed is mixed in the one case and pure in the other it is impossible to make accurate comparisons. I shall be very glad to do everything I can to gain information which will be helpful to farmers—that is what we are trying to do all the time; but it is well that the difficulties in the way of accurate results should be fully considered.

By Mr. Wright:

QUALITY OF BARLEY IN CANADA.

Q. With reference to a statement by a gentleman now standing high in commercial life in England, whose name I do not remember at the present time, but who, on a public platform, speaking before a large society there, asserted that no No. 1 barley was grown in the Dominion of Canada, and he appeared to think that every body acknowledged that and knew it. I was thoroughly astonished to hear that; is there any truth in that statement?

A. We can grow as fine barley in some parts of Canada as is grown in England, especially in British Columbia. We have grown malting barley which will grade as high as the best English barley, but you cannot find that barley in commerce, because the shippers mix the barley together. No barley goes to market in sacks, so that a man's own product is placed before the consumer separately from his neighbours'. The method of marketing here and in England is so different that our growers cannot compete with the English grower. In England a man sends his barley in sacks to the buyer, but here it will be mixed in a car in bulk with a dozen other samples of different qualities, and the grade of the whole is usually fixed when it gets to its destination at the value of the poorest sample in the lot, and the price received is not sufficient to encourage the growth of the higher grades.

By Mr. Ross (Ontario):

Q. The finest six-rowed barley in the world for years has been grown between the counties of Peel, in the Brampton section, and Kingston. It was the home of the six-rowed barley, what is known as the Midland section of Ontario.

A. I believe they grow very good barley there.

Experiments have been made during the past year with clover, which adds further testimony to its usefulness. With the ploughing under of one crop of clover, the gain in subsequent crops has been great, not only for one year but for two or three years after. Particulars of this will be found in the annual report, which is now going

through the press.

The correspondence at the farm continues to be very large, and is a good indication of the constant benefits the farmers are realizing from the work of the farms. During the last year ending December 1, the letters received at the Central farm numbered 52,068, and at the branch farms 13,300, making a total of 65,368. During the same period the number of reports and bulletins distributed was 248,673. By these means a constant stream of information is going out from the experimental farms helpful to farmers in their endeavours to make their work more profitable.

I desire to call your attention for a few minutes to the progress of the work towards obtaining apple trees which will be hardy enough to stand the North-west cli-

mate.

By Mr. Cochrane:

Q. Will you inform the committee whether the ploughing under of that crop that was sown with grain was done in the fall or whether it was in the spring?

A. You will find all the particulars in the annual report. In most instances the clover was sown in the spring and ploughed under in October, but there are some cases

where the crop has been allowed to remain on the ground until the following May and ploughed under then. That gives you a larger quantity of clover tops and roots, which makes the ground richer.

Q. Is it good for corn ?

A. It is a very useful fertilizer for corn or potatoes.

NEW HARDY APPLES FOR THE NORTH-WEST.

Continued efforts have been made ever since the experimental farms were established to obtain apple trees which would be hardy enough to endure the climate of the North-west country. The earlier efforts were mainly in the direction of testing all the promising cultivated sorts obtainable in northern Europe, the northern United States and in other countries and localities where the winters are cold. The trees obtained have been tested in considerable numbers, and under varying conditions, as to shelter, but thus far with very little success. While none of the apple trees planted at Indian Head and none of those tried at Brandon except the Transcendant Crab have fruited, both the Transcendant and Hyslop crabs have been grown with some success in several parts of Manitoba, and in a few special localities at low altitudes, and in exceptionally well sheltered spots some individual growers have succeeded in fruiting some of the hardiest forms of Russian apple. The most notable instance of success is that of Mr. A. P. Stevenson of Nelson, Manitoba, whose exhibits of Manitoba grown apples at exhibitions in Manitoba have awakened much interest in the subject, and proved a great stimulus to others. It should be borne in mind that altitude (height above sea level) has a great influence on the hardiness of trees. Winnipeg stands 757 feet above sea level, which is one of the lower points along the main line of the Canadian Pacific Railway. Nelson is about 80 miles southwest of Winnipeg, and its altitude is about 900 feet. Mr. Stevenson's orchard is not only at a low altitude, but is naturally protected by a wide and heavy belt of timber. He has also added to the natural advantages of this spot by planting additional windbreaks and screens of evergreens notably of Scotch pine, which does well in this district.

In 1892 and 1893 several hundred mail packages were sent from the Central Experimental Farm at Ottawa to farmers in different parts of Manitoba and the Territories, each containing a few young apple trees of the hardiest Russian sorts for trial. While we have no record of continued success in any other instance, the trees sent to Mr. Stevenson did well from the outset. He has reported on them from year to year, and further specimens have been sent him, so that his orchard now contains quite a number of varieties, a considerable part of which have come from the Central Experimental Farm. These trees, many of which have been twelve years planted, and have suffered very little from winter killing, have now grown to a good size, and produce annually considerable crops of fruit. At the time Mr. Stevenson was supplied with the young apple trees from the Central farm, a much larger number of trees of the same varieties were sent to the experimental farms at Brandon and Indian Head, and none of them have survived. These facts go to show the exceptional character of Mr. Stevenson's success. Transcendant crabs have been produced in many places about Winnipeg, and in the southern parts of Manitoba, also at Headingly, Stonewall. Portage la Prairie, Brandon, and at Souris, and at some of these points a few specimens of Duchess and Wealthy apples have been grown, and displayed with pardonable pride at public exhibitions. But thus far the exhibits made yearly by Mr. Stevenson have usually exceeded, far exceeded, those of all other Manitoba exhibitors combined. While the success which has crowned Mr. Stevenson's efforts should encourage further trials, they are far from establishing the fact that apples can be grown generally in Manitoba and the North-west Territories.

Brandon is at an altitude of 1,194 feet, and Indian Head 1,924 feet. Further west the country rises considerably, and at Calgary reaches 3,428 feet in height, and what

is wanted for that part of the Dominion is a race of apples hardy enough to be cultivated with success by the average farmer everywhere. That such a race of apples has been gradually produced by cross breeding at the Central Experimental Farm is now well established, and I desire to refer briefly to the manner in which this has been brought about.

By Mr. Galliher:

Q. You mentioned Calgary and other places in the western territories. May I

ask if trees have been sent out there?

A. Yes, we have been sending trees there more or less for many years, and since the experimental farm conducted by Mr. Bone for the Territories was established we have sent trees to him.

Q. Where is that ?

A. About four or five miles from Calgary, south towards the Indian reserve. It is the North-west Territories Experimental Farm.

Q. Because the climate in southern Alberta is much warmer than it is at Winni-

peg, especially down towards the boundary ?

A. Yes. I visited that part of the country last year, and found that at an altitude nearly as great as that at Calgary there were apple trees in the gardens of the settlers in Southern Alberta which had been growing for two or three years, and seemed to be fairly well established. In one instance, at Magrath, three apples had been produced on a young tree of the variety known as Wealthy. I examined the tree. The apples had been gathered, but there was evidence to show from the swelling of the stem where the apples had grown that they had come from that tree.

There are a great many things we do not yet understand in regard to altitude and climate, but the broad fact is nevertheless correct that the higher you go, the other

climatic conditions being equal, the greater difficulties you meet.

By Mr. Galliher:

Q. They are not equal. We have an experimental farm at Indian Head, but we have no experimental farm in the west. I have thought, and a number of people in the Territories and agricultural districts have spoken to me along the same lines, that an experimental farm would be very useful for not only apples but for everything. Although the altitude is much higher there—I lived in that country for eight years and know considerable about the climate—it seems to me that they could be successfully grown, more especially as it is the intention of the Canadian Pacific Railway to establish large irrigating works there. There will be a large ditch in southern Alberta. I say this more with the idea of seeing what your own views are.

A. You will see what we are doing for that part of the country.

By Mr. Cochrane:

Q. Have you tried any experiments in grafting apples on these hardy crabs?

A. Yes; sometimes they have been killed, and sometimes they have lived for several years. We have not yet produced any fruit on them, but we have some trees growing which have been doing very well at Brandon and Indian Head experimental farms.

FOUNDATION FOR INCREASE IN HARDINESS,

In the spring of 1887 there was received from the Royal Botanical Gardens at St. Petersburg a package of seed of a wild crab from northern Siberia, known as the 'Berried Crab' (*Pyrus baccata*). This crab grows very abundantly about the Baikal sea, of which we have frequently heard in connection with the present war between

Russia and Japan. It is one of the trees that is said to clothe the hills there almost completely in some places, and produce a very handsome appearance in the spring of the year when it blossoms. Young trees were raised from this seed, and sent to the experimental farms at Brandon and Indian Head to be tested, and from the outset they proved perfectly hardy, and have borne good crops of fruit. These trees are dwarf in habit, low branched and strongly built, with the fruit very firmly attached to the branches. They are hence well fitted to endure the strong winds which sometimes prevail on the open plains. The fruit, however, is very inferior in quality and very small, about the size of a cherry, and is practically of no value except to make jellies.

Having found in this species a tree with the desired degree of hardiness, experiments were undertaken with the object of increasing the size and improving the quality of the fruit by crossing it with some of the hardiest and best varieties of apples grown in Ontario. Among the sorts which have been used in making these crosses are Wealthy, Duchess, Fameuse, Broad Green, Krimskoe, McIntosh Red, McMahon White, Ribston Pippin, Pewaukee, Red Astrachan, Tetofsky, Yellow Transparent. Scott's Winter, Golden Russet, Winter St. Lawrence, Northern Spy, Ontario and others. We have thus covered a very wide range in the use of varieties. The original wild crab has been used as the female parent, because it is believed that trees thus bred will be hardier. Thus far the introduction of the blood of the larger apples has not appreciably lessened the hardiness of the trees, and all the varieties yet tested, both at the Brandon and Indian Head Experimental Farms, have passed through the winters uninjured.

In the character of the foliage, colour of the wood and form of growth of the crossbred trees, there is much variation, some resembling the varieties of cultivated apples. used as the male, while others are more like the wild form of the female. About 800 of these cross-bred sorts have been produced at Ottawa, and more than 100 have fruited. Among the 100 about twenty are of such size and quality as to make them useful for domestic purposes, and to justify their propagation for more general distribution. Among the best of these are Alberta, Jewel, Columbia, Charles, Robin, Pioneer, Prince, Ruby, Dawn, Magnus, Elsa and Silvia. These trees are being propagated as fast as possible, and have been sent for trial to the western experimental farms, also to about 200 experimenters in Manitoba and the North-west Territories, and a few to northern About 90 packages have gone to the Territories, and a similar number to Manitoba, the remainder to northern Ontario. In selecting the places to send these trees, we have endeavoured to give them a wide distribution, sending only a few to any one locality. We have thus scattered them all over the country. These 200 points vary in altitude from 747 feet at Winnipeg, to 4,200 feet at Lyndon, in the foothills of the mountains.

By Mr. Ross (Ontario):

Q. Is there any standard altitude for growing apples?

A. I think not, but high altitudes in this country are found to be unfavourable. As yet there is very little known as to what the conditions are which really prohibit the growing of certain varieties of fruit.

It was last year that these cross-bred apple trees were sent out. Reports have come in from nearly all those who received them, and in nearly every instance the trees have grown well, and it is hoped that in the course of three or four years they will begin to fruit. In the meantime efforts are being made to propagate them in a larger way, so as to extend the area and also to get them into the hands of nurserymen, so that they may be multiplied and made available to all those who wish to grow them.

By Mr. Bell:

Q. What is the weight of this fruit you have produced?

A. I am afraid we have not weighed them; but they have been measured, and they vary from 1½ to nearly 2 inches across, and from 1½ to 1¾ inches deep. They are large enough to make them very useful for domestic purposes. I am glad of the opportunity to place on record the progress being made in connection with this important branch of work.

JOURNEYS THROUGH THE NORTH-WEST.

The only other subject I wish to bring before you is a very brief reference to my journeyings during the past year through the North-west, when I had the opportunity of going over a very large area of these lands I have referred to as capable of producing wheat. I visited the districts between Regina and Indian Head, and between Edmonton and Calgary. I also drove from Saskatoon to Battleford, where I saw a very fine country into which settlement is pouring very rapidly. Most of the land I saw was very good and the settlers visited seemed to be much pleased with their prospects. Here is an example of the residence of a settler there who has been on his own land for four months (photograph exhibited). This man came from Washington Territory, and was one of the earliest American settlers in that district. This (photograph exhibited), is another settler who had only just arrived, you will notice he is using tents. This settler (photograph exhibited) is one who has been there for many years, and was a man well known in the early days. His name is Nolan, and at one time he was Minister of Agriculture for Manitoba.

I never saw such a continuous area of good land as I did in driving the 200 miles from Saskatoon to Battleford, going up on the north side of the river and coming

back on the south side.

By Mr. Ross (Ontario):

Q. Which river are you speaking of?

A. The Saskatchewan river. If the land I saw can be taken as an indication of the Saskatchewan country generally, I feel sure it will make a very excellent country for mixed farming. I saw fine fields of wheat at different points. Many of them were very good, and some, owing to the backward season, were slightly touched with frost, but the promise of that district is very great, and it is much the same with the other parts of the country that I visited. It would detain you too long to go over them all. but I was very much pleased with what I saw. I had the pleasure of going nearly 8,000 miles by rail, and nearly 500 miles by vehicle, so that I had an opportunity of seeing a good deal of the country. The more I see of it, the more sanguine I feel that it will soon become one of the most prosperous and important divisions of this great Dominion. It is worth all the efforts that have been made to improve it and to settle it so that its marvellous fertility may be utilized in the interests of our great country.

By Mr. Robinson:

Q. Where you saw that excellent land, was that in the neighbourhood where the

Grand Trunk Pacific Railway will go?

A. We drove more nearly along the line where the Canadian Northern is building. It runs along the north side, and there is a projected line of the Canadian Pacific Railway running along the south side of the Saskatchewan. I do not know just where the Grand Trunk Pacific Railway is intended to go.

Q. At any rate that excellent land will be tapped by railways?

A. No doubt it will. The Grand Trunk Pacific is expected, I think, to go to the north of the Canadian Northern.

2-6

By Mr. Stewart:

Q. Did I understand you to say that Nelson is 80 miles east of Winnipeg?

A. It is about 80 miles. I thought I said south.

Q. It is south-west, not east.

A. It is near Morden, and I thought, looking at the map, that Morden was pretty nearly south of Winnipeg.

By Mr. Ingram:

Q. During the last meeting of the committee, while Mr. Mackay was here, the professor made some reference to the financial management of the different farms, which he said was under his charge. If the professor comes before the committee before the Easter holidays, probably we can get from him some information along that line. Personally I would like to know something about the financial management of those farms.

A. The financial operations of the farms are all published every year in the Annual Report, but I shall be glad to give any further details desired.

Q. That is what we would like to have.

A. I will be very happy to come at any time, if the committee wish, and give any information I can.

Q. I would ask that the professor come some day after Easter.

APPLICATIONS FOR SAMPLES OF SEED AND BULLETINS.

By Mr. Gilmour:

Q. A few years ago I think the professor sent out a circular to us asking us to send him the names of persons that would sow particular seeds and take care of them. We have not had any such requests since that time. Do you continue to send samples of seeds to these persons for testing, or is it still expected that we will send in their names?

A. The farmers have been so active in sending in for themselves that we have not needed any help from members along that line for some years past. In reply to that question as to whether we have retained the names on our list for sending samples to, I may say that we have no permanent list of persons to whom we send samples of grain. We have a permanent list to whom we send reports and bulletins, and if a person's name goes on that list he gets all the publications as they appear, but for sending samples, it would be impracticable to use a permanent list, because some farmers after they have had two or three samples do not want any more. There are a great many new people coming into the country every year who need help in this way, and there are others who have been in the country for years who are just learning that there are experimental farms which are rendering good service in this way. Every farmer who applies within the limits of the time fixed for receiving names, which is usually March 1, receives a sample, and the list every year is a new one.

By Mr. Henderson:

Q. Have you no way of revising the list for bulletins? My impression is that in the course of two or three years there are a great many changes. I have not seen the list for my county for many years.

A. For some years past we have adopted the plan of printing a notice to the postmaster on the outside of every envelope in which the reports or bulletins are enclosed, asking him that if for any reason the publication sent is not called for to return it to the Experimental Farm. If it is returned we cross the name off the mail-

ing list at once. By that method I think we reach the great majority of instances where deaths occur or where parties leave the country. Of course there may be instances of carelessness on the part of the postmaster in not attending to our request, but I do not think that this occurs often. I shall be very pleased to prepare for any member who may desire it a list of the names of those in his constituency who are receiving the reports and bulletins of the experimental farm.

By Mr. Ingram:

Q. How do you secure additional names ?

A. Chiefly from individuals, and a good many are sent in by members from time to time. Any person who wants the publications may have them by asking.

Q. Any limit to the number ?

A. No limit has ever been fixed. Any farmer who wants the information which the publications of the experimental farms contain has the right to have it.

Having examined the preceding transcript of my evidence, I find it correct.

WM. SAUNDERS,

Director Dominion Experimental Farms.

ing list at once. By that method I think we reach the great majority of instances where deaths occur or where parties leave the country. Of course there may be instances of carelessness on the part of the postmaster in not attending to our request, but I do not think that this occurs often. I shall be very pleased to prepare for any member who may desire it a list of the names of those in his constituency who are receiving the reports and bulletins of the experimental farm.

By Mr. Ingram:

Q. How do you secure additional names ?

A. Chiefly from individuals, and a good many are sent in by members from time to time. Any person who wants the publications may have them by asking.

Q. Any limit to the number ?

A. No limit has ever been fixed. Any farmer who wants the information which the publications of the experimental farms contain has the right to have it.

Having examined the preceding transcript of my evidence, I find it correct.

WM. SAUNDERS.

Director Dominion Experimental Farms.

ENTOMOLOGY AND BOTANY IN AGRICULTURE

House of Commons, Room 34, Wednesday, March 30, 1904.

The Select Standing Committee on Agriculture and Colonization met this day at 10 o'clock a.m., the Chairman, Mr. Douglas, presiding.

Dr. James Fletcher, entomologist and botanist to the Dominion Experimental Farms, was called and addressed the Committee as follows:—

Mr. Chairman and gentlemen of the Committee, I am glad to be here this year, because last year, owing to a misunderstanding I lost the opportunity and privilege of appearing before you. I consider it a privilege to appear before this Committee because the reports being printed promptly, I find it one of the most useful means of bringing my work before the country.

VALUE OF ENTOMOLOGICAL AND BOTANICAL INVESTIGATIONS.

The work at the Central Experimental Farm, in the different branches, is carried on by specialists who believe that their own particular line of investigation is the most important work that is being done there. At any rate, let me say, that I consider that there is no part of the work of the experimental farms that can compare in value with that of the Division of Entomology and Botany, as gauged from the standpoint of the saving of money which takes place in the various crops of the country through investigations founded on a critical study and a better knowledge of plants useful and injurious, and of insects useful and injurious. I have to the best of my ability tried to develop this department of the work during the time that it has been in my hands, and therefore, I am always glad of any opportunity to bring it before representative men such as the members of this committee, who have opportunities of meeting those interested in the work in all parts of the Dominion. In the past I have found that this has been of enormous advantage to my division. I believe in the work, as I say, and I believe that by bringing it prominently before the men most interested, farmers, fruit-growers and others, a considerable saving of money has taken place in Canada. My appearance officially before the committee is really an annual report on work that is being done for the country, with the hope of finding new avenues of reaching those interested throughout the Dominion. Therefore, sir, I think the best plan in addressing this committee is to make a condensed statement, by way of an annual report, on some of the work that has been or is being done, in the hope of bringing out further inquiries from the members of the committee with regard to such investigations as they think would be of use to them and to their constituents.

WORK OF THE DIVISION OF ENTOMOLOGY AND BOTANY.

A large part of the work of the division of entomology and botany consists of answering letters from farmers and others in all parts of Canada with regard to those 2—7

insects injurious or beneficial which they may meet with in carrying on their everyday pursuits; also in the introduction and investigation of new plants and the testing for different parts of the Dominion of such plants as are known to be useful in the better known districts where these plants have been grown. In this way we have been able to introduce some useful agricultural plants into Canada, and more than that, we have extended considerably the known range of those that were already known to be useful in some localities. The different insects which attack our crops every year, although they cause a destruction of one-tenth of every crop that is grown, are not every year the same pests which have given trouble in previous years. Every one in his own experience knows well that a certain insect may appear in destructive numbers and then mysteriously disappear or come within control by the use of simple and easily applied remedies. Well the mystery of the disappearance is somewhat dissipated if we understand that the farmers of Canada from the Atlantic to the Pacific, have the means of acquiring information through their own officers at the experimental farms and at the provincial institutions of the same nature, where they can learn at once on application the general principles upon which all of these enemies can be fought.

NATURE STUDY.

Although there is unfortunately to-day a very widespread lack of knowledge with regard to very simple matters connected with natural history, yet at the same time there is a very rapidly increasing amount of practical knowledge which is now being acquired by farmers concerning plants, animals, insects, birds, &c., of great importance to them in their farming work. In addition to this, and what perhaps is of far more moment in the development of the country, these matters are being taught to the school children throughout the Dominion. The magnificent work that is being done by Professor Robertson in teaching boys and girls to use their eyes—to see what they are looking at and to know what they are looking at—is having a most beneficial effect upon the whole citizenship of Canada. It has been my privilege during the last five or six years to be brought very closely into contact with the school children in most parts of the Dominion, and I find that the elementary knowledge which is being given to them is bearing fruit to-day in larger crops and better methods of farming. are elementary and cheap works on agriculture available to all, and I think it would be well to draw the attention of the members present to a magnificent little book—and it can have no other adjective-called 'Practical Agriculture,' written by Professor James, of Toronto. It is a little book costing only 30c.—almost given away—and yet, if it were read by every farmer in the country, it would, I believe, in a very short time double the revenue of this Dominion. By reading this book the farmer would learn, and understand without special study, the general simple principles which underlie all agriculture, and these would be of the utmost value to him. I need not state that every man who lives in the country would be better prepared for his work whatever that might be by knowing something of the elementary principles of plant and animal life which are being imparted to the school children of Canada through the practical methods of education with common things now spoken of collectively under the name of nature study.

The effort is being made to impart to boys and girls at school a practical knowledge of many common things which concern everybody, but which during the past had been much neglected by most people. It is just such practical knowledge which is putting the province of Manitoba and the North-west Territories to-day in a far better position agriculturally than they would have been without it. This practical knowledge is being given to the boys and girls while they are young, and not only needing but wanting information, nay, demanding it;—information about the commonest things all around them, to know that the commonest weeds are all very different, that they differ from each other not only in appearance but in every characteristic; that

these differences exist, can be learned and are worth knowing; that one weed looking large, coarse and apparently very injurious may be very easily controlled, and is therefore after all not a bad weed, whereas another weed, and a very bad one indeed, as is shown by the way it is fighting against the farmers, may present a very innocent appearance. Boys and girls are getting to know this to-day in Manitoba, the Northwest and all through Canada. The farmers are also being taught these things by their own children in a practical way. During the last few years I have seen many evidences of this, and believe from what I have seen in travelling through Canada that it has had a distinct effect on the advancement of the country. It has been my privilege to be brought into contact with many of the school teachers and school children of Canada, and I am convinced that the training now being given to farmers' children is just as important for the advancement of agriculture as working directly through the farmers themselves. Perhaps, indeed, this plan is even more effective than anything else that can be done. In my official capacity I have attended a great many meetings throughout Canada during the past year, and have felt much encouraged by observing the much increased interest in what may be called the physiological basis of farming, a direct outcome of the effort which is being made to use in schools in the training of scholars simple but accurate knowledge of common things, and which is bearing fruit to-day. Last spring I held a series of sixteen meetings in the district around Whitby, and there came into contact with the school children who were being encouraged by the Minister of Agriculture, through Mr. Hodson, the Live Stock Commissioner, to inform themselves with regard to plant life and other natural history studies bearing on agriculture by inducing them to compete for trifling prizes given at the annual autumn exhibition held at Whitby, which they now call the Model Fair. A successful effort has been made to give this exhibition a greater educational value for farmers than has heretofore been the case in fall fairs, and many things that were thought undesirable in other exhibitions have been done away with. This fair, in fact, has become rather more educational in its influence than any of the other fairs in the country.

WEEDS.

The Honourable Mr. Fisher, in his own neighbourhood, has also taken a great interest in this work, and among other things by the offering of small prizes to be competed for by school children, has incited the farmers in the Brome district to know a little more about the weeds to which in the past they had not given sufficient attention. Weeds are enemies of the farmer that increase and prevail to a corresponding extent as they are neglected, and only as they are neglected, because there is no weed known which cannot be controlled by any farmer who knows and practises a small amount of simple and elementary knowledge in the ordinary practical methods of agriculture. By teaching farmers what these weeds were and their habits and also that it was worth while learning about them, they have been taught to control many varieties which before they could not control. I was at the first of these exhibitions held at Brome Corners, and although it may have been amusing to some, yet it was rather sad to see the ridicule and contempt which was excited among the common-sense farmers there when they came to the exhibition and found there was a weed tent with little else exhibited in it but weeds. This was simply because they had not thought much of the matter. The general remark of probably 90 per cent of every 100 who visited that tent was 'Well, but what are these? Are these weeds?' 'Yes.' 'But we all know all about weeds, we don't want to see weeds here.' And then if you held them a little longer and showed them that they did want to know about weeds, just what the weeds were and the kinds that were most troublesome, then they came back and began to look a little serious: and on the second day, instead of being passed by everybody, the tent was so crowded by farmers anxious to acquire information that it was necessary to repeat the explanatory statements at short intervals throughout the day. We also found exactly 2-71

the same thing took place in Manitoba when this method of explaining to the farmers about weeds was adopted a few years ago; but to-day there is nothing more popular in the annual western fair at Winnipeg or at any of the local exhibitions held in the North-west than the exhibits of weeds. Not only do farmers come in to see the weeds, but they bring in many specimens to have them named and to inquire about the best way to treat them. Exactly the same line of work has been carried on during the past five or six years at series of farmers' meetings which I have been able to address by the consent of the Minister of Agriculture, and at the request of the Manitoba, Northwest and British Columbia governments.

THE NORTH-WEST AS A WHEAT COUNTRY.

During the past summer I was all through that magnificent country on both sides of the Qu'Appelle valley. And just about the time when I hoped to have been paying my addresses to you at Ottawa last year, I was addressing the friends of the chairman at Tantallon. Although Ottawa is a lovely city, although there are few places lovelier, yet, Mr. Chairman, I think you must have been well up in the race and taken the pick of the North-west when you chose your beautiful home. All through and along the sides of the Qu'Appelle valley there is that magnificent country unequalled in fertility, in possibilities and for the production of all that the farmer wants. Crops of all kinds grow there, and with better knowledge of methods of farming, and with the suggestions that things should be grown there that we in the past thought would be impossible, all the settled parts of the country are producing enormously, and we know that even yet far less is now produced than will be the case in the future. Why, sir, it was only twenty-seven years since a man was told in Ottawa that he was not only a fool, but a criminal fool to say that grain could be grown in the North-west Territories. The man thus addressed was John Macoun, who came down here from a trip through Manitoba and the North-west Territories and told the people of Ottawa that wheat would certainly grow in the North-west, because he saw the same kind of wild plants were producing their seeds and bringing them to perfection there which he had seen in the best parts of Ontario. Another man who had been in the North-west, but who had not the same scientific knowledge, laughed at him and told him, as I say, he was not only a fool, but a criminal fool for wanting to take people into that country to starve. But, sir, the people there are not starving now. Last year's output of over 60,000,000 bushels of wheat I think does not leave very much latitude for starvation, and that is nothing to what will be produced when more land has been taken up and better methods prevail. In the year 1883 I went out as far as the spot where Moose-jaw stands to-day, and I met three young farmers who had got ahead of the railway and had taken up land there but were coming out thoroughly discouraged. They said 'This country is too far west, we are out of the wheat belt, nothing will grow here, it is too dry.' That, as I say, was in 1883. The year before last the very land that those men abandoned sold at the highest price that land had ever been sold for in the North-west Territories. Why? Because of a better knowledge prevailing of the way to work the land. In other words, because Mr. McKay, of the Indian Head Farm, in the middle of the North-west Territories, had taught the people that the way to hold moisture in the ground was to summer fallow it.

SUMMER FALLOWING.

The idea is still too prevalent that summer fallowing is done chiefly to kill weeds. In Ontario it is done to kill weeds, but in the North-west Territories the chief object is to hold moisture in the soil. In a secondary manner it does kill weeds, but that is not the first object of the farmer in the North-west. He knows that he must summer fallow his land, if he does his work in the way he ought to do it, once every three years; plough it in June when the land is moist, harrow at once and hold the moisture in

and keep it clear of weeds by two or three harrowings, not more, and then next year he knows that there will be sufficient moisture in the soil to keep his crop up so that he will get a rich heavy yield; whereas, the next man to him who has not summer fallowed his land for three on four years has a starved crop without any weight, because of the lack of moisture in the ground. But sometimes things that are easy are more attractive than things which are difficult and troublesome. Now I was disappointed to see that in many parts of the North-west Territories during the past year or two a new method of so-called summer fallowing had been adopted by some of the farmers in preference to what has been proved to be the proper way. The proper way to summer fallow is to plough land deeply for the next year's crop, as soon as all seeding is done, harrow it immediately on the same day if possible, so as to dry off the surface and hold the moisture there, follow up this treatment with two or three more harrowings before autumn so as to keep down weeds which consume and evaporate moisture. The harrowing or cultivating dries up a shallow layer of the surface soil so that it becomes a non-conductor of moisture and prevents evaporation of moisture from the soil. This method is more difficult than the other way, the one they were adopting and which they hoped would be successful, and because they hoped so they thought it was so. The new and wrong plan is : to plough shallow early in the season to destroy the weeds, cultivate during the summer for the same reason and plough deeply in autumn. They thought they were doing everything that was necessary, and the land looked just as well. But the experience on the Indian Head farm, and that is the best example to be copied by the farmers in the central North-west Territories, shows differently, and I have seen myself, many instances of the great value of properly done summer-fallowing in the last eight or ten years during which I have had the opportunity of going through the North-west Territories during the summer time. On the other hand where the land is ploughed shallow in the spring, merely gang ploughed or turned over, it is true the weeds were killed; but if the land is ploughed deep in autumn it leaves it loose so that it dries out and there is not sufficient moisture to develop the next year's crop. So it is a bad method for two reasons. It is easier and therefore is attractive, and consequently if wrong, dangerous. It is not a good plan because it leaves the soil loose underneath so that it dries out, and the moisture which escapes cannot get back again until the rains of the next June and July. Besides that the cleaning of the land from weeds effected by the spring ploughing is all counteracted, because by the deep ploughing in autumn fresh weed seeds from below the surface are turned up on to the top where they are going to give trouble the next year. When land is found to be very badly infested with annual weeds, such as the various mustards and pigweed or lamb's quarters, special treatment is necessary. With the present price of labour hand pulling on many farms is out of the question. I have recommended strongly, and it is now becoming a very general practice, I am thankful to say, to harrow or use a weeder on fields of growing grain of all kinds, after the grain is well up in the spring, thereby destroying a large quantity of small weeds which appear on the surface and would crowd out the crop if neglected.

THE FERTILITY OF THE NORTH-WEST.

The fertility of the soil in Manitoba and the North-west Territories, if we have not seen it, is so much beyond any thing we can understand—or perhaps I should say the fertility added to the remarkable climatic conditions that prevail there, are so much beyond what we have heard of or seen in the east that we do not understand the conditions until we have watched them a good many years. When we go from this part of the country and see the crop in July in some parts of Manitoba and the territories we might be inclined to think that it could not come to much; but ten days from that time the appearance of everything may be entirely changed. It is only by the experience of year after year that one can foresee what a crop is likely to produce.

The elements of this wonderful recuperative power are the excessive fertility of the soil and the climatic conditions which are excellently well suited for the production of cereal crops of the first quality. These have often produced good results even although bad farming may have been practised. But if good farming is done, the results that follow are astonishing. Some of the good farmers, I might say the best men and the most successful in the North-west Territories, those who are making large sums of money are those who attend to details, who consider the small things such as doing the usual work at the time it ought to be done, and in the way they know it ought to be done. But there are sometimes special circumstances which require consideration. Very few new things can be taught to farmers after a few years experience. They know very well what should be done, but some of them do not do it. Some say they have not time. Many undertake a little more than they can do properly, and the consequence is that they leave many things undone that ought to be done.

MIXED FARMING.

The question is often asked of farmers in the North-west Territories by those visiting them from the east 'why don't you go in for mixed farming?' Every man in the North-west knows that he would do this if he could, but he cannot. There are many things which prevent the general adoption of mixed farming; but year by year these are disappearing, and the farmers are able to go in more for mixed farming than they could in the past. In the first place, there has been a great lack of labour. There has never been such an increase of population in the North-west as has taken place during the last year and it will continue for a good many years to come, but at the same time, as I say, there has always been a lack of labour. Moreover suppose the farmers had in the past raised mixed crops, what could they have done with them? They could not have shipped them away. There were not railway facilities sufficient, they could not use them, for there were not cattle enough in the country to eat up the crops if they had gone in for mixed farming. 'Oh, but they should bring in more cattle,' say some people. That is just what they are trying to do. They are trying to do the best they can, but in the meantime they have got to adapt themselves to present conditions, and I have no doubt at all that what I consider the wrong method of summer fallowing is simply done to save labour and to cover more land and get more crops in. But I think it wise and right to sound a note of warning, because I have examined results carefully when travelling through the territories, and I believe that the method is a bad one and one which they ought to give up. In view of the fact that Mr. McKay and Mr. Bedford, at the experimental farms respectively of Indian Head and Brandon, have carried on experiments year after year and compared them and published the results, the farmers of the North-west if they know those records are there and published for their good, will do as so many hundreds of others have done, namely, study the information and profit by it. That these experiments carried on at these farms have had a very good effect I know, because I have seen for myself and have spoken with men who have attended our meetings.

HARROWING GROWING GRAIN.

I should like to say another word or two on harrowing before I leave the question of weeds. It is a well known fact that many of the best English and Scotch farmers regularly resort to harrowing grain after it has come up to destroy weeds. It is also a practice among some of our farmers in the east, but it has not been adopted very much in the North-west, and yet it is a matter upon which I believe a great deal depends. It is a well known method, but is not yet widely adopted for various reasons. Some do not understand the advantage it is, shortage of horses or labour, or even the

heat of the season when it has to be done, work against its adoption; but it is a most important operation and very beneficial. When the grain is well up-three or four inches-then a common heavy harrow, which every one has, may be drawn over it and do very little harm. It will do some harm, however, and therefore a heavy harrow is not the best thing to use. But now the lighter iron harrows with a ratchet by which the teeth can be thrown back a little, are everywhere so easily obtained that probably most people have these; but, wherever the lighter harrows are not obtainable, a heavy harrow is far better to use than no harrow at all. Weed seeds are very abundant in the soil in some parts of Manitoba and the Territories. The only crop that could be grown for a good many years on the large farms of the west with the available labour has been wheat or other grain crops, and that not from any choice at all, but simply because these were the only possible crops. With a minimum of labour and expense during the summer, and no hoeing or cultivation, a crop of grain could be sown in spring and the field need not be visited again until the autumn when the reaper was turned in. The grain could then be threshed and marketed without deterioration when a favourable opportunity occurred. But what was going on through all these summers? Every annual weed which grew up during the summer among the wheat plants and ripened before the wheat, dropped its seed on the land, and consequently kept on increasing. In this way the land of many farmers who had sowed wheat year after year on the same fields in Manitoba and the North-west Territories had become thoroughly dirty. The weeds had gradually increased until they were choking out the wheat and other grain crops and were reducing the annual yield very much. Something had to be done, and in addition to the distributing of information through the schools, special lecturers went out to meet the farmers on their farms to consult with them so as to help them in every way possible. Among other things it was shown that there were methods by which all weeds could be kept down, and that this was by first understanding the nature of the dozen or half a dozen different kinds of weeds which were the worst in a given locality. And according to the locality the worst kind of weeds ought to be fought.

It may surprise some of you, Gentlemen, to hear that I have made a collection of the names of the various weeds which in different parts of Canada have been reported to be as the very worst in the Dominion, and I have that list now up to 27. That means not that each of those weeds is not a very bad weed, or even the worst weed, because it was, for the man who reported it. I think you can understand, Mr. Chairman, what the man meant who said that Wild Rose was the worst weed for him, because it was one of the worst in his locality, and so can Mr. Stewart from Southern Manitoba; but people from Ontario could not. In Quebec we have the Perennial Sow-thistle as the worst weed. The Canada Thistle could in most parts of Ontario be called the worst weed, and so in different localities. All through the North-west a weed which is generally execrated is the Sweet Grass, but this grass is very rare in many parts and to-day is being sought for by Americans for making baskets. Letter after letter came to me last autumn asking where roots of this grass could be obtained. This is the scented grass of which the Indians make baskets. Here is a grand opportunity for some of our farmers' boys in the North-west to deal profitably with this pest, because it is the worst weed in many districts. Even to mention the name of Stinkweed would make people in the North-west hold up their hands in horror, because this is a weed which more than any other has caused men to leave their farms. Men have actually abandoned their farms because this weed was there in such numbers that they have taken up other land rather than fight this persistent enemy which had given them such trouble in the past.

The nature of different kinds of weeds is explained in a simple manner to farmers at the meetings such as those I have referred to, and they are shown that there are only three different kinds of weeds; those which grow and produce their seed in one season; those that live for two years and produce their seed the second season; and those which like the Sweet Grass

and Canada Thistle live for a great many years; that some of the last class root deeply and that others do not; and lastly, that all plants require food and water. That is all they are taught. That is the sum total of the botany the farmer needs to know in order to fight any weed that every grew. That is the simplest possible information and farmers have shown that they are glad to get and to use it. They know that if they have one of the weeds which grow up from a seed in the spring after the grain has started, they can kill it by harrowing the surface of the fields, and this without injury, because the harrow teeth do not penetrate so deep, as the grain has rooted below its slender delicate roots, and in this way they clean the land and by the time the next crop of weeds has begun to grow the wheat will stand another severe harrowing without any injury. I should like to give you one instance of two farms adjoining each other that I was able to inspect last summer near Qu'Appelle. One was a magnificent farm of 70 acres—magnificent as far as soil was concerned, but so covered with dangerous weeds, particularly of the variety I mentioned, the stinkweed, that no official weed inspector would allow the men to cut a crop of wheat from that land, because it was a menace to the whole district. By bad farming and neglect the stinkweed had increased so that the whole of the 70 acres, instead of being a magnificent wheat field was practically full of weeds, and the law of the North-west Territories insists that a man who grows such a dangerous pest as that is, shall not be allowed to reap his crop. So this man by neglecting to follow advice in spring had not only to cut down the stinkweed and burn it on the whole 70 acres, but he lost his whole crop and did not even get the advantage of his ploughing and keeping his land fallow, because the weeds had already sucked up all the moisture from the land before he ploughed it. The man next to him, just across a fence, had I think between 17 and 20 acres, but being a poor man he sought advice of the Weed Inspector who came in the spring and was told, 'Your field is in a terrible mess. This is the stinkweed which every man should know how to recognize if he finds it in his field. The only thing you can do now to save some of your crops is to harrow the land thoroughly.' He said, 'I have only the ordinary heavy harrows.' He had never harrowed grain and was afraid of destroying the whole crop. He was strongly advised to harrow if he wanted any crop at all. Well, this man followed the instructions, and he got, I am told, upwards of 20 bushels to the acre, off his 17 acres. The other man who did not harrow had the expense of cutting and burning and then of ploughing his land. He said, 'It does not matter very much; I intended to summer fallow the land, and I have got the summer fallow.' But he got nothing by it, because the wheat crop and the weed crop had sucked up the whole of the moisture out of the land, and he therefore got no moisture for the next year. Le simply destroyed the weeds which had not already ripened seeds.

By Mr. Erb:

Q. Why was not the harrow used on the 70 acres of land as well ?

A. The owner neglected to do the work. He was told to do so, but he did not do it, and then afterwards he was compelled by the Territorial government to plough down the crop. He said when warned, 'I intend to do it,' but he never did it.

DIRTY SEED-GRAIN.

Before I leave this subject of weeds, I should like to refer to one important branch of the work which we have done on the experimental farm since the founding of that institution, but which is now being done a good deal better by a special division of the Commissioner of Agriculture's Department, that is the examination of the purity of seed sold to farmers and testing its vitality. It was such a large question and such an important one, that the Minister of Agriculture thought it wise to create a special

division of the commissioner's department. The work is that of examining seeds for farmers and telling them if there are any weed-seeds among the grain. I have found from my own work of the same kind that the work of Mr. Clark and his assistants in the seed division has had a most beneficial effect on the seed trade of the Dominion. After only two years operation of that department, the seeds which are being sold today to the farmers of Canada are far better than they have ever been before. The seedsmen have been compelled to supply clean seed, or have been shown that farmers in the country are learning there is such a thing as clean seed, and that they can get it if they demand it. The trouble is that the seedsmen as a rule do not grow their own seeds, but are dependent on the growers who do not take pains enough when growing seed for the market to select or prepare very clean land for the purpose; but trust to the seedsmen to clean out weed-seeds. These latter, however, as few farmers knew the weed-seeds and consequently made few complaints, did not care to go to the trouble and extra expense of cleaning more thoroughly than was demanded by the market. That is, if it were not demanded they did not go to the extra expense of recleaning their seed. By drawing attention to the matter in just such a way as I hope to do by speaking to you to-day, the matter has been brought prominently before growers, and better seeds are being sold and sown to-day than ever before. There is no difficulty in recognizing the seeds of weeds. Farmers tell me frequently that they send the samples of weed-seeds to me to be examined because they don't know anything about them themselves. It is, however, with very little practice, quite easy to recognize all the weedseeds which are likely to be found in crop seeds offered for sale. I know this, because I have found it to be the case. I have perhaps twenty bottles here and they all contain different kinds of seeds. Now it would be no idle boast for me to say that if the chairman would pick out a few from each bottle and mix them all I could separate each kind at sight, and put it back in its own bottle again, because they are just as different from each other as pease and beans and barley and oats. It is true that they are smaller, but with an ordinary 25-cent magnifying glass a farmer could easily do the same after very little practice. Every farmer in the country may, before buying seed, send a sample of it free of all cost to the experimental farm to be tested and examined for purity and vitality. That arrangement has been going on for a great many years. In an investigation made by Mr. Clark it was found that there might be nearly 50,000 weed seeds in a single pound of clover seed, and we might say that that was not in the least likely to have been the worst sample ever submitted for sale. The number of seeds in a pound of Timothy is about 1,200,000; of Red Clover, 250,000, and of Alsike, 500,000, while of the ordinary June grass of our roadsides there are no less than 3,890,-000 seeds to the pound, and of Red Top, nearly double this number. knowledge which will enable a child of ordinary intelligence to recognize all the weed seeds likely to occur in agricultural seeds is easily included in the study of the classes at school, and there is actually no branch of the nature study work which has proved more attractive to children than collecting the seeds of weeds and putting them neatly labelled and arranged in such bottles as I have here (exhibiting bottles); and when they know them they get their fathers to help them in order to increase their collections, and thus the knowledge is carried to those who require it most. Besides this they grow the plants to get the seeds and soon learn to know the plants in their different appearances, and that is also good useful information. In many school houses of the North-west Territories and Manitoba weeds are studied regularly, and, in order that their appearance may be known, specimens are mounted on cards and hung up on the school walls.

STINK WEED.

Many a time the Stink weed has been introduced into new districts where its injurious presence might have been prevented if the farmers had known the plant or the seed when they first saw it. Now, however, farmers' children in many sections re-

cognize the seed when found, from its striking appearance and because of their desire to know all weed seeds and add fresh ones to their collection of weed seeds.

By Mr. Robinson (Elgin):

Q. Can you describe the stink weed plant ?

A. It is easily recognized in all stages of growth. In the spring when it comes up it is greener than any native plant we have in Canada, the leaves are narrow-shaped at the base, oval with large teeth, not quite like anything else we have; the flowers are white, and it is the only pure-white-flowered weed that grows with intensely green leaves in the North-west.

Q. How high does it grow?

A. Generally about a foot high, and in time it is covered with flat pods about the size and shape of a five-cent piece, each flat pod contains sixteen seeds; when ripe the pods separate into two halves and the small dark brown seeds drop out; these are easily recognized by concentric rings on their surface. As seeds they are beautifully marked. But the one character by which it is usually recognized is that character from which it takes its name of stink weed. It is the best name that can be applied to it because it describes so well a striking character, and no man can walk through a field where it grows without recognizing it. The very foolish name of French weed was given to it some years ago, but I made an effort to get the farmers to use a name that would explain something. Stink weed tells them all they want to know. 'French weed' tells them nothing and is a misnomer. It was not brought in by the French any more than by anybody else, but the name stink weed is now being generally adopted in Manitoba and the North-west. It has most wonderful powers of increasing and of remaining in the ground when once introduced. The intensest cold of winter has no effect even on the growing green plants. Plants in flower when winter sets in, thaw out in spring and go on growing. It ripens two full crops of seed every year, and these seeds are easily carried from place to place, and when once established this plant has proved itself an enemy most persistent and difficult to eradicate.

Q. Two full crops! Is the seed large or small?

A. Yes, two crops. It is a small seed, but with good screening it is easily got out of grain; but experience shows that it is a weed above all others that has power to spread through the fertile lands of the west.

Q. We know nothing of it, and I hope we won't get it.

A. It occurs in Ontario, but is not so bad a weed as in the west.

Bu Mr. Ingram:

Q. Is the seed a very light seed ?

A. It is about as large as a Red Clover seed, and flattened.

Q. Is it a light seed?

A. Not for its size; but it can be cleaned easily from grain.

By Mr. Blain:

Q. In what part of Ontario has it been found?

A. In almost every part of Canada, from the Atlantic to the Pacific, occasionally on the experimental farm and in all parts of the Dominion. It is a European weed which has been introduced by accident.

Q. Is there any part of Ontario where it is troublesome to the farmer?

A. I don't know of any. The usual short rotation practised is cleaning farms of many weeds.

By Mr. Erb:

Q. Does the same plant ripen two lots of seed in one year? or does the seed that is ripened drop into the ground and produce seed again?

A. The seed ripens in the autumn. Some of them germinate and the plants may get to the flower before winter. No frost affects it, and in the next spring every plant in flower in the autumn ripens early. The seeds fall and another crop ripens before autumn. Other seeds germinate in spring, ripen their seeds in summer, and these fall and begin growth before winter and even ripen seeds sometimes.

Q. So that the same plant does not produce two crops in one year?

A. No, the plant is an annual or one-year plant normally. It begins growth, flowers, ripens its seed and then dies, all in one season.

By Mr. Stewart:

Q. But some plants live over winter and ripen early next spring ?

A. Exactly, sir. Such plants are called winter annuals.

By the Chairman:

Q. I suppose it is called French weed because its home is largely in the French Red River settlement.

A. Exactly, but why not call it Scotch weed, after the early Scotch settlers? However, I prefer the name Stink weed, because it does explain something about the plant, and people can thus recognize it and they know too well that it is something objectionable. I brought these samples of weed seeds to show how very different they are when examined, although they look somewhat alike (bottles produced) at first sight.

By Mr. Wilson:

Q. How can you separate Stink weed from Timothy?

A. They are quite different in shape, colour and general appearance.

Q. How can you separate them?

A. The seed seldom if ever occurs among Timothy seeds. The plant would not grow for long in a grass field. It requires more room. The seed is slightly larger, and as a matter of fact I have never to my recollection seen it in Timothy seed.

Q. Is there any great difficulty in separating them by screening them with

machinery?

A. Not at all, sir.

Q. The difficulty is that the seed is in the ground?

A. Yes, in many places, and before seed crops are grown, great pains must be taken to clean the ground before sowing. If you have clean seed and clean ground, as a matter of course, you would get rid of it. Even in infested districts clean seed in new ground has produced clean crops; but this weed has such means of travelling that it is getting from the worst districts all over the North-west Territories, notwithstanding the energetic measures of the provincial and territorial governments. It has undoubtedly been carried further every year all over the North-west and into British Columbia. It is worst in grain crops, and along trails. I have found it almost everywhere I have been. I have often seen the seed in samples of oats and wheat.

BALL MUSTARD.

Another weed which has spread very rapidly is Ball Mustard; the seed ripens with the grain and is overlooked because it does not look like a seed at all. The seed remains in the pod, which dries on it, and looks like a little piece of earth. It has been carried in grain and has been found in a large number of samples. In the Edmonton district I found it growing abundantly, and the seed occurred in nearly all the samples of seed grain I examined, although these were thought to be free from all weed seeds. The Stink weed seed is distributed by the wind in winter and by freshets in spring,

4 EDWARD VII., A. 1904

it also travels on the feet of animals, and of people walking, by wind, on machinery, carried on cart wheels and taken from place to place.

By Mr. Wilson:

Q. Would not any seed be carried in that way if it got in with the dirt?

A. Yes, certainly it might, but apparently not to the same extent. The seed of stink weed has great vitality; it will stand soaking for weeks in water without rotting. This too is a character of the seeds of many of the family it belongs to, the *Cruciferæ* or Mustard family. Many of these seeds also are covered with a gelatinous covering like glue, and they stick in that way much more than any other seeds to passing objects.

WILD OATS.

Some one asked a question of Dr. Saunders about wild oats the other day, and he asked me to speak of them this morning. The wild oat is a peculiar weed in this respect. It has a very strange distribution. In some parts of Canada they abound, and in others hardly occur at all. We haven't them at all bad at Ottawa, for instance, and it is not with us a serious question to get rid of them, but in western Ontario and in parts of the Territories also wild oats are very abundant. They occur also in British Columbia and even up in the Dauphin district of Manitoba. Wild oats considering the amount of labour in getting rid of them, are really not such very bad weeds as they are supposed to be. In this respect they are a good deal like the Canada thistle which is not so very difficult to destroy when it is attended to persistently. When wild cats are in the ground, and are known to be there, the land can be cleaned with comparative ease if the work is done systematically. A plan not entailing much trouble and without very much loss of crop is to grow late sown grain crops and cut them green for feed. The wild oat makes just as good green feed as any other oat, but has little grain in it, and is therefore useless as feed. Land in which wild oats have appeared, has been very well cleaned by first of all working the land in the spring, then sowing late an early variety of barley or oats, preferably the latter, as making better hay, and cutting the whole for green feed as soon as the flowers show, so that no seeds will ripen. The plants will grow up again; thus you get a second cutting of hay or green feed, and the land is cleaned of those seeds which are on the surface. A second similar treatment or a root crop will clean the land. Statements about the great length of time that wild out seeds remain in the land I have not found confirmed by experiments which we have tried; but, supposing they do remain a considerable time, two or three applications of the method mentioned have been found to clean the land very thoroughly.

Mr. GOULD.—Take my own case, I bought a farm with considerable wild oats on it. When first I bought it, it was with a crop in, and of course I could not do much with it; the next year I sowed buckwheat, and when it was ripe I cut it, and took it off; the next year after that, I put in a root crop, and that particular weed has given us no trouble since.

The WITNESS .- You cut the buckwheat for the grain ?

Mr. Gould.—Yes, we harvested the buckwheat, and of course there was no oats in the buckwheat.

SWEET CLOVER.

By Mr. Wilson:

Q. What about sweet clover ?

A. There has been a great deal said about sweet clover in Ontario, and there was an effort made to bring it under a Noxious Weeds Act. I do not consider it a trouble-

some seed. All that is necessary is to keep it cut down closely. I have never seen it however, growing as a crop pest in cultivated fields. It is a wayside weed.

Q. If it happens to get into a field we find it very hard to get it out?

A. It should be easy to get rid of it, because it is only a biennial plant, that is, only lives two years, flowering the second year and then dying. Constant mowing destroys it.

Q. It is very stout in the stem the second year ?

A. Yes, the second year it is, but it dies after flowering. Bee keepers have been rather growing it lately as a honey plant, much to the indignation of some farmers. I have not found that it has done very much harm, except on the edges of pastures and waste places where it looks unsightly.

By Mr. Robinson (Elgin):

Q. It is no good as a fodder plant?

A. It is not much liked by stock, but they will eat it if they cannot get anything else?

By Mr. Kendall:

Q. Does it not salivate stock ?

A. Yes, to some extent at first, but white clover is probably even worse, though stock get used to it, and that is a most valuable fodder as all know.

WILD MUSTARD.

By Mr. Blain:

Q. Have you found any new method of killing yellow mustard?

A. Well, where you can afford it, or where your land will produce crops that will allow you to spend a dollar per acre on it, spraying with a 2 per cent solution of bluestone is the best method and perfectly effective. In the North-west Territories this is not quite a practical remedy, because the farms are large, and water and labour are sometimes scarce, but they are destroying it there by harrowing their growing grain crops on large areas.

Q. What strength of solution do you use?

A. A two per cent solution of bluestone, that is 10 lbs. in 50 gallons of water, sprayed over a crop just as the flowers of the mustard open, will destroy every plant of wild mustard which is covered by the spray.

Q. What effect will that have on the grain?

A. None at all at that strength, but if a much stronger solution is used, it will burn the leaves of the grain. We tried extensive experiments a few years ago, and the results were quite confirmatory of the English and French experiments. Our solution was somewhat weaker than is recommended in England. This solution, however, will not kill the smooth-leaved mustard or Bird Rape which is common in Manitoba as a weed.

PEPPERGRASS.

By the Chairman:

Q. What do you advise for peppergrass ?

A. The chairman asks about peppergrass, which is another weed requiring peculiar treatment. I said that with the knowledge of the nature of any of these weeds they can all be fought, and there are not many different kinds of weeds, that is, which differ so materially from the others as to require many kinds of treatment. The actual knowledge required concerning each of these troublesome plants is much smaller

than it might appear at first to those who have not studied the matter. Peppergrass is a two-year plant that springs up in the autumn and flowers and ripens seed the next year. It is sometimes so bad in a wet spring on dry land, that is on dry land when there is a wet spring, that it will very frequently crowd out a great many acres of crop in the North-west, and it is the same also in Minnesota and the Dakotas. However, land may be very easily cleaned of this weed, because it comes up in the autumn and passes the winter as a small plant, represented by a rosette of leaves of an inch and a half or two inches in diameter, close to the surface of the ground, and with a small root that runs down only 2 or $2\frac{1}{2}$ inches. One stroke of the disc harrow either in autumn or spring will entirely destroy the whole of the peppergrass on land which is ready for spring seeding. On fall or spring ploughing it cannot occur. It is only on stubble land that the young plants can start. Therefore, it is a weed found in crops sown on stubble or on land left for summer fallowing, and in such fields disc-harrowing will destroy peppergrass without trouble if the work is done well.

FODDER PLANTS-BROME GRASS.

Experiments with fodder plants have been carried on at the experimental farm as in the past. We have continued the system of growing on the plots at the experimental farm every fodder plant that is advertised in seed catalogues and of which seed could be obtained elsewhere. We have now growing or have grown all the different fodder plants which have ever been advertised in Canada, or that have come under our notice in American and European catalogues. This, of course, has meant that a great many kinds of plants of which many were useless have been tested. Some, however, have been of immense value. I claim that there is nothing more important to the farmer and the agricultural interests of Canada, of all that has been done by the experimental farms, than the introduction of the Awnless Brome grass into American agriculture. This was a triumph of our Canadian experimental farms, and meant more to the North-west Territories and Manitoba than the whole cost of the experimental farms since they were instituted. There are now, as the Chairman knows, thousands of acres of this grass grown in the North-west Territories. Last summer I visited a large farmer, Mr. Motherwell, the president of the Grain Growers' Association, who lives at Abernethy, and he told me he had cleared \$2,000 from the seed alone of Brome grass the year before, and had all the hay to sell or feed besides. A special quality of Brome grass is that the ripe seed may be threshed from the straw and yet the straw of this grass is equal in value to the best hay cut at the proper time before the seed has ripened. This is due to a peculiar habit of growth in this and a few other grasses. By the time the first stems are full grown and the seed is ripe, there are about a dozen young barren green stems thrown up from the base, and this succulent grass at the base makes excellent hay, therefore, you not only have young grass in good condition for making hay, but at the same time the hay is enriched by some of the ripe seeds which are left on the ripe stems of straw from which the main crop of seed has been threshed.

By Mr. Stephens:

Q. Does it do well in Ontario?

A. It has done very well indeed, but such a grass is not so necessary here as in the North-west.

Q. On what kind of soil?

A. Like all grasses it flourishes best on a rich, rather moist soil, but I would not advise farmers to grow Brome grass in Ontario, where they can grow corn; Indian corn is, of course, a grass, and gives a bigger crop of first-class feed than any other grass where it can be grown. Where it cannot, Brome grass is probably the best kind to grow, and succeeds on very dry land without much attention when once established.

By Mr. Kendall:

Q. What does it grow to the acre?

A. An average of 2½ tons to the acre in the North-west and Manitoba.

Q. In some parts of the eastern provinces we cannot grow corn advantageously.

How would it do on the coast, sir?

A. According to some of my correspondents it has done specially well in some parts of New Brunswick, but not very well in Prince Edward Island—in some parts of Nova Scotia very well, but excellently well in New Brunswick on intervale lands.

By Mr. Stephens:

Q. What time does it ripen?

A. In the North-west by about the middle of July.

The CHAIRMAN.—It is the first grass that comes in the spring?

A. Yes, earlier than anything else we have tried, and it is the last to freeze down. It will be green when the prairie grasses are ripe and brown, and yet it does not suffer from the winter.

By Mr. -Kendall:

Q. Good pasture?

A. Yes, excellent, abundant and succulent and also very palatable to all stock.

By Mr. Robinson (Elgin):

Q. What height?

A. Three and a half feet in the east, 4 feet in Manitoba and in the North-west.

By Mr. Smith (Wentworth):

Q. Do stock eat the straw?

A. Yes, very readily.

The CHAIRMAN.—It is generally cut with the ordinary reaper and bound?

Witness.—I stated to the committee a few years ago that I was almost afraid to speak of Brome grass; everything was so much in its favour that there was danger of being thought over-appreciative. There was no 'but' about it. That is about equally true to-day.

By an hon. member:

Q. Is it a coarse grass?

A. Yes, rather coarse in appearance.

By Mr. Kendall:

Q. Is it a good grass to stand the drouth?

A. It is generally better than any other grass grown in the North-west.

Q. What depth is the root?

A. Six to seven inches, a very thick mat-like growth of underground stems, and that was one of the contentions that was advanced against it when it was first introduced, namely that it was going to be such a trouble to clear it from land, a worse trouble even than the Couch grass or Quack; but when experiments were made in the North-west Territories it was found that it could be entirely eradicated by breaking and backsetting in the same way as with the native prairie.

4 EDWARD VII., A. 1904

By Mr. Stephens:

Q. Why do you cut it with binders?

A. There is so much of it. That is the most convenient way when cutting for seed. The Chairman.—It is the easiest way to handle it, and when it is threshed by the machine it is handled the same as grain.

By Mr. Smith:

Q. We were told the other day that around Moose-jaw it was impossible to grow

grass for pasture; could this be fairly overcome?

A. I thought it was possible to grow Brome grass there, and I believe it is grown there in large quantities. I think that your informant whoever he was forgot about this grass for the moment. Was that Mr. McKay?

Q. Yes.

A. Well, he knows more about Brome grass in the west than any one else. He was one of the first to introduce it extensively, and grows a great deal.

Q. He was speaking of the difficulty of keeping stock there. Farmers can't raise

feed for stock, especially pasture?

A. I think the Brome grass will be grown there. It is a magnificent country for wheat.

By Mr. Wilson:

Q. The scarcity of water is the great reason against stock-raising.

A. Certainly Brome grass does better in damp soil.

Q. For watering stock.

A. Oh, yes. That is what makes it more difficult to keep stock there.

By Mr. Robinson (Elgin):

Q. Does that grass run out?

A. It is not advisable to leave it on the land long, because it crowds itself out. After seeding in the spring it is moved once or twice the first year to keep down the weeds. The next year you get your heavy crop. Farmers generally take the first crop for seed, the next year for hay, and then it is broken up again or used for pasture. One great advantage from growing this grass in some parts of the west is that Brome grass puts back the vegetable 'fibre' into the soil quicker than any other method yet found. Thus in windy districts it prevents the soil from blowing.

By Mr. McLennan:

Q. Do you sow it alone or with grain the first year?

A. It is better to sow it alone in most parts, because it is better for the grass to have all the soil-moisture; but it is sown with the grain in certain districts.

By Mr. Robinson:

Q. How much seed to the acre?

A. 8 to 10 lbs. in the west.

By Mr. Stewart:

Q. Does that depend on the locality ?

A. Yes, entirely.

Q. I find 5 to 7 lbs. sufficient seed to the acre with us

The WITNESS.-What part is that ?

Mr. Stewart.—Pilot Mound, Southern Manitoba. We require only half the timothy seed there they use at Brandon and have grown it very successfully.

The WITNESS.—Is that on low land? Mr. Stewart.—No, on the high land.

The WITNESS.—I have seen very good crops with 7 pounds, but I think 10 would be nearer the mark in most places.

By Mr. Blain:

Q. Why can't corn be successfully grown in the North-west ?

A. It may be in certain years, but on the whole it is an uncertain crop. That is the reason it is not grown more than it is. Some years you can get an excellent crop of corn, but it is too uncertain to recommend it.

Q. What is the cause of its being an uncertain crop ?

A. The cold nights, I think.

LUCERN OR ALFALFA.

Before I leave the fodder crops I will refer to a clover which I am trying to encourage farmers in the North-west to grow, namely, Lucern or Alfalfa. This has been grown to a certain extent in the North-west Territories. At Maple Creek I met a farmer a few years ago who had grown it for 12 years, and he said he thought it had increased from the time he first sowed it, but I have not heard if he sowed more after the first trial. The available data on the subject I regard as interesting. In the Edmonton district there are several patches of this clover, and also at Prince Albert, at Pincher, and in the Mormon districts south of Lethbridge. I have no doubt it can be grown in many other parts of the North-west. I am trying to encourage farmers to try it and have distributed a little seed to that end. The North-west government have imported from Turkestan, through the Russian government, some seed of a hardy variety of Lucern, which has been grown for a good many generations in Turkestan, where the conditions are more adverse than in some parts of Russia and Germany where it has been grown very largely. I have got some farmers in the North-west and British Columbia to try Lucern, and find that if they mix it with Brome grass this will give it a little protection. The young Lucern plant is very delicate, and is easily burned up by the sun: and Brome or Western Rye grass, a native grass of great value, give just the kind of protection that is necessary. The roots run down deeply so are not starved so much for want of moisture as is the case of some other plants. A possible factor of importance in the success or failure with this clover, is whether those bacteria which make all the clover family so valuable as soil ameliorators by rendering nitrogen available in the soil, are present in sufficient numbers to enable it to thrive; yet I know Lucern will grow in the west, because the plants are there and also have some nodules on the roots, and these contain the bacteria, so that it is only a question of their increasing. It is not quite known yet, I believe, if the bacterium of a certain legume is restricted to that one kind of plant. We know, however, that there are bacteriabearing nodules on some of the Lucern plants in the North-west and that is the main fact we want to know. Whether these are introduced in small numbers with seed I do not know, but I am rather inclined to think that the bacteria which live in nodules on the roots of all the leguminosae or members of the pea family and form the root-nodules, can establish themselves on the roots of an allied species. I think it is much more likely that the same bacterium will occur on all kinds of clover than that it should be restricted to a single kind. White clover in the North-west has gradually increased and has spread right across the plains along the line of the Canadian Pacific Railway. In Winnipeg it has been used extensively along the streets and boulevards, and if that is such a beautiful city to-day, it is largely due to the fact

that this clover has crowded out the large coarse weeds along the streets. At Indian Head, Regina, Calgary, and many other places where white clover can be seen growing well; it forms a very attractive feature, and is being used with great success in beautifying waste places.

By Mr. Kennedy:

Q. Do you know anything about Alfalfa in the east?

A. It has been tried several times, but has never become very popular for some reason. It is a plant which has been described as fickle or capricious; the latter would be a better word perhaps. No two fields seem to produce the same results. I have seen where two fields have been sown close together; in one, it will be thin, while in the other, close to it, it will be luxuriant. The chief difficulty I think in getting a good catch has been lack of care in choosing the proper soil and in preparing the seed bed. The seedlings are very delicate, and therefore the soil should be very well prepared. It should be a deep soil, that is, deeply ploughed, and then firmed again by harrowing, so that a good clean, smooth seed bed is provided in order to allow the young plant to get a start. In a field that is well drained and with properly prepared soil, I have had no difficulty in growing it here at Ottawa in most places.

Q. I have made two attempts myself to grow it in good soil that has been thoroughly drained, and in each case it grew well during the first season, making ten inches

perhaps; but the next season not a single plant survived.

A. That was in Cape Breton, was it?

Q. Yes.

A. What kind of soil, may I ask?

Q. It was on a light sandy soil, well drained and high, perhaps 20 feet above the water level.

A. Well, that was a valuable experiment, and would seem to indicate that it would not succeed there; but it might be well to try again and perhaps to inoculate the soil with some earth from a good field from some other locality.

Q. A neighbour of mine also tried it on a very different soil, loam clay on top of

limestone; a red soil, and he had pretty nearly the same results.

A. I know, it does not succeed everywhere. At Cowansville, in the eastern townships some time ago I saw one of the finest fields of Alfalfa I have ever seen, and within half a mile an excellent farmer who tried to grow it, on apparently the same kind of soil failed entirely. I have a patch at the Central Experimental Farm which has been there for twelve years, and it grows well every year; but in a plot planted near by the other side of Mr. Fixter's house, within 100 yards of the same patch, we have never been able, so far, to get a catch of Lucern. Therefore this valuable clover must be called 'capricious' and I have always recommended that it be tried in a new locality in small quantities at first.

Q. Will Sainfoin grow where Lucern will not?

A. I hardly think so. It has not been quite so successful with us and with some others who have tried to grow it. It is, however, an excellent clover, and one of the staple crops in the South of England, cut green and fed with rye. It is worth trying, however. Either Lucern or Sainfoin is worth trying. Sainfoin is very valuable we find as a bee plant.

DANDELIONS.

By Mr. Blain:

Q. How do you kill out Dandelion?

A. I know of no way on a lawn except by digging them out. They are very unsightly in some people's eyes, and if we cannot cultivate our eyes to like the look of them I suppose they must be destroyed, but I see no other way of doing so except by digging out. The Dandelion is a very persistent deep-rooted perennial plant, so per-

sistent that their eradication is simply a question of exhaustion by digging out continually until there is no more vitality left in what remains of the root. Some years ago I tried an experiment and cut up a root into small pieces, which I placed in a hot bed for propagation. These pieces were planted in different positions and they all grew from the uppermost end, whichever that might be, those placed in a perfectly horizontal position grew at both ends. I do not know any other way of killing Dandelions except by digging them out.

BROME GRASS versus OTHER FODDER PLANTS.

By Mr. Henderson:

Q. You tell us that Brome grass can be grown readily and that it is more difficult to grow this other clover, Alfalfa. What is the difference between them as a crop?

A. The difference is that one is a grass and the other is a clover. All clovers have the power to collect from the air nitrogen; this power the grasses have not to nearly the same extent, therefore, clover of all kinds is always recognized as the best means of enriching the soil quickly, and it is also the cheapest way. We consider it so important that we sow it in nearly all our fields in grain, simply for ploughing down. One crop of clover from the ordinary seeding, when ploughed under, is worth 10 tons of the best stable manure.

Q. There is about the same distinction as between ordinary Red Clover and

Timothy?

A. Undoubtedly. Alfalfa is a rather heavier cropper than Red clover. So far neither common Red clover nor Mammoth have given any satisfaction in the Northwest, they seem to kill out in most cases the first year, nevertheless more people are trying these important plants every year, and some are succeeding tolerably well.

By Mr. Smith (Wentworth):

Q. Is it impossible to grow Timothy with success in the North-west ?

A. No, they grow the most magnificent Timothy in some parts of Manitoba. I think Timothy on the whole is perhaps the best grass grown in Canada.

Q. Then why should they want to grow Brome grass where they can grow

Timothy ?

A. Well, it has a wider range and is more attractive to stock from its succulence, and in hot dry districts is a decidedly better grass, giving a much heavier crop of hay and pasture. It will stand longer with much less moisture. Its chief attractiveness is due to its wonderful succulence which makes it so valuable in the west, and also to its long season, from its early growth in spring and its late production of green grass in the autumn. Its attractiveness to stock is most remarkable. As an experiment we sowed three plots side by side. Timothy on one side, and a mixed pasture on the other and Brome grass in the centre. There were no fences between the plots, and the stock when turned out would walk over the outside plots from either end in order to get at the Brome grass which they are bare, and in the autumn there was enough growth on the other two plots to get a light cutting of hay.

INSECT PESTS.

The other branch of my division to which I desire to call attention for a short time, embraces studies of injurious and beneficial insects. The ordinary pests of the year in 1903 have been very much the same as in past years. There have been no new introductions of crop enemies into our country, and even some of the old standard enemies have been less troublesome than usual. Apple orchards have been remarkably

4 EDWARD VII., A. 1904

free from attack by the Codling Moth which, except in British Columbia, destroys every year so many apples all over the Dominion. East of Toronto there was practically no injury by the Codling moth. West of that point there was some loss from the second brood.

The Plum Curculio, again, instead of being looked upon as an injurious insect, may possibly be regarded during the past year as having been rather beneficial, in that it thinned out some of the enormous crop of plums which were in such numbers on the trees that it was injurious to trees to bear them. The absence of, these pests has

given the fruit growers a good opportunity to control them.

The years in which injurious insects do not occur in large numbers, are those in which growers should be on the alert to fight them hardest, because then by the application of the standard remedies they can reduce their numbers to a much greater effect than when they are numerous. Throughout the best fruit districts of Canada the majority of fruit growers at any rate are well acquainted with the standard remodies and apply them. Large sums of money are spent yearly by nurserymen and fruit growers in treating their trees to clean them of pests and to save their crops of fruit to the best advantage. This has had a very decided effect on the quality of our exported fruit, so that to-day we are able to see from late English market returns that our Canadian fruit is of a better quality than the American. This is rather a triumph for us, and I claim was due to the greater care taken by our fruit growers in growing, spraying to protect from insect and fungous enemies, as well as in putting their fruit up and sending it forward to the markets in better condition. There is still much to be desired, but there has been a very vast improvement on the past. This is doubtless very largely due to the Fruit Marks Act and the carrying of it out by the officers of the Minister of Agriculture, who have inspected the fruit rigorously as it went forward through the ports of export.

SAN JOSE SCALE.

The worst enemy of the fruit-grower in North-America to-day is the San Jose scale, and although it is encouraging that this worst enemy has not spread in Canada beyond the limits known at the end of last year, still, unfortunately, within those limits it has increased enormously and is doing a great deal of harm. There are whole orchards in Canada infested with this insect, and yet it only exists in a very small section of Canada; in part of the Niagara Peninsula, south of a line drawn from Hamilton to the northern point of Lake St. Clair, and not in the whole of that district. It should be made widely known that it is only there it exists at all in the Dominion at the present time. The federal government is doing everything in its power to prevent the spread of the infestation. Not a single fruit tree or nursery plant liable to bring in the scale can get into Canada by rail, express or steamboat or through the mail, without being treated to an effectual fumigation which will destroy every insect which might be present on any imported nursery stock. More than that, the Ontario government has been carrying on very careful experiments to secure remedies which will destroy the insect. In addition to this, all of our nurserymen are doing every thing they can to keep their nurseries free of the pest, and not a tree is set out until it has been carefully fumigated, for fear that the scale might have got on to the trees without their knowledge. I am delighted to know that not a single instance has been found of a nurseryman sending out infested stock, or of infested trees having been brought into Canada from outside. Every complaint to this effect has been investigated and found to be without foundation.

By Mr. Kendall:

Q. Is this fumigation done by officials of the government or by growers of the stock?

A. It is done in Ontario by the growers of the stock under superintendence by the government.

Q. In each case?

A. Yes, in all cases; imported stock is furnigated entirely by the Federal Government officials at the border, and home grown stock by the nursery-men under inspection by Provincial Government officials, in the nurseries before shipping; but the men who are growing stock in Canada understand that their own interests are at stake, and they are doing the work with very great care. I have examined into this and am able to speak with all confidence. Sometimes I get complaints from different parts of Canada that stock is brought in in large quantities without being sent through the fumigating stations; in other words, that it is being smuggled into the country. I can only say that every statement of that kind I have challenged officially and publicly, and I never yet so far had an instance brought before me where it was proved that such had taken place. The San Jose scale is undoubtedly the worst insect enemy we have yet had to fight against. Everything is being done by officials of the federal and provincial governments to protect Canadian fruit-growers. There is a practical remedy known if fruitgrowers will use it. The federal government is doing every thing possible to prevent fresh importations from outside, and the nurserymen are not the source of trouble, for they are doing their duty to keep the trouble from spreading. Fruit-growers, however, will have to put forth greater efforts to destroy the scales on their trees where they now exist. This can be done by spraying the trees with a wash consisting of lime and sulphur.

By Mr. Ingram:

Q. Have you men stationed at the various towns on the border?

A. Yes, at six ports of entry, at St. John, N.B.; St. John's, Quebec; Niagara Falls, Windsor, Winnipeg and Vancouver.

Q. Supposing stock came in by way of Fort Erie!

A. It has to come by Niagara Falls, or one of the other ports of entry mentioned in the San Jose Scale Act. It is not allowed to come into the country except in that way, and all the railways are co-operating with the government and helping in every way.

By Mr. Blain:

Q. That is, no trees can be brought in to Canada except through these six channels?

A. Yes, and also between certain dates.

ORCHARD PESTS.

Besides the Codling Moth and Plum Curculio, the Tent Caterpillars, the Canker Worms, and some other well known orchard pests, have been less abundant this year than usual. The habits of these are known as well as practical remedies, and with care there is no reason why they should increase so as to become very injurious.

By Mr. Ingram:

Q. What is the well known remedy for the Plum Curculio?

A. The best remedy is spraying the trees in spring just when the plums are about of an inch in diameter or half as big as ordinary marbles.

Q. With what?

A. With the poisoned Bordeaux mixture or simply with a mixture of Paris green and water, one pound of the former and 160 gallons of water. There are other remedies, as arsenite of lime and arsenite of lead, both excellent remedies, but slightly more expensive.

By Mr. Robinson:

Q. What about the Bordeaux mixture?

A. It is primarily a remedy against fungous diseases. The poisoned Bordeaux mixture is made by adding arsenic in some form to the Bordeaux mixture, and in that way fungous diseases are prevented at the same time that the injurious insects are destroyed.

By Mr. Ingram:

Q. Do you recommend Paris green and water for apples?

A. Undoubtedly, for the Codling Moth, and leaf-eating insects; and spraying trees makes all the difference between success and failure. Experiments in spraying have been carried on for the last 18 years. Spraying has become popular, owing to the excellent results which show a saving that amounts frequently to 75 per cent. The cost is only about 10 cents for an ordinary tree. No remedy is claimed to be perfect; but the saving is always much more than pays for all cost.

Q. Do you spray before the blossom?

A. Always after the blossom for Codling Moth. The eggs are laid on the young apples about a week after the flowers drop, and by spraying the forming fruit the young caterpillars are killed before they enter the apples. By spraying before the blossom there are a very few kinds of insects killed, such as the Eye-spotted Bud-moth, but this is only occasionally necessary. If spraying is done during the time of blossoming, bees will certainly be poisoned, and the fruit may be injured by the corrosive mixture remaining on the pistil of the flower. So it is recommended never to spray trees while they are in blossom, and only before blossoming when infested by the Eye-spotted Budmoth. From three to five sprayings with an interval of about a fortnight between each will protect trees from most of their enemies. A poisoned Bordeaux mixture is the best general remedy, because it destroys both enemies, insects and fungous diseases.

OYSTER-SHELL BARK-LOUSE.

There are one or two insects which require more attention than they are receiving, for they are increasing. The Oyster-shell Bark-louse is one of these. This insect is frequently overlooked and is not considered to be as injurious as it really is. This may be controlled in several ways. Of first importance is better cultivation of orchards; invigorating the trees by cultivating regularly and by using a little more fertilizer than is sometimes the case. The Oyster-shell Bark-louse increases most in old orchards which have been neglected. On vigorous young stock it is seldom troublesome. Occasionally, however, it is, and the special remedies have to be used, as spraying the trees in summer when the young scale-insects first hatch, either with whale-oil soap solution, one pound in six gallens of water, or with kerosene emulsion made of coal-oil and soap-suds or coal-oil and milk. During the winter the trees should be well sprayed with whitewash made of one or two pounds of fresh lime in one gallon of water.

A useful remedy for all scale insects is the wash which I have spoken of as a practicable remedy for the San José scale. This is a combination of lime and sulphur,

one pound of each boiled together in a gallon of water.

There are a great many modifications of the formulae, both as to quantities of the materials used and the way of mixing them, but the remedy is probably the best for all scale-insects, and even with the San José scale, if it is sprayed thoroughly on to the trees early in spring, the scale insects are destroyed, and the trees can be kept clean for that summer, so that they can develop their crop of fruit properly.

Other scales may possibly be brought from other trees or there may be a few that are not destroyed by the wash which may not have been applied very thoroughly; but this is a practical remedy and one which, if applied every year, will keep the trees so

clean, that they can grow paying crops of fruit. This remedy may be applied to plum trees, applies and peaches, and does no harm to the trees if applied while they are in a dormant condition late in spring; but it will destroy the insects. The same remedy may be used for the Oyster-shell Bark-louse, and other injurious scale insects which pass the winter on the wood of trees. It will also control fungous diseases.

PEAR TREE FLEA-LOUSE.

The Pear-tree Flea-louse, which is also known as the Pear psylla, is an insect which is increasing in Canada and which, although it has not yet done any very serious harm, is capable of doing so, and has actually done so under certain conditions. The presence of this pest may be recognized on trees by their dirty appearance; a black fungous growth appears wherever the trees have been affected by the insect. This fungous growth develops upon a sugary exudation called honey-dew, which is made by these insects and which gives the trees a black dirty appearance. The trees become stunted, the leaves dwarfed, the fruit gnarled and the trees will die in time, if not attended to. The perfect insects pass the winter under the flakes of bark on the trunks of the trees. Freedom from the ravages of this enemy may be obtained by scraping the trees during the winter time, so as to expose or remove the insects, and by spraying the trunks with kerosene emulsion, with a simple whitewash or with the lime and sulphur mixture. This insect will not increase in orchards where the trees are treated for the San Jose scale.

PEAR-TREE BLISTER-MITE.

The Pear-leaf Blister-mite is doing a great deal of harm all over Canada wherever pears are grown. Its presence on the trees may be recognized by the red discoloured blotches which appear on the leaves while young. These blotches afterwards turn black and are frequently thought to be the effect of a fungous disease. They are, however, really blisters or galls made in the tissues of the leaves by very small mites which during the summer propagate inside these blister-like galls and increase in enormous numbers. It is known that before the leaves fall in autumn all the mites leave the galls and pass the winter in the bud scales. It is only by treating the trees in the early spring with lime and sulphur wash or kerosene emulsion, that the mites can be destroyed. The lime and sulphur remedy is very effective, and in one year trees may be made quite clean from the attacks of this enemy.

FALL WEB-WORM.

Some of the shade trees in our cities have been injured by insects during 1903, and there are one or two to which I would draw public attention. The Fall Web-worm, a well known enemy of fruit trees has increased in many cities of Ontario. It is easily recognized by the unsightly webs left on the trees, particularly the elm trees, during the winter. Although generally found on Elm trees, it spreads to other trees and is particularly destructive in orchards. The remedy is not as is generally supposed to cut off these unsightly nests during winter and burn them, but to spray the trees directly the caterpillars appear, which is just about midsummer, the web seen in winter are empty, all the caterpillars having left them the previous season.

WHITE-MARKED TUSSOCK MOTH.

The White-marked Tussock Moth is another insect which has caused a great deal of harm in the city of Toronto for a good many years, and also in the cities of Mont-

real and Kingston. It is particularly injurious to Horse Chesnut trees, the leaves of which it strips until there is nothing left of them except the skeleton. All knowledge necessary to the extermination of this pest (how it passes its life, its habits, &c.), is known. The remedy is for the municipalities, and the various county and city bodies to recognize that it is an enemy requiring attention, to give it that attention as directed in many publications and to do the work early in the season. The eggs may be seen in winter in conspicuous white clusters on the trunks of the trees. The moth is one of those exceptions in insect life in which the female has no wings. She can only crawl, and that very feebly. She merely crawls on to her cocoon when she emerges from the chrysalis and after pairing lays a mass of eggs which may be seen on the trunks of the trees throughout the winter. Very good work has been done in the city of Toronto by having these egg masses swept from the trees with wire brushes and burned. The cocoons were also gathered by school children, who were given a small sum for the work. While good results were obtained by this method, a more wholesale remedy is found in the spraying of the trees in the early spring, shortly after the caterpillars hatch. This is perhaps the most practicable method of destroying them.

MAPLE SOFT-SCALE.

In the city of London there was also an attack upon the trees by the Maple Soft-scale, a most disgusting insect only a quarter of an inch in length, which produced a large amount of honey-dew, a viscid excretion that fell on the sidewalks and on any one walking beneath the shade trees, and was very objectionable. This pest could only be controlled by the spraying of the trees during the autumn or winter, as for other scale insects, a troublesome and expensive work, but at the same time the matter is well worth the attention of those in authority in cities. As a means of preserving the beauty of some of their streets and parks and preventing them becoming objectionable by reason of the presence of this insect, certain parts at any rate might be sprayed.

CATTLE HORN FLY.

The Cattle Horn Fly which some years ago was very troublesome in eastern Canada still exists in some numbers; but last year it reached the Pacific coast, where I found it in large numbers on Vancouver Island, giving a great deal of trouble to horned stock. It now occurs right across Canada, I saw it at Regina and at Indian Head, but not in large numbers. I do not think it will ever become the troublesome pest there that it was in the east, where, if you remember, only a few years ago its ravages were so great that it reduced the output of the dairies of western Ontario, as much as 25 per cent, and caused a very considerable amount of suffering among stock, not only to milch cows, but also to fattening stock. The remedy which we have found most successful is one pound of pine tar mixed with five pounds of lard, or any other coarse grease or common oil. A small quantity of this put on the animals twice a week kept them comparatively clear from the attacks of this fly, and by its use the animals were kept in good condition and comfort.

CATTLE WARBLES, CATTLE LICE.

Another loss in live stock the extent of which is seldom appreciated at its full value, is caused by Warbles in the backs of cattle. This is a serious matter. Sometimes farmers resort to the old remedy of squeezing the maggots out in the spring. While it is a very disgusting operation, the benefits derived are great, and it is well worth the trouble. The flies from which these maggots come lay their eggs on the animal's legs and flanks in the summer time, and the treatment with pine tar has the

effect of preventing the eggs being laid. The same mixture will free stock from those very objectionable parasites, lice, which are far too numerous in many herds all over the country. No one who has witnessed the discomfort and falling off in flesh which is so apparent in the case of stock which are allowed to remain lousy in the early spring, can doubt how well worth while it is to keep the animals clean and free from these tormentors. There are many well known remedies, even ordinary fish oil will answer; but it is more effective if mixed with a little sulphur or carbolic acid. Without putting on the animals so much as to make them objectionable, all of these remedies will destroy the lice, without trouble, particularly if it is done early in the winter, before they have increased largely. By cutting away the hair at the root of the tail and also at the base of the horns, and such places where the creatures congregate, the work of cleansing the animals is made much easier, and this is certainly a matter well worth attention by all stock owners.

By Mr. Erb:

Q. Do you consider Warbles injurious? Do they prevent the animals from thriving?

A. Yes, indeed, I do consider Warbles injurious, and most certainly they prevent animals from thriving. There was an old idea that Warbles were found only upon healthy animals, which is entirely wrong. If young stock are turned out, you will find that it is those not attacked by Warbles which are healthiest. The pain the large maggots inside the warbles cause the animals is very great indeed. In watching those affected animals, you will often notice that even when feeding they may be seen to twitch and bend down their bodies, indicating that they are suffering. The maggots have rows of spines down their backs, and their food is the pus which forms inside the warbles from the irritation set up in the flesh by the wounds created by the movements of the maggots. When opening up one of the warbles or large tumours the amount of inflamed flesh found underneath it is very considerable, and it cannot but give very great pain to the animal. In fact, warbles must be very similar to large boils, and we all know to what a state of nervous irritation a single boil reduces us. In addition to this, there are a few rare instances known where human beings have suffered from warbles, and it is recorded that every time the maggot moved it caused the patient intense agony. The loss from warbles is known to amount to many millions of dollars; this loss is in the price of the hides, which are reduced in value by one-third, and in the quantity and quality of the flesh or milk. Moreover, strange to say, this great loss could be entirely prevented. The Warble fly is a native insect which formerly was a parasite of the Buffalo; but which now exists through the winter only on the backs of living cattle, which, in the east at any rate, are housed and can be treated so as to destroy all the Warble maggots before the stock are turned out in spring. From February to April the maggets are in the warbles on the backs of cattle and can either be killed there by rubbing grease of some kind through the hole in the top of the warble, through which the maggot breathes, or by squeezing the maggot out and killing it. If left in the animals backs till turned out to pasture, when full grown, the maggots work their way through the hole in the skin and fall to the ground, where they change to black puparia, from which later large flies emerge, to again lay eggs on the cattle and give rise to another generation of warbles.

CABBAGE CATERPILLAR.

By Mr. Ingram:

Q. Would you explain the best method for killing the cabbage caterpillar?

A. Make a mixture of Pyrethrum insect powder, one pound in four of cheap common flour; keep the mixture in a tight canister for 24 hours, and then dust some of

this powder over the infested cabbages. It is perfectly harmless to the higher animals such as ourselves, but if it falls on the caterpillars it will destroy them. This is the cheapest and safest remedy.

Q. And the most effective?

A. It is as effective as any; the only thing more effective is perhaps Paris green—I don't know indeed that Paris green is more effective, but I certainly could not advise the use of Paris green on cabbages at all, because it is a virulent poison; and any poison used at all commonly is apt to the used carelessly; therefore, its use is not advisable, and in this case is not necessary.

CODLING MOTH.

By Mr. Smith (Wentworth):

Q. Going back to the Codling moth—what is your opinion of banding the trees? A. It is an excellent supplementary remedy. It is not, I think, the most effective, but it is absolutely necessary in your part of Canada. In Eastern Canada the Codling moth has only one brood in the year, but west of Toronto there are two broods, and for that reason as in your district banding is just as necessary as spraying in the spring. If spraying in the spring is done very thoroughly, it will destroy those insects which would lay eggs for the second brood. Last year the weather conditions in the eastern area of occurrence were such that the early brood of moths did not lay their eggs on the apples, and even where no spraying was done there was no loss from Codling moth last year. There were more in the western area and in fact the second brood did a great deal of harm in some places. Spraying in the spring and banding in autumn are both necessary for the Codling moth in the western area. The bands must all be examined at short intervals and the caterpillars destroyed carefully or the bands do more harm than good by simply providing convenient places for the caterpillars to spin up in.

Q. That is the only means of entirely eradicating the moth from a township. With spraying, unless it is absolutely perfectly done, there are a good many which escape. In fact, our experience has been that spraying is very ineffective; I suppose it is because it is not thoroughly done. Spraying has to be extraordinarily thoroughly

done in order to fall on the blossom end of the apple.

A. The poison need not necessarily fall there. The young caterpillars can exist both on the leaves and on the apple. By spraying the trees, poison is placed where they will eat it with their first meal.

Q. Young larvæ penetrate into the apple, and unless there is Paris green on the skin of the apple, they will get off without any and there is nothing to drive them out

once they get into the apple ?

A. That is perfectly true, but I lay more stress on the spraying than on the banding. The insects sometimes feed on the wild haws, so these would also have to be banded to entirely eradicate the insect from a township. If you don't take off the bands and kill all the larvæ which are very hard to detect when they have formed their cocoons in the bark some may be overlooked; but a thorough spraying at the right time is likely to kill all the brood.

Q. We feel satisfied that if the inspectors did their duty and compelled everybody to inspect their bands at the proper time, it would entirely eradicate them in time.

A. It would help a great deal, no doubt.

By Mr. Ingram:

Q. You spoke of spraying after the fall of the blossoms. Wouldn't spraying the trees when in blossom have a great deal to do with it?

A. Yes, but these intervals begin some days after the flowers have fallen, when the eggs are generally laid. Spraying earlier would injure the flowers. The eggs are laid about a week after the flowers fall.

Q. You say, spray about every two weeks. Supposing you had a wet season, if you sprayed an orchard to-day and it rained to-morrow, would it be necessary to spray the following day?

A. Yes, it would; if it was a heavy shower it would spoil the effect of the work

a good deal.

By Mr. Smith (Wentworth):

Q. Spraying does not cure the Codling moth ?

A. If done thoroughly it reduces the injury enormously. There is one thing certain, much spraying is not done properly. There is often an effort made to save trouble. Some people say they can spray better if they spray with the wind. This is a very dangerous and injurious idea for a man to get into his head, because, for instance, if you have sprayed one side of a tree and then wait for the wind to change before doing the other side of the tree, it may not change at all, and then that side of the tree is not sprayed at all. That was very much the case in the San Jose scale work a few years ago.

The CHAIRMAN.—I think you have given us a very good presentation of your

work.

Mr. Smith (Wentworth).— I would move a vote of thanks to the professor. The motion was carried unanimously.

Having read over the preceding transcript of my evidence, I find the same to be correct.

JAMES FLETCHER,

Entomologist and Botanist to the Dominion Experimental Farms.

CHEMICAL RESEARCH IN AGRICULTURE

House of Commons, Committee Room No. 34, Wednesday, 6th April, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, Chairman, presiding.

Mr. Frank T. Shutt, M.A., Chemist of the Dominion Experimental Farms, was present and addressed the committee as follows:—

SCOPE AND CHARACTER OF THE WORK OF THE CHEMICAL DIVISION.

Mr. Chairman and Gentleman, with respect to the work of the Chemical Division of the Experimental Farms, I am able to report that very satisfactory progress has been made during the past year. By that statement I do not wish you to infer that we have satisfied all the demands that have been made upon us, for they have very materially increased, as they have been increasing yearly for a number of years,-and we have never been in a position to keep ourselves abreast of the work. There is always a good deal of work awaiting our attention. Our work, I might briefly say, in addition to the correspondence and lectures at agricultural conventions, falls naturally into two divisions—the analytical work done for farmers upon samples which are forwarded to the laboratories, and work done in connection with original investigations instituted by ourselves. This latter work has our first attention. This, you will agree with me, is the right course; the solving of problems which are of interest to the agricultural community in general is of the first importance; then, secondarily, we do as much as we possibly can for the individual farmers. What I purpose this morning is to bring before you briefly the results of certain of the more important investigations that we have had in progress since I saw you last year. Before proceeding with this, however, I might say that we have very gratifying and satisfactory evidence that there is a wider realization of the value of chemical work to agriculture by practical farmers. I think the evidence for this is plain when I tell you that the number of samples sent in for examination is annually increasing and that this year we have analysed and reported upon between 600 and 700 samples which have been forwarded from various parts of this Dominion. These samples consist of soils, fertilizers, insecticides, cattle foods, dairy products and other matters relating to one or other branches of agriculture. Then, in addition to these, between 2,000 and 3,000 letters have passed through our hands. This, as I say, represents the extent to which we come into contact with the individual farmer, in addition to the work of addressing conventions and farmers' institutes. Further, the requests for our publications become more and more numerous. I think it must be gratifying to us to feel that as the experimental farm system grows and becomes better known, it is growing in value, that there is a wider appreciation of the work as our people become better acquainted with the value of this technical knowledge in connection with their work. I think I may safely say that wherever we see progress and advancement in agriculture, no matter whether it is in fruit-growing

4 EDWARD VII., A. 1904

or dairying, there we find the application of the principles which are being disseminated through the agency of the Experimental Farms. Our report for 1903 is in the press, consequently I cannot present it to you to-day. Neither is there time for me to bring before you, even briefly, the large amount of work which will be found in its pages. This report will, I believe, prove of considerable value to our people. The investigations cover many and varied problems in Canadian agriculture, and the results are, as far as possible, stated in language readily understood by the general reader.

THE IMPROVEMENT OF SOILS THROUGH THE GROWTH OF LEGUMES.

First of all, I wish to direct your attention to some results which I have placed upon this chart in connection with the improvement of the soil by the growth of legumes. You are all doubtless aware that for a number of years past, at least ten years, we have been at work upon this fundamental and important question—the economic enrichment of soils. I do not think it is necessary for me to apologize in bringing this subject before you again. It always will remain one of the greatest importance to our farmers and to the agricultural interests of this country. The first work that we did upon the chemistry of this subject was published in the year 1896. In the report of that year will be found the fertilizing values of certain clovers when used for this purpose. Since that time, year by year, very valuable data have been amassed and, in a bulletin published about a year and a half ago by the Director of experimental farms and myself, we made a compilation, bringing together the more important of those results. That bulletin (No. 40) has been in the hands of the farmers for some time, and no doubt is now bearing good fruit. That, however, did not finish, did not bring to a completion this investigation, neither have we, at the present time, reached the end of it. The work still continues, and from year to year more useful information is obtained.

LEGUMES IN THE ROTATION AND AS COVER CROPS.

These experiments have been conducted in the fields in the ordinary rotation, and they have also been conducted in the orchard, using the legumes as a cover crop. I think it was on the last occasion that I appeared before you that I went into a somewhat extended discussion as to the value of cover crops for orchard soils, and the various functions which the cover crops performed, and, therefore, it will not be necessary for me to speak at length upon that subject to-day. I will just mention that we have considered this question from these two standpoints—that of the farmer and that of the orchardist—and obtained data as to the value of clovers and other legumes in the ordinary rotation, and also for the improvement of orchard soils. These results which I present to you this morning are obtained from the latter inquiry, and include data from experiments in the improvement of the soils of the orchards at the Central experimental farm. They are nevertheless very widely and very largely applicable to the general improvement of soils.

I mentioned a moment ago that we received during the year a very large number of samples of soils. Some are virgin soils, and some are soils which had been under crop for a number of years. These latter soils have been subjected to what we might call long continued cropping. Contrasting the virgin soils which are still fertile and productive and those other soils which are now yielding but diminished crops compared with what they once did, we find a marked difference in one respect especially. Looking at the matter broadly we find, as a rule, that a considerable difference between these two classes of soils lies in the percentages of humus or vegetable matter and of nitrogen which they contain. Just in a word then we may say that the difference in a very large number of instances between the virgin soil and the partially exhausted soil, as I may

term it, is in the humus content. We are further to note that as the percentage of humus increases or decreases, so do we find the percentage of nitrogen, a very important element of plant food, increases or decreases. Now, if this is the case, we must reach the conclusion that the cropping of our soils leads to the dissipation of the organic matter or humus of the soil. It is not necessary for me to go into any chemical definition of that term humus. We all understand that the humus is the semi-decayed remains of former plant life upon the soil, and we further understand this, that our virgin soils are those which are comparatively speaking rich in this constituent. We know that humus in itself is not a direct plant food, but it nevertheless does contain materials which upon its further decay in the soil are readily available for plant sustenance, and the chief of these elements which it furnishes is nitrogen, the most expensive of all We have, therefore, to consider this humus as amongst forms of plant food. the most valuable constituent of our soils. It is not only a constituent which must be considered of particular value from the chemical standpoint as the source of nitrogen, but it is also a most important material from the mechani-It has been most clearly and emphatically shown by research cal standpoint. during recent years that we must pay more attention to what we might call The word tilth the physical condition of our soil, the mechanical condition. It is not only necessary that there very well covers what I refer to now. should be a sufficiency of plant food in the soil, but that the soil should be in a right mechanical condition for the sustenance of the plant; that there should be a seedbed loose, mellow, warm and moist, in which the seed may germinate freely and in which the roots may find an easy foraging ground. Humus is the constituent above all others which so mellows the soil, and which makes it so retentive of moisture and of warmth. It improves both clays and sands in this respect. It will be obvious, therefore, that in addition to the fact that it is our chief natural source of nitrogen, it is a constituent which we cannot replace by any other. The commercial fertilizers will not take the place of humus in mellowing the physical condition of our soil. That is one reason why we find in certain quarters that there is such a strong prejudice against commercial fertilizers, and such a strong and The amount of plant food, that favourable impression regarding barnyard manure. is to say, the nitrogen and phosphoric acid and potash which is contained in barnyard manure, is not large compared with the amounts which are contained in many of our commercial fertilizers. Nevertheless, we find on many soils greater returns from the barnyard manure than from the commercial fertilizer. What is the reason for this? It is chiefly due to the fact that the barnyard manure contains a considerable amount of this humus, or material which will go to form humus on its further decay in the soil. It will improve the tilth of the soil no matter whether it be a clay soil or a sandy loam. If it be a clay soil it will counteract and prevent that hard and refractory condition which would otherwise follow rain and subsequent exposure to the hot sun; if it be sandy soil it will improve its cohesiveness and increase its retentiveness for moisture.

BACTERIAL LIFE OF THE SOIL.

There is another matter we must not neglect to consider. Nowadays the soil is regarded as something which is alive or rather something full of life. In past years we considered it just as a sort of mineral agency for the sustenance of our plants, but we know now that the soil is teeming with plant life, living organisms so small that we connot see them with the naked eye, but visible under the higher powers of the microscope. We know now that the influence, the function, of these microscopic plants is to prepare the food, that is to say, take it from its insoluble form and make it available to digest it, as it were, for the plants which we sow, i.e., our farm crops. Experiments have shown that our most fertile soils are those which are rich in this bacterial life. We cannot have bacterial life unless we have this organic matter or humus,

2-101

4 EDWARD VII., A. 1904

for that is the food upon which these organisms live. By the consumption, so to speak, of the humus by the bacteria, the plant food in the humus is converted into forms assimilable by our crops. Take the nitrogen of the humus. As it there exists it is of no value whatever to crops. They cannot feed upon it any more than we can feed upon the nitrogen of the air and make it our own. Our farm crops cannot themselves absorb or utilize the nitrogen in the humus. It must be first prepared, and this is brought about by the soil microbes—living agents themselves working for and with the farmer if they are only supplied with raw material—humus. These bacteria convert it into other forms and compounds which are directly assimilable by plants. I need not to-day go into a lengthy discussion of this matter. The process is one known as nitrification. The point I wish to make is this: We shall have to pay more and more attention to the preservation, and in many cases, the increase of the organic matter, the vegetable organic matter, in our soils. By so doing we shall be improving the physical condition of our soils, we shall be enriching our soils in plant food, and we shall be making it more suitable for bacterial life and development, more suitable for the increase of those bacteria which work over this material and make it assimilable by crops.

HUMUS,-A SOURCE OF NITROGEN.

I have spoken of humus as a source of nitrogen. It is the natural conservator of nitrogen; when it goes the nitrogen goes with it. Now, how and where does this humus go when we cultivate the land? It is just as if it were burned up by reason of our agricultural operations, by our ploughing and harrowing and cultivating. All stirring of the soil tends to the dissipation of the humus. Now, it is absolutely necessary that we should continue ploughing and harrowing, etc., because we must have the soil in that right physical condition which will allow the roots to easily penetrate their foraging ground. Consequently, these operations which entail to a certain extent this waste must go on. We must not prevent it. We cannot prevent it. We can, however, so arrange our system of farming as to be continually replacing this humus and nitrogen. It frequently happens that more nitrogen is dissipated in the cultivation of the soil, in the ploughing and harrowing and so forth, than there is removed by the crop. This cannot well be prevented. Having recognized this continued loss we must ask ourselves, how we are going to maintain the fertility of the soil by replenishing this humus.

MANURE, -A VALUABLE SOURCE OF HUMUS AND NITROGEN.

First, of course, there is the barnyard manure. Our method of growing legumes does not in any measure minimize the value of barnyard manure. But have we enough of it? On the majority of farms in Canada, or at all events in a very large number of instances, we do not keep sufficient cattle, but matters are improving in that connection. In the older provinces, more stock is being kept upon the farms, and consequently more of the plant food that is taken out of the soil by the crops is being returned to the soil. Still there is room for improvement in that respect. I am not advocating in this the immediate increase of the stock upon the farm. Before we get the stock there must be means taken for its maintenance, and not merely for its maintenance, but for its rapid growth. The profitable production of flesh and milk necessitates good feeding. There is no object to be gained in merely feeding stock a maintenance ration. Manures from such cattle are of very little value compared with that from well fed stock. But with provision for the proper keeping and feeding of the animals, it is to the advantage of the farmer to increase his stock in all classes. I feel sure of this that as the stock increases upon our farms, so we shall find the average production per acre increased. The two will go together. You know the

average production in this country is not what it should be, considering our climatic conditions and considering the character of our soils. There is plenty of room for improvement. Now, that is partly due to defective or imperfect methods of soil treatment, partly to the fact that we do not keep enough stock, and it is partly due to this fact—I am only going to mention it—the neglect that the manure on the farm receives. Once having the manure, I am speaking generally, we do not take that care of it, we do not realize its worth, we do not value it in the light we should, consequently the large portion of its fertility, that part of it which is the most soluble, and consequently the most valuable, is very often lost, running away into our creeks and streams and down to the sea, instead of being returned to the soil. There is still room for a great advance in our methods of treatment of barnyard manure. But all this said and done, there will not be enough under existing circumstances to keep up the humus of our soils, at any rate for a great many years to come.

SWAMP-MUCK, -- A SOURCE OF HUMUS AND NITROGEN.

One other source which is being brought permanently before our farmers, principally through correspondence in connection with this matter of the addition of humus, is the vast deposits of swamp muck which occur over extended areas in Ontario and Quebec, and indeed in all our eastern provinces, and to some extent also in British Columbia. In this swamp muck we have a large amount of organic matter, which is rich in nitrogen. This material, if it is applied to the soil in a crude condition as taken from the swamp, is of little direct value for the nourishment of plants. Before its plant food becomes assimilable the muck has to be composted, in other words, has to be fermented, and we have advised various methods for the treatment of this material so that it may be converted into a manure of more or less immediate value. This composted muck at once furnishes our soil with organic matter which eventually will become humus, and also with a large amount of nitrogen. I might say in this connection that in the report of the chemical division for the past year, now in the press, this subject has been treated somewhat in extenso. We have brought together our experience and the experience of others who have been working more or less under our direction, and have put together the information so gained. We wish our farmers generally to know that there may be, at their own doors perhaps, a fertilizer of great value, and which with a little labour may be converted into valuable plant food. I do not intend to further speak upon this matter unless there is some member of the committee who desires me to do so.

By Mr. Cochrane:

Q. In your report have you dealt with the best way of treating barnyard manure?

A. Yes, we have published a bulletin upon barnyard manure, and also in various reports of the farm mention has been made with regard to our experiments with fresh manures and rotted manures. The matter, however, is not treated of in my last report.

By Mr. Wright:

Q. With reference to the muck, we found in putting it on that it contained a certain amount of moisture, and when we put it on the field in the winter it was a long time before it thawed out in the spring. It is almost impossible to get a crop of any kind unless you plant corn?

A. Did you spread it or leave it in a heap on the field ?

Q. We spread it as well as we could.

A. I do not generally advise that method in the use of muck, though there are some mucks that can be directly applied with benefit to the soil. As a rule, however, acids which have developed in the swamp muck are injurious to crops, and it is therefore well

to free the muck of this acidity before mixing with it the soil. My general advice is that the muck should be dug and teamed at any season when most convenient, and piled so that it may dry. If possible it should be exposed to the winter's frost for its more easy disintegration. It is now a good absorbent, and I should advise its use in or about the farm buildings generally. You all understand with regard to manure that the liquid portion, the urine, is much more valuable than the solid. It contains a larger percentage of plant food, and that plant food is more assimilable than that which is in the solid portion. I have generally advised that the air-dried muck should be brought in and kept convenient to the farm buildings and then used in the cow barns. For instance, a shovelful each day behind each animal will not only absorb the liquid manure and prevent it going to waste, but make the cleaning of the barn a very much easier task than if the muck is not used. And it can be used also in the pig pen, about the farm yard and other places. By the means I here suggest you may increase the bulk of the farm manures and also enhance their quality. Subsequently, the fermentation of the mixture liberates the plant food in the muck. I think that better satisfaction, upon the whole, will be obtained if the muck is so used and treated than by carting it direct from the swamp to the field. Of course, I know there are various qualities of muck. Some are quite brown and peaty, woody in their character, and some are more decomposed, quite black and cheesy. These latter, of course, will more rapidly decay in the soil without previous composting than the brown and peaty varieties. But I think that for most soils it will pay to compost the muck before its application. There are other ways of composting it besides that which I have mentioned. It can be at once mixed with barnyard manure in alternate layers in a heap and allowed to ferment in that way, or a compost may also be made with an alkali, such as wood ashes. But that matter, as I have just mentioned, is treated fully in my report, so that I may now proceed with the subject under discussion.

By Mr. Cochrane :

Q. In regard to barnyard manure, your idea is to prevent fermentation and loss?

A. Yes, to hold the valuable liquid portion and to check excessive fermentation. In the rotting of manure we must guard against losses from two sources: excessive fermentation (which burns the manure and destroys the organic matter and dissipates the nitrogen) and excessive leaching by rain, which would carry off the soluble fertilizing elements. By mixing the muck with the manure and keeping the whole mass compact and firm I think we have a condition under which that fermentation is very largely controlled. The fermentation will proceed slowly and the conversion of the plant food into more valuable forms will take place without loss on the one hand from burning or on the other hand from leaching.

By Mr. Wright:

Q. In our case we could hardly handle the muck in the way you say. We have kept teams drawing four immense loads every day.

A. What kind of soil do you put it on?

Q. We put it on clay soil, which looked as if the vegetable mould had been burned off, and it was as hard as a brick. We put the muck on and it was a grand thing.

THE VALUE OF LEGUMES FOR ENRICHING THE SOIL.

A. Yes, it mellowed it.

I might perhaps now proceed with the discussion of certain results contained in the table which you see before you. Some of these were obtained during the past season and some are from work done in previous years. I have in the first column mentioned the variety of the legume under experiment. We have the hairy vetch, also

known as the sand vetch; the soja bean, a legume from Japan; the horse bean, very well known in England; the common red clover; the mammoth red clover, and the alfalfa or lucerne. As I have already mentioned, these results are from experiments that have been made in our orchards. These crops were grown as cover crops. The intention was that they should furnish organic matter and nitrogen, and at the same time act beneficially in protecting the roots of the tree during the winter from frost, as well as serve other useful purposes.

By Mr. Wilson:

Q. Do you plough them under ?

A. Yes, sir.

Q. How does it particularly protect in the winter, then ?

A. They are not ploughed under in the fall; they are ploughed under in the spring. I may say by way of explanation, that in the system of cover cropping, the soil of the orchard during the early part of the season, is kept cultivated so that the moisture shall be conserved for, by keeping a dry earth mulch upon the surface the moisture is retained in the soil for the benefit of the tree. Then, as soon as the tree has made all necessary growth the cover crop is sown.

Q. What time?

A. About the first of July the crop is sown. It may be clover or alfalfa or one of these other legumes which I have upon the chart here. We obtain in this way about three month's growth by October, that is, before winter sets in. We then usually have quite a large mat of growth, and this is allowed to remain so that it may hold the snow during the winter. Then in the spring, before there is a chance for the soil to dry out, the residue of this crop is turned under. This enriches and improves the soil to the extent of the amount of plant food and humus which the crop contains. The soil is then cultivated until the first of July when the cover crop is again sown.

By Mr. Cochrane :

Q. Have you ever tried peas ?

A. Yes, we have tried them; they have proved fairly satisfactory. Reverting to the crops mentioned on the chart. We are to understand then that they have been sown between the 15th of June and the 1st of July, and that the results have been obtained on samples collected between the 15th of September and the 1st of October, so that we really have here the results of three months' growth. The first three crops mentioned on the chart are those which have been under experiment during the past season, 1903.

HAIRY VETCH.

The hairy vetch (vicia villosa) is, comparatively speaking, a newly introduced legume. It has been spoken of very highly for orchard work by experimenters in the United States, and these results, representing our first trial with this crop, have shown that it is extremely valuable as a fertilizer. In furnishing nitrogen and organic matter it has proved the best of all the legumes experimented with. We find it stored up in the plant nearly 150 lbs. nitrogen per acre.

Period of Growth: July 1 to Oct. 15 (approximately).	Weight		Amount of Certain Constituents per Acre.				
	Ci	rop Acre.	Organic Matter.	Ash.	Nitro- gen.	Potash.	Phos- phoric Acid.
	Tons.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Hairy Vetch (Vicia villosa)— Stems and leaves. Roots	11 2	1,895 345	3,689 536	425 56	129 18	131 19	36 6
Total	14	240	4,225	481	147	150	42
Soja Bean (Soja hispida)— Stems and leaves Roots	7 1	350 900	3,319 549	313 28	82 13	65 7	25 5
Total	8	1,250	3,868	341	95	72	- 30
Horse Bean (Faba vulgaris)— Stems and leaves	7 2	733 852	2,193 605	156 39	63 15	53 10	17 4
Total	9	1,585	2,798	195	78	63	21
Clover, Common Red— Stems and leaves Roots	4 2	1,779 1,445	1,842 1,394	481 172	90 48	75 40	30 16
Total	7	1,224	3,236	653	. 138	115	46
Clover, Mammoth Red— Stems and leaves Roots	6 3	1,310 1,260	2,269 1,409	508 219	82 48		
Total	10	570	3,678	727	130		
Alfalfa— Stems and leaves	5 5	1,192 558	2,664 3,120	510 613	75 61		
Total	10	1,750	5,784	1,123	136	1	
Barnyard manure	10		4,000	1,190	100	90	50

I should say, before referring further to the hairy vetch, that these three, the hairy vetch, the soja bean and the horse bean, were sown by the horticulturist this year in rows instead of broadcast. The object in sowing them in this way was that the land might be cultivated longer, and moisture for the growth of the tree, conserved for a longer period, than it would be if the crop were sown broadcast. The rows were 27 inches apart.

The photographs of the hairy vetch that I now show you depict the growth of these several crops at different dates, namely, the 3rd of August, and again on the 15th of September. On the first named date the plants were about 8 to 10 inches high, and the lines of the rows were well defined. The photograph of the 15th of September shows that the whole surface of the ground has been covered with a heavy mat of growth.

Q. How much to the acre of seed does it require ?

A. In connection with this experiment we have sown of the hairy vetch, 20 lbs. of seed to the acre; if it had been sown broadcast it would have required about 40 lbs. to the acre. Of the soja bean, 37½ lbs. were sown to the acre, and of the horse beans sown in rows there was a bushel; probably if they had been sown broadcast it would have required two bushels. All these were cultivated between the rows as long as it

was possible. With regard to the price, the hairy vetch seed, retail, is worth about 15c. per lb., but wholesale, it is worth about 10c., so that the seed for the hairy vetch sown in this way costs about \$2 per acre. The soja beans, of which $37\frac{1}{2}$ lbs. were sown to the acre, at 10 cents per lb., would amount to \$3.75. The horse beans are worth about \$2 per bushel, so that it would cost about \$2 to the acre. These are re-

lative prices.

Although the hairy vetch is a low growing plant, it produces a phenomenally heavy weight of stems and leaves, much above the average obtained from such crops. On September 13th, when we took these samples, we had in the stems and leaves upwards of 11 tons, nearly 12 tons, of green matter to the acre, and in the roots, to a depth of 9 inches, there were 2 tons 345 lbs. The analysis of the crop at that date shows that there was of organic matter, which, subsequently incorporated with the soil, will form that humus of which I have spoken as having very useful and important functions, 3,689 pounds in the stems and leaves, and 536 pounds in the roots, so that altogether we obtained 4,225 pounds, or two and one-eighth tons of humus-forming matter added by the growth of this hairy vetch.

Q. With regard to the seed, is there any difficulty in obtaining it from the differ-

ent seed merchants.

A. There used to be, but I do not think there is any difficulty now; the hairy vetch seed has been very dear, but on account of its wider introduction in the United States more people are growing it and it is now easily obtained at a fair price.

By Mr. Robinson (Elgin):

Q. Is it the same as 'tares'?

A. No, it is a different plant, but nevertheless closely related.

By Mr. Ross (Ontario) ::

Q. What is the value ?

A. 15c. a pound retail, but in large quantities probably 9 or 10c.

Q. And how many pounds to the bushel?

A. It is sold by the pound. I do not know the weight per bushel. We have sowed here 20 pounds to the acre. I presume there are about 60 pounds to the bushel.

Q. Is the seed something like what we call 'tares.' Is it as large a seed ?

- A. Yes, it is.
- Q. Then it will be about 60 lbs. to the bushel?

A. Possibly so.

Q. How much did you sow to the acre?

A. 20 lbs. is what we sowed to the acre in this way; it would take about 40 lbs. if sown broadcast.

By Mr. Cochrane:

Q. It will also have a beneficial effect by preventing the foliage being blown away. When you have a crop like that it retains the foliage from the trees on the ground?

A. Yes, and there are many other useful objects to be attained by a cover crop which I have not spoken of to-day. That is a minor one which you have referred to just now, but nevertheless one of some importance. I wish to point out to you that in the stems and leaves of this crop we have practically 130 lbs. of nitrogen. We have to remember in connection with legumes, that this nitrogen has practically been taken from the atmosphere, only a very small part indeed has been taken from the soil. The plant in its very young stages draws from the nitrogen of the soil, but owing to the agency of certain germs or bacteria which reside in the nodules upon its roots, the hairy vetch in common with all other legumes is able to make use of an labstract the free nitrogen of the air. The legumes are very rich in nitrogen and

that which makes them so valuable is the fact that this nitrogen is from the atmosphere. They store it up in their tissues, so that when subsequently decomposed in the soil, this nitrogen becomes converted into plant food useful to wheat, corn, potatoes and so By means of this crop in the roots and the stems and the leaves, we may capture nearly 150 pounds of nitrogen. If we purchase nitrogen in the form of commercial fertilizer, we have to pay 10 or 15 cents per lb. for it. Put it at the lowest value, 10 cents per lb., and you see that we have \$15 worth of nitrogen, besides the benefit that is to be derived from the humus and those other (mineral) constituents which are contained in the crop. I should like to say one or two words with regard to the phosphoric acid, and potash contained in these crops, in connection with the system of green manuring. The mineral elements when returned to the soil by the turning under of the legume must not be considered as a distinct addition to the soil; nevertheless they are more valuable as plant food than they were previous to being utilized by the legume. The subsquent decay of the cover crops liberates this potash and phosphoric acid and lime in forms much more assimilable than they existed previously in the soil. I consider in this way that the value of the potash and the phosphoric acid to the future crop has been greatly increased. We are to understand, therefore that while we are not really adding any mineral constituents to the soil, yet we are increasing its available store of mineral plant food.

SOJA BEANS.

We may now consider the next crop upon the chart. In connection with soja beans we did not get the same yield per acre with hairy vetch, but nevertheless there was a satisfactory growth. Without discussing all the results in detail, I may point out that the amount of organic matter in the soja beans is somewhat more than three-fourths that in the hairy vetch. We likewise found that there was much less nitrogen than in the hairy vetch. Nevertheless, there is almost 100 lbs. of nitrogen that can be added to the soil per acre by the growth of this crop, with also notable quantities of phosphoric acid and potash rendered more available.

HORSE BEANS.

At the time of the collection of our samples, as will be seen by the accompanying photograph, the horse bean looked as if they would furnish the largest amount of plant food, standing 3 to 4 feet high, and presenting a magnificient appearance. It was a very fine crop, nevertheless when it was analysed we found the percentage of moisture considerably larger than in the soja beans and in the hairy vetch, consequently the horse beans did not contain per acre the same amount of organic matter, nitrogen or mineral constituents which the others contained. In other words, the horse beans were not so valuable from the fertilizing standpoint. We found, for instance, that although there was a total of over nine and a half tons per acre, as compared with eight and a half in the soja beans, there was less organic matter by 1,000 pounds and very much less nitrogen. Comparing the results with those of the hairy vetch, there was practically only about one-half the amount of nitrogen in the horse bean crop per acre that there was in the hairy vetch—78 to 147.

CLOVERS AND ALFALFA.

I have placed upon the chart certain results obtained a few years ago with common red clover, mammoth red clover and alfalfa. We are to understand that the amounts stated on the chart were obtained from three months' growth, having been

sown at the rate of 12 to 14 pounds per acre about the first of July, and the analysis made in September or October. Well, we found under our conditions that we could obtain a crop of about 72 tons (foliage and roots) from the common red clover, and that this contained one and a half tons of organic matter, humus-forming material. In this there was about 138 pounds of nitrogen. Averaging a considerable number of experiments, extending over several seasons, we have come to the conclusion that an addition of 100 to 125 pounds of nitrogen may be made per acre by the growth of this clover; that is, if the whole crop is turned under. If it is cut and fed, or made into hay and only the roots left to decay there would be somewhat more than onethird of that amount added to the soil.

By Mr. Cochrane:

- Q. What time was that common red clover sown ?
- A. About the end of June, or the beginning of July.
- Q. On a cultivated soil?
- A. Yes, in an orchard.

By Mr. Robinson (Elgin):

Q. At what stage of growth were these horse beans turned under ?

A. They are not turned under yet, but they will be this spring. The crop was left standing during the winter to hold the snow. They were well podded at the time we took our samples in September last.

By Mr. Smith (Wentworth):

Q. The frost I suppose has cut them down?
A. Yes, the hairy vetch, however, has come safely through the winter. We did not anticipate it would live through the winter.

By Mr. Robinson (Elgin):

Q. Where did you get it from ?

A. From Canadian seedsmen. I do not remember the the name of the firm.

Q. Where is it a native of ?

A. It is grown very largely in the states. I cannot say where it originally came from. It is a vetch (vicia villosa), sometimes known as the sand vetch, as it will grow on poor soil. You may see its luxurious growth from the photographs [have here. Our orchard soil is a light sandy loam.

By Mr. Smith (Wentworth):

Q. It always remains green in the Niagara district?

A. Yes, but our winter here is much more severe.

Q. Does it grow anything like the white vetch ?

A. Yes, it has the character of the vetch; this may be seen by the foliage as portrayed in the photograph. It creeps and runs along and reaches a length between three and four feet. It made that growth in about three months.

Bu Mr. Ross (Ontario):

Q. Does it belong to the pea family?

A. Yes, to the leguminosæ.

By Mr. Robinson (Elgin):

Q. How will you turn it under ?

A. I suppose we shall have to run the disc harrow over before ploughing under.

Q. Does it rot on the ground ?

A. No, it has not done that, but if it were killed by the frost it would of course rot.

By Mr. Smith (Wentworth):

Q. You could use a sharp rolling coulter ?

A. Yes, I dare say. I suppose a good disc harrow would be about as valuable as any implement for cutting it previous to ploughing under.

Q. That meets all purposes, if you would only have one ?

A. Yes.

- Q. We frequently have very heavy crops.
- A. Is is largely grown in your district?

Q. Yes.

- A. Our attention was chiefly directed to it from experiments in the States. Claims were made that more nitrogen could be obtained by it than from any other legume crop. We obtained nearly 150 pounds of nitrogen per acre in a three-months' growth.
- Q. Did you make any experiments to ascertain the amount of moisture left in the soil after these various crops ?
- A. No, we have not. That matter was thought of, but owing to having so much work in hand we were unable to make the determinations. Very possibly the Horticulturist and myself may be able to plan this work in our experiments during the coming season.

Mr. Smith (Wentworth).—We have tried it both ways, but found it more economical to grow it broadcast.

Witness.—Of course, it covers the whole ground very quickly, but more rapidly

when sown broadcast. .

Very briefly, then, with regard to clover, both mammoth and common red and alfalfa, we find that three months' growth will furnish about 130 pounds of nitrogen. There is somewhat more difficulty in getting alfalfa to grow in certain districts, and for that reason we generally advise common red clover. It is an excellent crop, whether used in the rotation on the farm or as a cover crop in the orchard. Most probably, however, the hairy vetch will, for orchard use, supplant the clovers.

EQUIVALENTS TO BARNYARD MANURE IN NITROGEN AND HUMUS.

We have mentioned barnyard manure and the nitrogen it contains. In this connection, it may prove useful if we make a comparison between it and these legumes. We have placed upon the chart, on the lower line, some figures with regard to the composition of barnyard manure. I presume that ten tons to the acre would be considered a very liberal dressing. That is the amount which we consider upon the chart. Many of our farmers are quite unequal to giving their land any such amount. Barnyard manure is extremely variable, and it is impossible to do more than to approximately estimate its value in plant food. The factors affecting the composition of manure are many. Among them we have the character of the animals, the nature and richness of the food and the care taken of the manure. It is only possible, therefore to make an estimate as to the amount of plant food that any particular sample of barnyard manure may contain. Nevertheless, those figures may be taken as representative of manure of good average quality. Ten tons of barnyard manure, then, will contain in the neighbourhood of 4,000 pounds of organic matter, that is to say, of humus-forming matter. Let us compare that with what we have formed by the growth of these

legumes. In the case of the hairy vetch we have 4,225 lbs.; with the soja beans, 3,888 lbs., and with the horse beans nearly 2,800 lbs.; the common red clover, 3,236 lbs., and the mammoth red clover between 3,600 and 3,700; alfalfa has a greater quantity of organic matter from its extensive root system, viz., 5,700 lbs.. So that you see as regards the addition of this extremely valuable soil constituent, humus, we can supply as much by the growth of one or the other of these legumes, speaking broadly, as we can by a dressing of barnyard manure at the rate of 10 tons to the acre.

Let us now consider the matter of nitrogen. Ten tons of barnyard manure will contain, say, 100 lbs. of this element. The nitrogen obtained in connection with the growth of the hairy vetch was in the neighbourhood of 150 lbs.; in the case of the soja beans there were nearly 100 lbs.; in the case of the horse beans there were practically 80 lbs. per acre. Of course these figures will vary somewhat according to the season, the character of the soil, etc.; nevertheless, they are relative and may be taken as approximately true. With the clovers and alfalfa we got in the neighbourhood of 130 lbs. nitrogen. From these considerations it will be seen that by the growth of these legumes we can obtain as much, and in the majority of instances more nitrogen and humus-forming material as will be furnished by the application of ten tons of barnyard manure per acre. It is unnecessary for me to enlarge upon this fact; the figures upon the chart are exceedingly striking. It is certainly of very great importance that our people should know these results. I have brought here before you the cost of growing these legumes, and as far as I know I have not exaggerated in any way the various benefits which are to be derived from them. We have not discussed the matter at all in detail, and I can assure you there are many other aspects of the subject of almost equal value with those we have considered. These crops benefit the soil in many ways, but I think I have brought before you to-day sufficinet data at any rate to emphasize the fact that in the cultivation of these various legumes we have one of the most valuable and economic methods of improving the soil.

By the Chairman:

Q. Before you leave this subject allow me to ask, are we to draw the conclusion from the remarks you have made, that it will pay us in the North-west Territories, for example, to cultivate clover simply with a view to the enrichment of the soil.

A. No, I do not wish you to draw that inference, though I believe in time to come it will be necessary to replenish the humus of those soils. I had not in my mind, when speaking of these legumes, the vrigin soils of the North-west Territories and Manitoba. They are in a category by themselves; of that there is no doubt. We have rich soils in all the other provinces; in British Columbia, in Ontario and Quebec, and in the extreme eastern provinces there are numerous soils just as rich as those in Manitoba and the North-west Territories. But there is no denying the fact that in the older provinces we have no areas that can compare with the extensive areas of the North-west Territories and Manitoba in fertility generally, and especially in the amount of nitrogen, and in the amount of organic matter. We have analysed many soils in Manitoba and the North-west Territories which in the air-dried condition will contain between five-tenths per cent and one per cent of nitrogen. These soils do not at the present time require that attention which many do in our older provinces. Many of the soils in the older provinces were never equal in fertility to those of the North-west, and owing to the long continued cropping, without any adequate manuring, they have decreased in fertility. It was with regard to these soils that I spoke more particularly. However, since this matter has been brought up I should like to say that these North-western soils will in time require attention, and it will be much better for us to apply the ounce of prevention rather than wait to give the pound of cure. We must admit that although the soils of the North-west are extremely rich in plant food, they will ultimately show the effect of our present system of farming. We are taking away millions of bushels of wheat every year and this we must not forget means that we are taking away a considerable amount of plant food from these soils. There is a very large deposit in these natural banks, but the largest accounts are not inexhaustible. The balance must decrease if we are contiually withdrawing and putting nothing back. I know from correspondence and from conversation with men from the North-west, they are finding, in many instances, that an application of barnyard manure is increasing the yield of wheat. I think this is the experience now of a considerable number in the North-west in districts where wheat has been grown, say, for a quarter of a century or more. Further, the cultivation of the land, and especially fallowing, wastes the humus and nitrogen; and I think there should be a determined effort to put these back by the growth of a legume.

By Mr. Robinson (Elgin):

Q. You do not advise the farmers in the North-west to burn their straw?

A. Not unless it is compulsory; but it is compulsory or practically so at present in many districts. Of course, it means a certain loss of plant food, of nitrogen.

By Mr. Wilson:

Q. What else can they do with it ?

A. That is a question that cannot easily be answered. They must continue burning it though it means loss, unless there is sufficient moisture to rot it. If there is enough moisture, that is the right course to pursue. Naturally, if it is fed, we retain in the manure its plant food. That is the best way of all to dispose of the straw.

We have to recognize that if the straw is turned under in such a climate as prevails in many parts of the North-west it is going to open up the soil so that it will dry out, and the question in the North-west to-day is not so much a question of plant food, but one of moisture. There is, as we may say, a superabundance of plant food there, but it needs moisture to make it available. Any course of procedure which dissipates the moisture may do far more harm than one which dissipates plant food. Therefore, at the present time it may be more economical in certain districts to destroy nitrogen in that straw by burning it than to allow the straw to go back into the soil, where it will not rot owing to insufficient moisture, and where it will cause the soil to dry out.

Q. You can rot it in heaps, can you not ?

A. You may in certain places. Where it can be so rotted, it is undoubtedly the wisest course.

By Mr. Ross (Ontario):

Q. In many of these instances illustrated on your chart there is a large portion of the weight unaccounted for, take barnyard manure ten tons to the acre. There is about two tons of organic matter, what becomes of the balance?

A. There is between 75 and 80 per cent of water in fresh manure.

Q. Take the second on the chart up there, there is only about one-fourth of that

accounted for in your analysis?

A. Yes; the soja beans contain 85 per cent of water when analysed. The difference between the 'total' weight and the sum of the organic and mineral matter is the water contained in the material.

Bu Mr. Erb:

- Q. The vetches and beans you say were planted in rows and cultivated?
- A. Yes.
- Q. Have you any idea how long they were cultivated; was it a month or two months?

A. Up to the first or second week of August.

Q. So that in that case the orchard was cultivated a month or a month and a half longer than if these crops had been sown broadcast?

A. About three weeks to a month.

- Q. And does that continued cultivation interfere with the ripening of the wood in the fruit trees?
- A. That will depend upon the season. If the season is wet it would be a disadvantage, but if the season were a dry one it would be advisable, especially on light soil, to keep cultivating. There is no method which is universally applicable, and in districts such as ours I do not think that this method of extended cultivation is necessary, because as a rule we have a fairly equally distributed rain-fall throughout the spring and summer. Where there is likely to be an insufficiency of moisture to fill out the fruit, then I think it would be desirable to extend the cultivation. I might remark that this method is being tried by Mr. Macoun this year for the first time, and therefore should be regarded as purely experimental. Further work may show the desirability of materially modifying the plan adopted last season.

Q. If you allow these crops to remain in the orchard during the winter, don't they

furnish a harbouring place for mice ?

A. Our smaller trees are protected to the ground with a little piece of elm veneer or building paper, and for that reason there has been little damage from mice.

Q. You protect your fruit trees?

A. Yes, all the smaller trees; we wrap them with a piece of elm veneer or building paper, and the trees are quite immune from mice. In any case there are benefits to be derived from having this material turned under which would outbalance any disadvantage from that source.

Q. By allowing these crops to remain on the surface of the soil during the winter exposed to the rain and frost and snow are any of the fertilizing elements in them wasted? Suppose you ploughed the crop under green in the fall in the one case and in the other case allowed it to remain, would you have the same amount of fertilizing

element?

A. One of the objects, you will remember, is the winter protection of the roots. This would not be attained if the crop were ploughed under in the autumn. No doubt, there is some loss by exposure to the rain and frost throughout the winter, but not sufficient to warrant turning under the crop in the autumn—that is, when sown in an orchard. The case is different in ordinary rotation on the farm. The amount of loss would depend much on the character of the winter. At Ottawa the loss would not be very great. Further, we usually get three weeks' growth of the clover in the spring to turn under. To enrich the land simply, undoubtedly the better plan would be to turn under at the close of the season, but with 'cover' crops, as in the orchard, we seek to obtain protection throughout the winter. I consider the hairy vetch, from this standpoint, the most valuable of the cover crops examined this year.

By Mr. Cochrane :

Q. Wouldn't the ploughing under in the fall be more detrimental or wasteful than

ploughing under in the spring ?

A. It might be or might not be. It would not be good practice to plough under in the autumn for orchard work. The question is a different one as regards rotation in our ordinary work. We seek to have a leguminous crop, say every third or fourth year. As you are aware, we sow clover with our grain crop in the rotation. That is our universal practice, and we have found it does not in any way diminish the yield quite a growth of the clover after the grain is harvested before the winter sets in. If it is to be followed with another cereal, then that crop is turned over at the end of the season. If the land is intended next year for corn or potatoes, the clover is not turned under until the following May, say the end of April or the beginning of May, depend-

ing how far advanced the season is. If the clover has come through the winter there will be quite a growth by the time it is necessary to prepare the land for these crops. After it is turned under, the decay of the clover warms up the soil and makes it particularly suitable for corn or potatoes.

By Mr. Smith (Wentworth):

Q. Speaking of the value to orchards, in Essex the orchards are reported to be mostly frozen out. I notice the following in the paper this morning. 'One well informed correspondent writes to say he believes the trees are as badly killed as they were in the disastrous winter of 1889. J. L. Hilborn, writing under date of the 2nd, says, however, that while most of the trees are somewhat injured he thinks the majority of these will recover, at least where protection was afforded by means of a cover crop. Trees that have not the protection of a cover crop will, he believes, all die. In any case, there is no doubt that very serious damage has been caused.'

A. Yes, the cover crop is extremely useful in preventing the roots being killed. If you go to the farm at the present time and examine the hairy vetch you will see the thick mat that protected the growth throughout the winter has had a beneficial effect

in that respect.

By Mr. Henderson:

Q. It seems to me, not being a practical farmer, that the results from sowing hairy vetch are somewhat extraordinary. You get 4,225 pounds of organic matter, as compared with 4,000 pounds from barnyard manure. Is that 4,225 pounds the net gain, or must you not deduct from that something for what you have actually taken out in order to produce that organic matter? If not, we can do away with barnyard manure.

A. No, we can't do away with barnyard manure. It must always remain a staple source of plant food. Our crops draw more from the air than from the soil—very much more, and all the organic matter they contain, with the exception of nitrogen, comes from the air. In the case of the legumes, the greater part of the nitrogen also comes from the air. The ash or mineral matter, on the other hand, comes from the soil, but it is almost insignificant compared with the amount of organic matter. I cannot say exactly how much of the 147 lbs. nitrogen (see table) of the hairy vetch came from the soil, but it would not be large. With that exception, all the organic matter comes from the atmosphere. It is taken from the carbonic acid of the atmosphere by means of the green colouring matter of the leaves by the aid of sunshine, and built up into plant tissue; so that practically the 4,225 pounds is really matter brought from the atmosphere. As I have pointed out, it contains a certain amount of material which comes from the soil, but comparatively a very small amount.

Q. What percentage would you suppose of the nitrogen-10 per cent?

A. Oh, no, not so much as that; merely a small proportion of its nitrogen if the roots are well supplied with nodules.

By Mr. Ross (Ontario) :

Q. That equals the amount in the manure ?

A. One ton of fairly good manure should contain about 10 lbs. nitrogen. The organic matter in barnyard manure also came from the crops. If you trace it back you will readily see that the organic matter of the manure is from the fodders the cattle have eaten, and the organic matter of the crops, as we have seen, is from the atmosphere.

By Mr. Smith (Wentworth):

Q. The 481 pounds of ash in the vetch came from the soil ?

A. Entirely. I said that this mineral matter contained potash and phosphoric acid and lime, all of which have been taken from the soil, not from the atmosphere, and now returned to the soil in a more available form by turning under legumes.

Q. As I understand it, that 150 pounds of potash and the 42 pounds of phosphoric

acid are included in the ash or mineral matter?

A. Yes, sir.

Q. And that from the 4,225 pounds?

A. No, that represents the organic matter simply. As I have pointed out, this amount of phosphoric acid and potash are merely returned to the soil, they are not additions to the soil in the case of nitrogen. In the case of barnyard manure, they are distinct additions to the soil, because the barnyard manure may have been produced elsewhere or from some other part of the farm.

Q. Suppose it were bought ?

A. Yes, or suppose it was produced from crops on another part of the farm and transferred to this particular field and consequently in that case it would be a distinct addition to the soil of that field.

By Mr. Cochrane :

Q. Yes, but if it is an addition to one part of the farm it has been taken from some other part of the farm, so that in reality there will be no addition?

A. Yes, it may be viewed that way.

Q. But it might be taken from some other farm—it might be bought ?

A. It might.

Q. But I do not see how you can call it an addition to the soil if it is taken from one part of the farm to another?

A. If the crops are grown on the soil and the manure returned to the same soil, it could not be construed as a direct addition; but if the manure, for instance, is bought, then its plant food should be considered a distinct addition to that soil.

By Mr. Henderson:

Q. What objection would you have to growing in an orchard Indian corn? So much of the food of that plant comes from the atmosphere, would it have any material

effect upon the growth and vigour of the trees ?

A. Yes, it does. In the first place, we should not return the Indian corn to the soil. In the case of these legumes, the object of growing them in the orchard is to return them to the soil, but if we grow Indian corn we should feed it off the soil. Then again it does not take its nitrogen from the atmosphere as does the legumes. It takes a great deal of potash from the soil, as well as nitrogen. These, as I have pointed out, are not in the case of corn returned to the soil. The corn is either field-cured or put in the silo, and the soil is necessarily impoverished. But what is probably of more importance is the amount of moisture taken from the soil by the corn. Probably as much as 1,000 tons of water per acre can be abstracted from the soil by the growth of the corn. Further, corn is planted early in the season, and the probabilities are that the corn would so dry out the soil that the trees would not have their proper amount of moisture.

Q. Then you would consider it as bad farming for a man attempting to raise an

orchard to grow crops in the orchard ?

A. Generally speaking, I do. A great deal will depend upon how he is prepared to feed the soil. If he is prepared to put on a large amount of barnyard manure, or artificial manure, there can be no objection to his growing crops in the orchard, but when the trees have attained such size that they demand the whole of the plant food of the soil between the rows it does not pay to do so. Besides such crops take the moisture necessary to the growth of the trees.

By Mr. Wilson:

Q. Do you think it pays to raise crops in the orchard ?

A. Speaking generally, I do not think it does.

By Mr. Henderson:

Q. I called your attention to the fact, because I think it is the general practice to do so, and I think that if it is a mistake, the farmers should have their minds disabused of the idea.

A. Well, when the trees are small, and providing the crops are not grown too close to the trees, I do not think there is any great damage committed by the practice. But once the trees are sufficiently large, as I stated before, to make demands upon the soil for all the moisture it contains between the rows, then I think it is high time to stop growing crops in the orchard.

The composition of the various feeding stuffs is the next matter to which I desire to draw the attention of the committee. In order the better to illustrate the subject, I have prepared a chart of the results obtained in he analytical work underaken by the

chemistry division in this connection, as follows:-

COMPOSITION OF VARIOUS FEEDING STUFFS.

_	Price per ton.	Moisture.	Protein.	Fat.	Carbo- hydrates.	Fibre.	Ash.
	\$ cts.						
Ground pea chips	25 00	8.02	25.91	2.19	61.19	0.20	2.49
Pea dust	22 00	8.37	26.16	2.77	48.70	10.58	3.75
Ground pea bran	14 00	8.01	28.53	2.89	48.44	8.11	4.02
Barley feed	14 00	8.57	12.12	4.34	59.00	10.87	5.10
Meal seeds	12 00	5.67	7.09	3.83	60.05	19.17	4.1
Oat dust	5 00	4.81	9.59	3.77	52.13	24.60	5.1
Ground seeds		8.14	15.12	8.77	49.12	13.57	5.2
Cottonseed meal (Bryan)	30 00		44.31	8.87			
" (Sessex Merc. Co.)	25 00	9.48	25.25	5.43	36.05	18.65	5.1
Gluten meal	25 00	5.25	36.68	11.05	43.83	1.24	1.5
Gluten feed	22 00	3 68	23.00	2.83	63.79	5 75	.9
Beet pulp	4 00	7.61	7.62	.40	59.49	20.85	4.0
Molasses cattle food	14 00	4.36	8.28	.74	64.61	16.36	5.6

You will all doubtless remember, gentlemen, that for several years past I have brought before you data in connection with the concentrated feeding stuffs which are found on the Canadian market. As the years go by we find these feeds are increasing in numbers; only a few years ago the foods which were used by farmers and dairymen, were comparatively simple in character and few in number—bran, shorts, provender and ground Indian corn; these, with probably the addition of linseed meal and one or two other meals, I think, may be said to cover the list of those that were upon the market. But the case is very different now. Many of these concentrated foods are now being used in order to balance the rations, to supplement the protein of our home-grown coarse fodders. These feeds are largely milling products and manufacturing by-products obtained in manufactures which had no existence a few years ago. For instance, the various breakfast foods which are sold so largely mean that there is an amount of offal and refuse from their manufacture which must be sold as cattle feed.

By Mr. Henderson:

Q. Do you think there is really any refuse from the manufacture of these cereals; does not everything go into them ?

A. In the preparation of some of them, I believe, there is a considerable amount of refuse.

By Mr. Ross (Ontario) :

Q. Could we not have an address on breakfast foods?

A. I think that is hardly within my province; the examination of such articles is undertaken by the Inland Revenue Department. That branch of the government service controls the examination of articles of diet, of foods intended for human consumption.

In the manufacture of starch from corn there are several products of greater or less value as cattle food. Again, in connection with our Canadian beet sugar industry certain products have recently been put upon the market. We have examined many of these products at the request of farmers and others in order to ascertain their relative feeding values. These various feeds differ widely in their composition, and, of course, the nutrient value of the feed depends upon its composition. Speaking broadly, I may say that the value of such feeds is chiefly dependent upon the percentage of protein or flesh-forming material, and the percentage of fat which they contain. There are other constituents of feeding value present, such as the starch, but nevertheless in estimating the value of feeding stuff the percentage of protein and the percentage of fat are the chief factors. Protein and fat are the most important and most costly elements in a food.

By Mr. Ross (Victoria):

Q. What is protein ?

A. Protein is the nitrogenous organic material which in the animal system goes to the manufacture or building up of muscle.

Q. Meat ?

A. Yes. It is the muscle or meat builder. It is necessary, for instance, for the pro-The casein of milk and the white of egg are formed from the protein duction of milk. in the food. There can be no growth without a certain amount, a due proportion of protein in the feed. In using the concentrated forms of feed we seek to strengthen the coarse fodders of the farm in their protein and fat content. The coarse fodders, as a rule, are poor in protein, and, as you may be aware, the animal, in order to lay on flesh or give milk or do work, must receive a certain proportion of protein. It is important for the farmer and dairyman to know in what form he can purchase protein the most cheaply. By mere inspection of these feeds it is quite impossible, in the large majority of instances, to say how valuable they may be from that standpoint. I have brought with me samples of the various feeds, the names of which appear upon the chart before you, and I will undertake to say that although many of you are well versed in cattlefeeding and in the examination of cattle food, it would be quite impossible for you to say what is the relative feeding value of a large number of these meals. It is nuite impossible for any one, no matter how experienced he is, to say what may be the feeding value of many of such products; to arrive at an opinion as to their correct value it is necessary to make an analysis.

The reason that I bring this matter before you is that for a number of years we have in Canada been making an official inspection and analysis of the plant foods upon our market, in other words, the commercial fertilizers sold in Canada are annually examined by the Department of Inland Revenue, and I think that the time has come now that we shall have to use, or ought to use, government official control with regard to our feeding stuffs. I do not mean by that to say that there is any widespread intentional fraud on the part of millers and manufacturers—any intention to obtain money for something that is not of any value from our farmers. It is very largely a case of ignorance. I think our farmers in this matter need the protection of the government.

Your attention is directed to this matter, since the number of these various products is increasing. In my opinion, there is no doubt as to the desirability of submitting them to an official annual examination.

By Mr. Ingram:

Q. You mentioned about the farmers selecting the richest and best classes of feed. May I ask you whether the table that you have before us will be included in the report of your remarks here to-day?

A. Yes, that will be included in my evidence.

By Mr. Ross (Ontario):

Q. I presume a good many of these millers and manufacturers that make these foods have chemists in their establishments?

A. Some of them may have, but the larger number have not.

Q. I should think the beet sugar people have a chemist?

A. They have, but they have not given any special attention to the analyses of their by-products. His duty is chiefly to ascertain the percentage of sugar in the beets in order to pay the growers the right amount.

By Mr. Wilson:

Q. Do you think they could fool the farmers with these feeding stuffs very much for any considerable length of time?

A. I don't think you can fool all the people all the time, but I think some of our people are fooled some of the time. I think these high-priced products should be sold under guaranteed analysis, especially as regards protein and fat.

Q. Now, if I may volunteer a statement, I think we are altogether too paternal. We are looking after those who can look after themselves better than we can; that is

my view.

A. I should like to bring some of these facts before you, and you will then see whether there is any necessity for the statement I have made. The first six feeds upon this list all come from the same manufacturer. I do not mention his name, because it is unnecessary for our purpose to-day. In the first column is the selling price per ton.

By Mr. Ross (Ontario):

Q. Is that the jobbers' price ?

A. No, the manufacturer's price. These are the prices at the mill; the price at which we purchased these foods.

By Mr. Wilson:

Q. They are the retail prices ?

A. Yes; that is, these are the prices at which he sold to us. We bought as an ordinary farmer direct from the manufacturer.

By Mr. Ross (Ontario):

Q. The farmer's retail price ?

A. Yes. There might be a reduction if the feeds were bought in car lots.

The point is this: This miller is not intentionally defrauding the farmer. He

considered that these prices are relatively just values for the feeds he is selling. I wish to show you, gentlemen, from the analyses we have obtained that these prices are not

in accord with their feeding value. They furnish a series that fully sustains my contention that there is some necessity for looking into the position of the foodstuffs.

By Mr. Ingram:

Q. It would be impossible for an ordinary farmer to get at the value of the different feeds ?

A. Yes.

By Mr. Wilson:

Q. He very soon learns by feeding it.

A. That would be at best an expensive and unsatisfactory method. We notice, first, pea chips; they are valued at \$25 a ton. They have got practically 28 per cent of protein and a little over 2 per cent of fat. These, as I have said, are the two most important constituents. The next product is called pea dust. Its price is \$3 a ton less than that of the pea chips. By our analysis it contains slightly more protein, and is richer in fat and still it sells at a lower price.

By Mr. Ross (Ontario):

Q. Because he gets it from the inside of the pea?

A. I cannot say, but from the farmer's or dairyman's standpoint the prices are not in accord with the nutritive values of the feeds.

By Mr. Ingram:

Q. Until a man had experience he would hardly believe he was getting a superior article at a reduced price; that is, between the \$25 and the \$22 feeds. He could not tell without an analysis; he would naturally think he was getting an inferior article

at the lower price.

A. The point is this, we have a bag of commercial fertilizer, nobody can tell from its appearance how much potash, &c., it contains. The farmer would not know by looking at it, it must be analysed. It is just as impossible, in many instances, to tell the relative feeding value of such materials as I show you to-day from an inspection. It is possible for certain pure products, such as bran and shorts and linseed meal, in many instances, to be fairly correctly valued from their appearance, but there are many milling and manufacturing by-products that could not be so valued. Now, let us look at this third food on the list, ground pea bran. This is being sold at \$14 per ton, and yet it contains 28½ per cent of protein and nearly 3 per cent of fat. It contains nearly 3 per cent more protein than the pea chips, and yet is sold \$11 per ton cheaper! This is undoubtedly the result of ignorance, but it serves very well to support my contention that these foods should be officially examined.

By Mr. Ross (Ontario) :

Q. But there is 8 per cent of fibre in that ?

A. That is true, but the pea dust at \$22 per ton contains 10 per cent fibre.

By Mr. Richardson:

Q. There may be two methods by which you might arrive at these values, the cost of production and the demand for the article.

A. Quite true, but the point is that for the farmer and dairyman the price should

be in accordance with the feeding qualities of the article.

Q. He has probably placed that price of \$14 as against \$25, because he has sold the best portion of the product from the raw material at a higher price?

A. Possibly so, but the price for the farmer should be in accordance with the feeding value of the article. Indeed the point is: Can we apply the same principles upon which the values of artificial manure are fixed to these foods? I believe we can, and their relative value within certain limits can be arrived at from the study of their composition. Let us now consider the 'barley feed.' There is another meal which is valued at \$14 per ton, the same price as the pea bran, but containing but one-half the protein, namely, 12 per cent. The purchaser is really buying that barley feed for protein, the flesh-forming material. He has plenty of hay, roots and ensilage possibly upon his farm, but he wants a meal ration in order to supply the lack of protein.

By Mr. Ross (Ontario):

Q. What is that 'carbohydrates?'

A. That is largely starch.

Q. Well, you see the high price feed is rich in starch, and some of the low price 1 noticed is also rich in starch?

A. Starch has very little value compared with protein. The farmer has a large percentage of carbohydrates in the corn stalks, roots and hay, and he buys 'meal' to supplement their content in protein and fat.

Again (pointing to the chart), we have here something which is called 'meal seeds.' It is really a mixture of the various weed seeds, &c., all ground up together, the waste of the mill. It has only 7 per cent of protein, really very little more than is to be found in Timothy hay. Now, if a farmer can buy barley feed with 12 per cent of protein for \$14 per ton, he can readily understand that the meal seeds containing only 7 per cent of protein are not worth \$12 per ton.

By Mr. Bell:

Q. What is the 'meal seeds?'

A. It is difficult to say, but I presume it is anything that is left from the screening of the grain, weed seeds principally, all ground up. We might discuss these various feeding stuffs in detail, but I think what I have said is quite sufficient to illustrate the point I desire to make.

By Mr. Kidd:

Q. In that barley feed, was it pure barley ground up ?

A. No, it was not pure barley ground up, it is really the offal from the making of 'Pearl Barley' for soups, together with small, broken grain. It is a very fair feed, but the point is this, that you could obtain something very much better for the same price, if you bought ground pea bran.

By Mr. Erb:

Q. I cannot understand how a farmer will be willing to pay \$25 for pea chips, because that would mean that peas were worth 75 cents a bushel, and you can get them at much less than that price?

A. Probably so, but that is what the 'pea chips' were selling for.

By Mr. Blain:

Q. Can you give us any idea of the increase in the consumption of the different kinds of concentrated foods?

A. No, we have no means of arriving at that. A great many of our letters contain inquiries as to the values of such and such a meal, and we frequently get letters

from the manufacturers themselves asking for analyses of their products, and the feeding value of such products, as compared with bran, etc.

By Mr. Ingram:

Q. Could not the consumption of the various kinds of feed be obtained from the manufacturers throughout the country?

A. It might, to some extent.

Q. Has any effort been made to get it ?
A. No, there has been no such effort made.

By Mr. Ross (Ontario):

Q. I know that it is largely increasing.

A. I believe it is very largely increasing. Further, the prices are going up; and as high prices prevail there are other materials come into use which were not formerly utilized, but which with the increasing price find a market. I certainly think it is imperative to look into this matter in the interests of the farmer.

Cotton seed meals.—This is a material which is very high in price, and you will notice that analysis has shown it to be variable. There are two grades instanced on the chart, the second is not nearly equal to the first in quality, though it is only \$5 per ton cheaper. Inferior cotton seed meal is frequently in the Canadian market. Cottoa seed meal is not used to any extent in Ontario, but in Nova Scotia and New Brunswick it is used very largely. It is brought in ships from Florida to Halifax or St. John and is used very extensively for cattle feed in the maritime provinces. We have, as you may see from the chart, a very poor brand put upon the market as well as the good one, and while a man with experience can judge to a very large extent as to their relative value, still it is quite impossible to say exactly what is the feeding value of these low grades. Let us for a moment consider these two samples that have been examined during the past year. The good meal contains 44 per cent of protein and 8 per cent of fat, the poor one, 25 per cent of protein and 5 per cent of fat. When I came to inquire with regard to the prices of these articles, I find there is only \$5 per ton difference. You know the tendency of many people is to buy the cheapest article, or what they consider is the cheapest article-although the cheapest is not always that at the lowest price. You will see from the result of the analyses that the meal at the low price is scarcely worth more than one-half, as regards protein and fat content, as much as the higher priced meal, yet there is only \$5 per ton difference.

By Mr. Blain:

Q. Do you not give the result of your examinations to the people selling these feeds?

A. Yes, and we do more than that. We put the result in the Farm reports. Every year a number of such analyses are included in our annual report.

Q. Has there been any change in the prices as the result of your examination by the manufacturer?

A. I cannot say as to that; our object has been chiefly to disseminate information

among the farmers on this subject.

We have, I believe, done a good work during the past four or five years in examining samples of these feedstuffs. No doubt, in many instances, where car lots were being bought, we have been instrumental in saving farmers a considerable amount of money. Especially has this been true in connection with gluten feeds—among which there is considerable variation in composition. We also have been enabled to point out the feeding value of many 'oat feeds,' 'oat dust,' etc., refuse from the oatmeal mills, some of which are of fair quality, but many of them very poor.

Q. Why should not the manufacturer selling these feeds in large quantities be required to put upon each package a tag stating the proportions of the constituents of

which the meal is formed ?

A. I believe that would be the right course. My opinion is, that we should have upon every bag of such feed that is sold a tag containing the percentages of protein and fat. This should apply to every feeding stuff sold over and above \$10 a ton. I think the manufacturers should be obliged to put on a tag on which is printed a guaranteed analysis.

By Mr. Henderson:

Q. Perhaps it would be like the binder twine tag, they would pay no attention to them.

A. Possibly so. Of course, if the farmers don't wish to avail themselves of the privileges extended to them through the system of experimental farms, that is not our fault. But I find that, as a rule, they are very thankful for such information as we can give them.

By Mr. Robinson (Elgin):

Q. Are the deductions you make the result of your own analysis ?

A. Yes, they are all from our analysis.

GLUTEN MEAL AND GLUTEN FEED.

Let us now consider gluten meal and gluten feed. There are a number of products from our corn starch factories, but these are the chief. We have factories at Cardinal, Brantford, Port Credit and Prescott, manufacturing starch from corn. A great deal of confusion has arisen from wrongly naming the various by-products which are there produced. At the first, all the gluten from the corn was kept separate and sold, after being dried, as 'gluten meal,' and in that material we had a feed which was extremely rich both in protein and fat. It was certainly one of our most valuable concentrated feeds, and for the price it sold at, \$25 to \$30 a ton, it was a very cheap source of protein. It compared very well with linseed meal. In fact, it was richer in fat than linseed meal, and in many instances contained four to six per cent more protein than linseed meal.

By Mr. Ross (Ontario) :

Q. And more wholesome

A. I should not like to say that; I do not think so. The manufacturers, however, began to find that they had difficulty in selling at what they considered remunerative prices their corn bran and other products, so they put all the by-products together and called the mixture gluten feed. Some even made the mixture without changing the name and sold it still as gluten meal. There is a vast difference in nutritive value between gluten meal properly so called and gluten feed. The pure gluten meal should contain 35 or 36 per cent of protein and from 8 to 11 per cent of fat. Now, when all the by-products are mixed together and dried the product is known as gluten feed, and, compared with gluten meal, contains 10 to 13 per cent less protein and very much less fat—probably not more than one-fourth of the percentage of fat. I have every reason to know that at the present time there is a great deal of confusion in these terms. Gluten feed is being sold under the name of gluten meal. It is to the interests of the manufacturer to keep up this confusion so long as he can sell gluten feed under the name of gluten meal. I am not at all sure but that all the gluten meal has disappeared off our market; I think it has entirely. The Edwardsburg firm used

to sell gluten meal, but they found it more profitable to mix their several by-products than to sell them separately. For the farmer and dairymen there was usually a better value in buying the higher priced pure gluten meal. These feeding stuffs are widely used in Ontario and Quebec.

By Mr. Henderson:

Q. For dairying purposes ?

A. Yes, gluten meal is an extremely valuable food for milch cows. I don't think at the present time it is possible to get a sample of pure gluten meal. During the past year it has apparently disappeared from our market, and the material sold now as gluten meal is merely gluten feed. It contains the bran and other parts of corn, which means, as I have shown you, a reduction of the protein and fat contents, and an increase in the fibre. Whereas they used to sell the gluten meal for \$25 a ton they are now selling gluten feed for \$22; obviously it pays very much better to sell the gluten feed at the slightly reduced price than to sell the gluten meal at \$25.

By Mr. Blain:

- Q. The quantity cannot be very large, as the number of starch factories is very small?
 - A. There are factories at Port Credit, Brantford and Cardinal.

By an hon. member:

Q. There is one at Prescott ?

A. Yes, I don't know what the output is, but still there is a considerable quantity and unless the attention of our people is drawn to this distinction between gluten meal and gluten feed, they may be paying for the gluten meal when they are only getting gluten feed. Pure gluten contains 36 per cent of protein, and the gluten feed contains only 23 per cent, which means a considerable difference in feeding quality.

By Mr. Ross (Ontario):

Q. Did you say these carbohydrates are starch?

A. Yes, principally.

Q. Why doesn't the manufacturer get a chemist to take it out ?

A. Undoubtedly, they have taken out all they can extract economically.

MOLASSES AND PULP FEEDS.

Now I will refer to these products from the best sugar factories. The samples I have here came from the Dresden factory. The first one is simply the exhausted beet pulp dried. It has not been put upon the market generally, because it was considered that it would be more advantageous to mix it with another by-product of beet sugar, the waste molasses. The molasses from beet sugar factories in Europe is very largely used in the preparation of cattle foods. The fresh, exhausted beet pulp is scarcely saleable; it has such a low feeding value. A certain amount of it can be given away locally; frequently, it cannot be given away. When the two by-products are dried together, the beet pulp and the molasses, a very palatable and useful food is produced.

By Mr. Ingram:

Q. You say beet pulp cannot be given away; what is the stuff the factories have in their yards which the farmers are taking away?

2-12

A. Perhaps I should not have made such a sweeping statement, yet I know that at several of the factories the amount which they can give away is extremely limited. The farmers will not haul it any great distance; it contains about 95 per cent water.

Q. The distribution of this pulp is, I suppose, limited to a certain area?

A. Exactly. It is 95 per cent water, and the 5 per cent dry matter is not very nutritious. It is very low in feeding value, and even when dried, it would not pay to ship at any great distance. With the fresh pulp, as a matter of fact, they frequently have a great deal of difficulty in disposing of it.

By Mr. Kidd:

Q. It is a bulky, heavy thing to handle?

A. Yes. By the use of specially constructed machinery this beet pulp is dried; it is then in the form of chips. Soaked in water, it again assumes a succulent condition. It is not a rich food—it is too low in protein—but it would be useful if roots or ensilage were scarce. The molasses cattle food is made by allowing the molasses to trickle upon the pulp as it passes to the driers. This furnishes the feed with sugar. So that really the difference between beet pulp and what they term the Improved Molasses Cattle Feed is due to the presence of sugar in the latter. The protein remains very much the same in both. In molasses cattle feed there is about 13 per cent of sugar. That is to say, about 260 pounds of sugar to the ton. Sugar, of course, is a valuable nutrient. We have examined a number of samples of this feed lately and find that it is not constant in composition—the percentage of sugar varies very considerably. As there is not sufficient time this morning to further discuss this matter, I shall ask permission to include in my evidence a short report I have recently written on this feed. It will involve the repetition of several statements I have already made, but it will serve to bring together in the most concise form the most important points in connection with this feed.

IMPROVED MOLASSES CATTLE FOOD.

This newly introduced feeding stuff is made by the Dresden Sugar Company, Limited, Dresden, Ontario, and constitutes what might be termed a by-product in the manufacture of sugar from the sugar beet. It is prepared from two residues in the process—the exhausted beet pulp and the waste molasses. These, by the aid of heat and suitable machinery, are dried and mixed, so that a dry, palatable fodder results.

As placed upon the market, it has the appearance of dry pulp chips or flakes, quite loose and without any of that stickiness generally noticeable in feeding stuffs containing molasses. We have analysed in all, during the past two months, five samples of this feed, and find that in certain particulars, e.g., sugar-content, it is not characterized by uniformity of composition. This we believe to be due largely to the difficulty in keeping the proportion of molasses to the pulp constant during the drying and mixing, and it is quite possible that improvement in the process of manufacture may in the future overcome this drawback. The data of a sample taken after thoroughly mixing 20 bags (2,000 lbs.), and which we may consider, therefore, as fairly representative of the food, are as follows:—

Analysis.	
Moisture	4.36
Crude protein	8.58
Fat (ether extract)	'74
Carbohydrates	64.61
Fibre	16.36
Ash	5.65
	100.00

Aqueous extract dried at 212° F	22.17
Ash in aqueous extract	1.31
Cane sugar	13.51
Glucose (reducing sugar)	2.05
Non-albuminoid nitrogenous substance	84
Albuminoids	7 44

The element of chief value is undoubtedly the sugar, which in the animal economy acts as a source of energy and heat, and also contributes largely towards the formation of fat. Its ready solubility and the ease and rapidity with which it is digested and assimilated, place sugar before all other carbohydrates (starch gums, &c.) for these purposes. Apart from their direct food value, the use of the molasses feeds appears to act beneficially in increasing the appetite, stimulating the digestion

and keeping the animal in a thrifty condition.

As regards the flesh-forming constituents (protein) this feed, in common with all molasses feeds, is not sufficiently rich to supply all the animal's needs in milk or flesh production. It can, therefore, only be employed economically as a part of the ration and when used in conjunction with such feeds as possess a comparatively high protein content. The exact position of such sugar foods in the classification of feeding stuffs cannot as yet be given. It will probably be found that these foods constitute a class by themselves and are not strictly comparable either, on the one hand, with coarse fodders (roughage) chiefly by reason of their high sugar content, or on the other hand, with the concentrated milling products, principally by reason of their low protein content. Their comparative feeding value will undoubtedly depend largely on the foods associated with them in the ration and the proportions in which they are employed. This we know, however, that such foods as the one under discussion must be practically entirely digestible, that though dry in the form as sold they readily become succulent, and hence are of particular value when roots and ensilage are scarce, that they are palatable and wholesome, and that their sugar constitutes an element possessing a very important function in the maintenance and fattening of the animals.

By Mr. Ross (Ontario):

Q. Is that a fair price for that feed, \$14 per ton ?

A. It is probably a little high. We do not know as yet the exact feeding value of sugar, but we know that it performs very valuable functions in the animal. We have generally regarded sugar as too expensive for cattle feed. There is undoubtedly a field for these sugar feeds, but their value will depend largely upon how the rest of the ration is made up. They must be fed in conjunction with foods richer in protein, if they are to be used profitably.

Q. They have taken the best part of the sugar out of it.

A. The sugar that is left behind in the molasses is as valuable as that taken out and crystallized. It has the same feeding value. There is but a very small proportion left in the pulp.

By Mr. Erb:

Q. When you prepare that table for publication in the report can you have added to it similar analyses of wheat, bran, shorts, pease, oats and barley for comparison?

A. Yes, I will do so.

TABLE SHOWING THE AVERAGE COMPOSITION OF THE USUAL FEEDING STUFFS.

Feeding stuffs.	Moisture.	Protein.	Fat.	Carbo- hydrates.	Fibre.	Ash.
Wheat	10.2	11.9	2.1	71.9	1.8	1.8
Bran	11.9	15.4	4.0	53.9	9.0	5.8
Middlings	12.1	15.6	4.0	60.4	4.6	3:
Shorts	11.8	14.9	4.5	56.8	7.4	4.
Barley	10.9	12.4	1.8	69.8	2.7	2.
Brewer's grains, wet	75.7	5.4	1.6	12.5	3.8	1.0
Oats	11.0	11.8	5.0	59.7	9.5	3.
Oatmeal	1.9	14.7	7.1	67.4	.9 .	2.
Oat feed	7.7	16.0	7.1	59.4	6.1	3.
Oat dust	6.5	13.5	4.8	50.2	18.2	6.
Oat hulls	7.3	3.3	1.0	52.1	29.7	6.
Buckwheat	12.6	10.0	2.2	64.5	8.7	2.
Buckwheat bran	10.5	12 4	3.3	38.8	31.9	3.
Buckwheat hulls	13.2	4.6	1.1	35.3	43.5	2.
Flax seed	9.2	22.6	33.7	23.2	7.1	4.
Linseed meal (old proc.)		32.9	7.9	35.4	8.9	5.
Linseed meal (new proc.)	10.1	32.2	3.0	38.4	9.5	5
Cotton seed meal	8.2	42.3	13.1	23.6	5.6	7.
Pea meal	11.5	21.2	1.4	55.8	6.9	2.
Bean meal	11.8	23.1	2.2	54.2	5.5	3.

Q. What prices could you assign to each percentage of protein or fat ?

A. We could scarcely assign any monetary value at present. There are several phases of the subject that would first have to be considered, as for instance, the relative digestibility of the protein in the various foods. Again, some feed, such as bran, would have to be considered as a standard and the other feeds regulated as to price from its price. Possibly with us in Ontario and Quebec, digestible protein and fat are worth from 2½ to 3 times as much as the carbohydrates.

Q. What is 'herbageum'?

A. It is stated to be a tonic, sometimes it is called a condiment. It consists largely of linseed and wheat bran, or some wheat refuse.

Q. With some sugar in it, I suppose ?

A. Sugar, salt, fenugreek and charcoal are all present.

By Mr. Ross (Ontario):

Q. Are all those included in it ?

A. Yes, it contains all those ingredients I have mentioned. Although it possesses a nutrient value, such value is not greater than that of linseed. The price asked—at the rate of \$240 per ton, precludes its consideration as a feeding stuff. I suppose this value is placed upon it by reason of its alleged medicinal value, but all its constituents are of a very cheap character. It may be useful at times, but my opinion is that viewed either as a food or medicine or both, it is altogether too dear.

Having examined the preceding transcript of my evidence, I find it correct.

FRANK T. SHUTT, Chemist, Dominion Experimental Farms.

FRUITS, VEGETABLES AND TREE CULTURE

House of Commons, COMMITTEE ROOM 34, April 7, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, Chairman, presiding.

The CHAIRMAN.—I may state that we have succeeded in securing the promise of the attendance of Prof. McLennan, from Toronto University, to explain the metrical system. I think it will be of much interest to the committee, and we expect him on Tuesday, and with your approval we will make that arrangement.

Proposal agreed to.

Mr. W. T. Macoun, the Horticulturist at the Experimental Farm, is with us this morning, and he will address the committee.

Mr. Macoun.—Mr. Chairman and Gentlemen, it gives me a great deal of pleasure to come before you each year and tell you something of the work we are trying to do in the horticultural department at the Experimental Farm, because I think we are doing work there that is useful to the fruit-growers of Canada, and we hope to do more, and I trust that the members of this committee will suggest new lines of work for us to carry on, and by knowing what we are doing out there it is quite possible for you to make suggestions of work which we can do which will be of use to the fruit-growers of this country.

SEVERITY OF THE WINTER OF 1903-4.

To give you some idea of the value of the experimental work in fruit-growing, I may say that this past winter, which has been the severest in the history of the farm, will be a very disastrous one to the fruit growers of a large part of the province of Ontario and probably the province of Quebec. There has not been a severer winter within the memory of the oldest inhabitant, as the old saying is, and it is going to give all kinds of fruit a very thorough test. At the Experimental Farm we have very large collections of fruits of all kinds that will succeed in the Ottawa valley, a very large collection of apples, a large collection of plums, a large collection of grapes and small fruits and so on, and we shall be in a position to say after this winter just what kinds will stand winters of this sort. We may have a winter like this next year; we may not have a similar one for ten years; but the fruit grower who is going to plant an apple orchard, for instance, in a climate like that of Ottawa should know what trees will be likely to stand such a winter even though there may not be another like it for twenty or thirty years. Because if his trees have been planted 15 or 20 years or more and are in full bearing, and there is a winter like the one we have just passed through, his losses are going to be very much greater than if his trees are only three or four years old. So I think the value of the horticultural work at the Experimental Farm is going to be proved more conclusively by the past winter than at any previous

time, because I believe there will be thousands of trees of the different kinds of fruit killed by the severity of the weather not only in the eastern but also in the western part of Ontario, and any variety that has stood the past winter will be likely to stand any winter we shall have in the next fifty years.

By Mr. Stephens:

Q. Do you say the trees will be killed ?

A. The trees will be killed outright, yes. On the Experimental Farm we have varieties of apples which have been killed back in their growth which have never been killed before, some of them back to the trunk of the tree, and I am sure there will be other kinds which will be killed outright. I have had reports from western Ontario in which they say that apple trees, even in the south-western peninsula, will be killed outright.

Q. Whereabouts?
A. There is a report from Leamington in which it is said that Ben Davis' trees were killed.

By Mr. Robinson (Elgin):

Q. In the extreme south?

A. The report was from Mr. W. W. Hilborn, of Leamington.

By Mr. Ross (Ontario):

Q. Is that due to the long and severe winter?

A. The long, dry, cold weather.

Q. We have not had any extreme frost this winter, but a lot of it ?

A. A lot of dry, cold weather. We find at the Experimental Farm from the experience of the past winters that a long continued spell of dry, cold weather is what proves most injurious to the trees—that is to the tops of the trees. Of course, the root killing occurs when there is no snow and very severe freezing. But we had lots of snow this winter here, and the killing is in the body and top of the tree, showing it is done by the severe cold. Now what I say is this, that, owing to this winter being of such a character, we shall be able to tell with certainty the kinds of fruits which it will be safe to plant, looking forward to frosts in this country which may not occur again for 15 or 20, or even 50 years. I got a few figures from the Meteorological Department of the farm to give you some idea of the weather we had here last winter. There were 58 days in which the temperature was below zero. There were 14 days on which the temperature was below 20° below zero. In December there were four days when it was below 20. In January there were 7 days, and in February there were 3 days.

By Mr. Ross (Ortario):

Q. What was the extreme point?

A. The extreme was £0.2° below zero.

Q. When was that?

A. On January 5, it was 28° below zero, on February 2, 27° below zero, on January 19, 26'5°, on January 2, 26'5°, on February 9. We had even one degree below zero in November. You can readily see that it has been a very severe winter, and although it was not as severe in the western part of Ontario, still the long continued cold weather will be, I am very sure, very disastrous to fruit trees.

By Mr. Henderson:

Q. Were those temperatures taken in Ottawa?

A. They were taken at the experimental farm.

PRINCIPAL EXPERIMENTS CONDUCTED BY THE HORTICULTURIST.

I should like, before taking up the special subject which I am to speak on this morning, to read over a list of some of the principal experiments being carried on in the fruit department of the experimental farm, so that you may know what we are trying to do, and you will be in a position to know what to suggest for any future work.

EXPERIMENTS WITH FRUITS.

1. The testing of varieties to determine hardiness, productiveness and quality of the fruit. (2) The testing of seedling varieties sent in by fruit growers, and also seedlings raised from the best varieties which have fruited at Ottawa, in order to obtain better kinds. (3) The cross-breeding of apples, especially for the purpose of obtaining a late keeping apple of good quality. I might say that in eastern Ontario and in the province of Quebec we have not yet got a good list of late keeping apples of the best quality, and that is one of the things we are trying for. (4) The top grafting of the tenderer varieties on hardy stock to determine which varieties will succeed in that way which will not when grown as standard trees. (5) The study of the individuality of fruit or experiments conducted to determine if individual trees of a variety vary in productiveness. We have found, after six year's work that there is a great deal of difference in the individual trees of a variety. (6) The thinning of fruits on the trees. (7) Root grafting varieties on different kinds of stocks. Experience has shown that the ordinary stocks are not always well suited to this district. (8) Experiments in close planting to determine if apples can be grown profitably in this way. (9) Investigations in diseases of fruits. (10) Experiments in spraying with different mixtures and solutions for the prevention of fungous diseases. (11) Different methods of orchard culture. (12) Experiments with different cover crops for orchards. (13) Experimental shipments of fruit. (14) Identification of varieties sent in for name. We have, since the passage of the Fruit Marks Act, had a great many more apples sent in for identification, because, as you know, every man now has to mark on his package the name of the variety that is in the package, and we find more apples sent in for name now than we had in the past, and on account of the very large collection we have made for experimental purposes it has been possible to give much satisfaction to fruit growers who have sent in fruits.

By Mr. Robinson (Elgin):

Q. Have you found any difficulty in naming any of them ?

A. Sometimes we have, but not often. Of course, if the variety is a very old one there may be difficulty. In some cases, there have been varieties introduced from England perhaps 50 years ago, and these kinds of course are not in commerce here now and it is sometimes difficult to name them, but as a rule we have been able to name the kinds sent in. Those are the principal experiments we are carrying on with fruits, although there are others.

EXPERIMENTS WITH VEGETABLES.

Then we are testing the varieties of vegetables to determine the productiveness, season of maturity, quality, etc. In the second place, planting at different dates to determine the most suitable time; planting at different depths; planting at different distances apart. An experiment was also conducted during the past year in the shading of vegetables to find out what effect shading would have, and some very interesting results were obtained from this work.

EXPERIMENTS WITH FOREST TREES.

Then the forestry branch of the farm comes under the horticultural department. Here are being tested the principal kinds of timber trees to determine how they will succeed. (1) By planting trees at different distances apart. (2) By planting trees in clumps by themselves, and mixed with other species for comparison of growth. (3) Close planting of trees and the use of undergrowth to prevent growth of weeds and encourage the growth of trees. (4) In recording the annual growth of the different species in height and in diameter. (5) Comparing the growth of different species when planted on different kinds of soils.

ARBORETUM AND BOTANIC GARDEN.

I have also to deal with the arboretum and botanic garden, which comprises 65 acres where we have a very large collection of trees, shrubs and plants, comprising about 3,000 species and varieties of trees and shrubs, and about 1,700 kinds of herbaceous plants. This is a very interesting part of the farm, and one which will be of great value in the future when more study is given to trees, shrubs and plants than there is at present. This work in itself would furnish enough employment really for one man if he were to make a thorough study of the different species and varieties, but it is not possible at present to give this branch of the work all the attention it deserves, but there is being got together there a very fine collection of plants properly labelled so that some time we shall have at the farm a botanic garden which will be a credit to the Dominion of Canada. As it is, I think we have now one of the best botanic gardens in America. In addition to the duties already described, there is the attending of meetings, the correspondence, and the writing of the annual report and the publication of bulletins. That covers pretty well the work in my department, and while some of these things cannot be looked after as well as others, because they are not of as much importance, each branch of work receives more or less of my attention. If any gentleman would like to ask questions regarding these different experiments or lines of work before I go into details, I should be very glad to answer them.

By Mr. Robinson (Elgin):

Q. In grafting, you graft different scions, do you ?

A. We have now on the Experimental Farm about 90 varieties of apples, top grafted on hardy stock, to find out the kinds which will be a success here, which are not a success when grown in the ordinary way on ordinary trunks. We find that some kind of apples, like the Northern Spy, for instance, will go in the trunk—the trunk becomes diseased—but if that is top grafted on hardy stocks we can grow that apple quite satisfactorily.

Q. Give us your system of grafting, so that the farmers in the country will learn

from it how to graft?

A. Yes; but I might say that is explained fully in the bulletin on apple culture which was distributed very freely.

Q. It was ?

A. Yes; and I can answer the question in this report if necessary. I can make a selection from that report and put it in.

TOP-GRAFTING.

Where there are trees which produce poor or unprofitable fruit they may be made to bear good fruit by top-grafting other varieties upon them. If it is desired to grow a good variety which, when grown in the ordinary way, proves a failure on account

of root-killing or sun-scalding, it is possible to grow it successfully by top-grafting. Varieties which ordinarily take a long time to come into bearing will fruit much sooner when top-grafted. These are some of the most important results which may be obtained by this method.

Up to the present time in Canada top-grafting has usually been done on old or bearing trees which produced poor fruit, and as very satisfactory results have been

obtained this practice will continue to be popular.

The work is done in the spring before growth begins, but it is possible to graft successfully even when the trees are coming into leaf, provided the scion is quite dormant, but the chances of success are much lessened if it is done late. As the shock to a large tree would be very great if all or nearly all the branches on which the leaves develop were cut off the first season, from three to four years should be devoted to removing the top of the tree. If, however, a large number of scions are inserted, the top may be changed in less time, but as a rule it is not wise to do it in less than three years. Furthermore, a too severe pruning at one time will cause a large number of shoots to grow on the tree, and considerable labour will be involved in removing them if many trees are grafted. Cleft grafting is usually adopted in top-working trees, it being a

simple and satisfactory method.

Scions may be cut at any time after the wood is well ripened in the autumn before the buds begin to swell in the spring. The best time, if a large amount of grafting is to be done is in the autumn, but they may be cut just before using if they are still in a dormant condition, and very good results are often obtained; in fact, sometimes better than from scions badly kept. If the scions are cut in cold weather one cannot tell very well whether the young wood has been injured or not. Scions should be cut from healthy, bearing trees. The wood of old trees is liable to be diseased, and if diseased wood is used it is likely to produce a diseased tree when grafted. Scions should also be cut from the most productive trees. Occasionally one or more trees of a variety will produce more and heavier crops than others. If scions are taken from these trees, the probability is that a large proportion of the grafted trees will produce crops like the trees from which the scions were taken than they otherwise would. The scions should be cut from the wood of the current season's growth, as older wood is not satisfactory. The buds should be well developed and the wood thoroughly ripened. It is not wise to use the water sprouts or young shoots which spring from the main branches or trunk for this purpose. They may not be thoroughly ripened, and there is also a possibility that sprouting propensities may be thus more developed in the grafted trees. Scions may be kept through the winter in good condition in moss, sawdust, sand or forest leaves. The last named are found very satisfactory at Ottawa. These materials should be slightly moist but not wet, the object being to keep the scions fresh and plump without danger of rotting. They should be kept in a cool cellar that is not too dry, and should remain dormant until ready for use.

The branches to be grafted should not exceed an inch and a half or two inches in diameter. If they are larger it is so long before the stub heals over that disease may set in. It is possible, however, to graft larger branches by putting in more scions. The top-grafting of a large tree should be done with a view to having the new top as symmetrical as possible, and great care should be taken in selecting the branches to be grafted upon. After the branch is sawn off it is cleft by means of a mallet and strong knife to the depth of an inch and a half to two inches. It is held open to receive the scion by driving a wedge in it. Scions for use in top-grafting are cut from dormant wood which has been kept in good condition in the manner already described. They should have about three strong buds and be cut wedge shape at the base, one side, however, being a little thicker than the other. Two scions are now inserted in the cleft of the stub with the wide side of the wedge on the outside, and thrust down until the lowest bud is almost on a line with the edge of the stub. The inner bark of both scion and stub should meet at some point, so that the union will take place readily, and this is more easily effected if the scion is given a slightly outward slope when inserted.

When the wedge has been withdrawn from the cleft the advantage of having the wedge-shaped end of the scion thicker on one side will be apparent, as it will be held much more tightly than if both sides were the same. If the scion is not a tight fit all along, there is something wrong in the way it has been cut or the stub has been cleft. The cut parts should now be covered with grafting wax to exclude the air and hold the scion in place. Cotton is also sometimes wrapped around the wax in order to more effectively hold the scion in place. If both of the scions grafted on a stub should grow, the weaker one should be removed after the other is well united and the surface of the stub at least partially healed over.

It is often desirable to top-graft young trees, and this may be done very readily. The main branches are cut back to within a short distance of the trunk, and the scions grafted on, either by cleft or whip grafting. The closer the grafted part is to the trunk, the better, as the tree will be stronger than if the union occurred further out on the limb, since the growth of graft and scion may not be equal. It is possible to cut off the whole top of the tree and graft successfully on the main trunk, when the tree is young, but unless one is sure that the union will be perfect and the top not outgrow the stock, it is better not to run the risk of losing the tree. Furthermore, if the whole top is cut off there will be such a growth the first season that the scions are liable to get broken off. In top-grafting a young tree that has been planted from three to five years, it is better to take two seasons to do the work, as the results will be, as a rule, more satisfactory.

It is necessary to examine the grafted trees during the summer and remove any young shoots from the stocks which are interfering with the scions. It is not wise, however, especially when the tree has been cut back severely for grafting, to remove all the shoots until the grafts have grown considerably and furnish a good leaf surface. McMahon White, Haas, and Hibernal make good stocks where the winters are very severe, and Tolman Sweet a good one elsewhere.

GRAFTING WAX.

There are many kinds of grafting wax recommended, but it is unnecessary to enumerate them all. One of the cheapest and best is that recommended in the Horticulturist's Rule-book, under the name of 'Reliable Wax,' the receipt of which is as follows: 'Reliable Wax': resin, 4 parts, by weight; beeswax, 2 parts; tallow, 1 part. Melt together and pour into a pail of cold water. Then grease the hands and pull the wax until it is nearly white. One of the best waxes for either indoor or outdoor use.' This should be heated before using if too hard.

The principal value of grafting wax is to exclude air from the wound, and thus prevent the wood from drying before a union takes place. A good grafting wax should not crack when on the tree, else the air will reach the wound and the wax prove of little value. Many materials may be used instead of grafting wax for this purpose, one of the simplest being a mixture of clay and cow dung, but grafting wax is much to be preferred. Strips of cotton are often used, especially in top-grafting and crowngrafting, for wrapping around the wound after the wax has been applied for the purpose of helping to exclude the air, and also to assist in holding the scion in position until the union takes place. This cotton is unnecessary if good grafting wax is used; but if a very valuable variety is grafted it is safer to use the cotton, as when the growth of the scion is rapid there is a chance of its getting broken off during the first season before it is thoroughly united with the stock. Large wounds on trees should be covered with some material that will protect the cut surface from the weather, prevent disease from setting in, and which will not peel off easily. A good dressing of lead paint is probably the best material to use for this purpose. Grafting wax may be used on smaller branches.

By Mr. Wilson:

Q. Does it change the flavour of the apple grafting with other kinds?

A. No, sir, it does not change the flavour of the apple at all, nor the size to any extent. The only marked change that the grafting makes is in the early fruiting of the variety and in the hardiness of it. For instance, if you top graft the Northern Spy on another kind of stock, it will bear much sooner than when grown in the ordinary way. It will begin to bear in six or seven years, whereas, if grown ordinarily it will be ten, or twelve, or fifteen years before it bears good crops of fruit.

By Mr. Smith (Wentworth):

Q. I suppose that would depend upon the kind of stock it is grafted on?

A. To a certain extent. Supposing your stock is dwarfed, the grafted variety will bear sooner than if the stocked is a strong grower.

Q. Would it depend upon the early bearing qualities of the stock ?

A. I do not think so. I have not had any indication that it would, but usually the slow growing trees are the earliest bearers and hence in reality it does in some cases.

By Mr. Wright:

Q. What do you graft your Northern Spy on to?

A. We graft it on the McMahon White, the Haas and some Russian varieties. We have it grafted on the Duchess, but that has proved very unsatisfactory stock, because the Duchess is a very slow grower and the Northern Spy is a very rapid grower, and the result is that in a short time it becomes top heavy and breaks off, although it fruits comparatively early on this stock.

By Mr. Smith (Wentworth):

Q. What do you mean by dwarfing stock ?

A. Stock like the Duchess, slow growing stock. I said that if you top-grafted it on slow growing stock like the Duchess you would dwarf it to some extent, and it does certainly dwarf some because there is not so much sap goes through the Duchess, but if you graft it on the Haas it grows nearly as rapidly as the Northern Spy.

Q. If you graft it on the Haas, does it produce as early ?

A. Probably nearly as early, although of this I have not present proof.

Q. Then you cannot attribute that early bearing to the dwarfing ?

A. Not altogether, but to a certain extent. I consider one cause of the early bearing of top-grafted trees is that where the union takes place between the two kinds there is not a free passage of sap the same as there would be in the ordinary tree, and the more the sap is checked at that union, the sooner the tree will come into bearing.

By Mr. Wright:

Q. Have you examined your apple trees this year ?

A. Yes, they are killed back, some of them this year.

By an Hon. Member:

Q. How long have you been grafting the Northern Spy?

A. We grafted the Northern Spy in 1893. It began to bear, I think, in 1898, and we had a barrel on one tree in 1903. We have not had many trees fruit yet. That would be ten years after the grafting.

By Mr. Ross (Ontario):

Q. What results had you in the thinning of fruit trees ?

A. It is not profitable in the case of apples, the expense is too great, but in the case of plums it is sometimes profitable to do so.

Q. Is it not necessary to do so in the case of plums ?

A. It depends a good deal upon the labour. It certainly pays if you can get labour at the proper time, and can get skilled labour to do it.

Q. Would you get superior fruits ?

A. Oh, yes, the fruit is much increased in size.

Q. Any better quality?

A. Yes, it is better in quality, and the fruit is larger and better developed.

By Mr. Smith (Wentworth):

Q. I judge you attribute the early bearing of the Spy largely to the fact of its being top-grafted.

A. That is why I think all top-grafted fruits bear earlier.

By Mr. Wright:

Q. Is it not a fact that all top-grafted trees do ?

A. Oh, yes, they all do.

Q. My experience is I can get them to bear three years earlier, some of them ?

A. Certainly.

By Mr. Smith (Wentworth):

Q. I suppose you could impede the flow of sap in some artificial way, such as

wrapping wire around it?

A. Yes, we had a very good demonstration last year in a McIntosh Red tree. The label by which the tree is named cut into the wood without our seeing it, and one branch was injured in this way, and that branch of the tree bore heavily last year, and the rest of the tree had no fruit at all. That was the first year the tree had borne at all; showing that by checking the growth in that one limb, earlier fruitfulness was brought about.

Q. Could we not possibly bring orchards into bearing earlier that way ?

A. It might be possible if means could be devised whereby the tree would not be injured?

By Mr. Ross (Ontario):

Q. Can you not check the growth without killing the tree ?

A. Oh, yes, but there is always danger if you break the bark of getting disease into the tree?

Q. What kind of disease ?

A. Rot.

By Mr. Erb:

Q. What size would you suggest for top-grafting ?

A. A tree which has been set four or five years, or even three years. You can get a better top. I have a few photographs I should like to show you on that subject. Here is a tree (producing photograph) which has had the entire top renewed by top grafting. That tree was set about five years.

By an Hon. Member:

Q. Do you call that a nice shaped apple tree?
A. Not as nice as one would wish to have it.

By Mr. Erb:

Q. If a tree had been set five years and then top-grafted and bears fruit five years after, which would be ten years from setting, a tree which bore ten years after setting would be in the same position as if it were top-grafted.

A. Yes, that is about right. Scions top grafted on a young tree will not bear as soon as when grafted on an older tree, because there is more vigour in the young tree. If you top graft on an older tree you have not such growth in the stock, not as much vigour.

By Mr. Wilson:

Q. If the tree has got its full growth almost, and is then top-grafted, would it not

mature much quicker?

- A. If you take an old tree it is not always possible to get a good top on it unless you cut into the very large branches, and that is very often a serious operation. If you have to cut away branches that are two or three or more inches in diameter, the next year the tree is liable to get diseased. Of course there are a great many trees that are renewed that way, but the ideal system is by planting out hardy stocks and then by top-grafting on them four or five years after planting, because in that way one can form the top of the tree to suit oneself, providing you get good stock to begin with
- Q. If you had a good hardy orchard of middle aged trees could you not get better results?
- A. Oh, yes, if you have an orchard of medium sized trees of poor quality and want to get better ones, certainly I would top-graft them right away, because you can get splendid results in that way.

Q. They do about as well to top-graft?

A. Just about as well, except that the advantage of grafting when the tree is young is that you can form your own top on the tree.

By an hon. Member:

Q. You did not succeed very well in this photograph.

A. That is not a bad top, except that there should be a central leader. But I might say the tree it was top-grafted on was not a proper shape to begin with, and it is very difficult to get a good shape in top-grafting unless you have a good nursery tree to begin with.

By Mr. Robinson (Elgin):

Q. What sized branch do you prefer to put your scions into?

A. A branch about an inch in diameter. You can put them in a very small sized branch.

Q. Would you put it in one of two or three inches diameter?

A. Yes, if absolutely necessary, but the smaller branches are the best.

By Mr. Erb:

Q. Have you tried grafting on Tolman Sweet?

A. We have not at Ottawa, it is not hardy enough, but it has given excellent results in some parts of Ontario. It is one of the best trees for top-grafting on.

By Mr. Ross (Ontario):

- Q. In pruning trees, would you cut back the limb, that is, cut them back at the ends?
- A. In pruning them, yes. I should prefer, if possible, to prune from the outside of the tree rather than from the inside, because the great object is to get as big a crop as you can on the tree without its covering too much ground.
 - Q. Near the stem?
 - A. Yes.
 - Q. Well then, it does not injure the trees to cut them back?
- A. No, provided it is not cut too much. The great difficulty if trees have not been pruned for a number of years, is one has to take off such large limbs that large wounds are left, and here where we are just on the limit of hardiness of a great many kinds, it would mean that disease would set in. It does not matter so much in western Ontario.

By Mr. Wilson:

- Q. Have you had much trouble with fruit in this section on account of being too tender for the season?
- A. Yes. In the case of certain kinds. For instance we cannot grow the Baldwin or the Northern Spy or the Greening, or any of these kinds in the ordinary way.
 - Q. Where can you grow them in Ontario? What is the best part?
- A. West of Kingston or Belleville, and from there west within twenty-five or thirty miles of the St. Lawrence river, and then the belt widens very much as one goes west.
 - Q. I think we can grow them easily in Lennox.
- A. Between Brockville and Prescott they cannot grow the Northern Spy, the Greening and the Baldwin with any safety at all, but from Kingston west, it is perfectly safe.
 - Q. Are the trees winter killed?
 - A. They are winter killed, yes.

By Mr. Armstrong:

- Q. Have you any reports as to the country south of Lake Huron with regard to winter-killing this year?
 - A. No, just from Essex, from Leamington.
 - Q. You get no reports?
- A. Occasionally I do, but I have no regular correspondents there except some from whom I hear occasionally.

By Mr. Ingram:

- Q. Would your experiments here apply to the western district?
- A. Not always. In regard to small fruits they do pretty well.
- Q. Then they would be of no service to the west at all?
- A. Not in all respects. The same general principles, however, hold good. With regard to varieties and hardiness of course our results here are not of much value in the west.

By Mr. Wright:

Q. When you have half-a-dozen kinds top-grafted on one tree and you want to ep track of them, what method do you adopt?

A. We had a long strip of zinc, about an inch in width, write that name on it, and twine it around one of the limbs of the tree. That expands as the tree grows. We also keep a record as to the direction the varieties are, whether north-west or north, and so on.

By Mr. Robinson (Elgin):

- Q. Is it not better to grow one kind of apple on each tree; you do not want half a dozen.
- A. Certainly, it is, but if you have only one or two trees in your garden, as I presume this gentleman refers to, it is very interesting to have a number of kinds.

By Mr. Stephens :

- Q. Can any ordinary young farmer graft ?
- A. Yes, it is a very simple operation.

By Mr. Ingram:

- Q. Do you know whether the Ontario Government have conducted experiments ?
- A. They have conducted some at Guelph.
- Q. On the same lines that you experiment on ?
- A. Not in all lines, but they have in some. There is an experimental station in the Niagara district, for instance.
 - Q. Would you suggest that a station be established in that district?
- A. I certainly think it would be a very valuable acquisition. I may say that there are a number of experimental stations controlled by the Ontario government in south western Ontario. There is one at Leamington, and one at Winona and Grimsby, and one at Burlington, but I do not know just the extent of the work they do at those stations. Mr. Smith is in a better position to state that.

By Mr. Erb :

Q. I think the Ontario Experimental Union is conducting experiments in different parts of Ontario?

A. Yes.

By Mr. Smith (Wentworth):

- Q. Speaking about that stock on which you graft the Northern Spy, that is a very important question, and the varieties you refer to are chiefly varieties not grown to any extent; consequently when the grower asks for 100 or 500 trees on which to graft Spys he cannot get them. Cannot you tell us some variety more largely grown which would serve the purpose?
 - A. I would suggest Tolman Sweet.
 - Q. What about the Pewaukee?
- A. It is all right; I know no objection to it. The Tolman Sweet is very satisfactory.

By Mr. Wright:

- Q. The object of grafting Spys is to graft on stock that will grow in northern sections?
 - A. Yes.
 - Q. If Tolman Sweet will not grow it is no use grafting on them ?
- A. No, but in some sections it does succeed where the Northern Spy does not, except when top grafted.

By Mr. Smith (Wentworth):

Q. Some of the kinds are not largely grown, and if a man wanted to get 500 trees on which to graft he could not get them?

A. The difficulty is there are few hardy trees which are large, vigorous growers, and Spy requires a strong growing stock to make a permanent tree.

By Mr. Wright:

Q. Did you say it was all right with Duchess?

A. No, they break down.

By Mr. Smith (Wentworth):

Q. Wealthy the same?

A. Yes, and Ben Davis probably the same.

Q. Is Tolman Sweet hardy here?

A. Not here, but it is on the St. Lawrence, 60 miles south.

By Mr. Stephens:

Q. Did the wood growth of last year's grafts ripen?

A. Not as well as usual, because we had a very wet season.

Q. Wouldn't that be the reason the trees have died ?

A. Partly, except on some trees there was very little growth last year, showing that it was undoubtedly due to a large extent to the winter.

By Mr. Erb:

Q. We were told here yesterday that in some parts of your orchard you grow a cover crop cultivated and in other parts not cultivated. Did you find any difference in the freezing of the wood in these two parts?

A. We just began this new system last year, of growing cover crops, namely, cultivating them in rows. It would be impossible to tell, owing to the wet season last year.

Q. I understand the object of a cover crop is to retard the growth of trees and allow the wood to ripen so that the frost would not affect them.

A. Yes, that is one object of having a cover crop.

Q. Did you find any difference in them?

A. None last year, for the reason that the summer was extremely wet and cold, and the trees had any amount of moisture, and it is only in a drier season where you could notice the difference in that way.

EXPERIMENTS IN GROWING GRAPES AT OTTAWA.

One of the subjects that I wished to speak principally on this morning was that of the grape, and when the question came up about our work here not being useful for the western parts of Ontario and for the grape belt, it might be thought that perhaps we couldn't do anything in grapes at Ottawa. That is a mistake, and it is for that purpose that I would like to spend a little time in discussing the grape this morning, because there is a very large part of Canada where grapes are not grown for home use, where they could be grown if proper methods were adopted. For instance, all through eastern Ontario and northern Ontario and a large part of Quebec, and a large part of New Brunswick certain kinds could be grown if grown in the right way. I wish, if agreeable to the committee, to spend a little time in discussing the question of

grapes, so as to bring before the readers of your report a system which I believe if adopted would ensure their getting ripe fruit almost every season in these districts,

and where they would have this fruit for their own use.

At the central experimental farm there are about 200 varieties of grapes growing in a vineyard of about two acres. Last year 101 varieties ripened here thoroughly. When we started growing grapes 17 years ago, it was thought that very few kinds would succeed in the Ottawa district, and in fact most people thought that grapes could not be ripened here at all. It is out of the commercial belt as far as dessert grapes are concerned, but wine grapes are grown profitably in this vicinity. A good many systems of grape culture were tried, and I believe we now have the best one for this section of country. The aim here is to make the reflected heat from the ground help to ripen the fruit, and for this purpose a different method of training is adopted from that in the best grape districts. We tried growing the grapes by the post system, training them up a post and tying them to the post, but found that would not succeed, because the vine and the leaves hid the fruit from the sun, and in this district we have to get as much sun and as much heat as possible in order to ripen the fruit. It was thus found that this system was not a good one. Then the horizontal arm system, in which there are permanent arms, and this system was not found very satisfactory, because vines here have to be covered with soil every winter to protect them from the cold, and it was found very expensive to do that with these old arms. Then the Kniffin system, which is largely adopted in western Ontario, was found quite unsuitable, because by this method the arms are about 51 feet in height, and when taken down are difficult to cover satisfactorily for winter.

It was thus necessary to adopt another system for this district, which was found in a modification of what is known as the high renewal system, and which has given very good results. This system provides for the renewing of all the old wood, except a short trunk and crown, either every year or every two or three years, the object being to have as little to cover as possible in order to save trouble and expense. I have brought with me two or three vines to explain to you this system. It will give

you an idea of what I mean.

When planted in the spring the vine is cut back to near the ground, and in the autumn cut back to one stem, 12 to 18 inches from the ground. Two canes only are allowed to grow during the second season, and when long enough these should be tied to the lowest wire, which should be about 18 inches from the ground. In the autumn the canes are bent down and covered with soil to protect the vine during the winter, the main stem being also covered. In the spring the canes or arms are spread out in opposite directions and tied along the lower wire, and three new wires should now be added 18 inches apart. I may say that all we would have to cover for the winter would be a little piece of trunk, and the two arms which are just bent down and covered with soil. It requires very little soil indeed.

By Mr. Henderson:

Q. About how much ?

A. Just enough to hold them down. They are protected by the soil and the snow, and they would come out perfectly.

By Mr. Wright:

Q. I have had trouble when I covered them if I did not put manure over the soil, and the heavy rain is apt to wash it off.

A. We have never had ours uncovered that way.

By Mr. Lennox:

Q. Is the whole vine covered ?

A. Yes, the stem is covered, and the object is to have the main stem as short as possible.

By Mr. Stephens:

Q. Did you bend the stems down to the ground? A. No. Only at the tips.

By Mr. Lennox:

Q. The largest part of the vine is above it ?

A. Yes. The idea is to have the crown as close to the ground as possible, providing it is not too low. It should not be difficult to spread out on the wire. I would like to point out here the object of having this fruit close to the ground. As you know we want to get as much heat as possible. At 18 inches from the ground we get plenty of heat, and although I have not taken the temperature at that and at five feet up, I should fancy there would be 8 or 10 degrees difference. The temperature would thus be much higher at 18 inches than at five feet high, so that all that advantage is

obtained by growing them by that system.

This year, which is the third, there will be canes grow upwards from the bud along the outstretched arms and a little fruit will be set. During the growing season laterals or side shoots should be pinched out. In the autumn of the third year the canes which have grown upright should be cut back to near the arms, leaving only one bud on each in addition to the bud at its base on the arm. The arms should at the same time be cut back until there are from 40 to 50 buds left in all, from which fruiting wood will grow during the fourth year. In the high renewal system provision is made for the replacing of the arms every year by new ones by leaving two additional stubs on the main stem from which new canes grow, and which replace the two arms. In the high renewal system the arms are never more than one year old. The system adopted at the experimental farm is between this and the horizontal arm system, where the arms are left for a number of years. It is found that if the arms are left for a number of years they will get stiff and are difficult to bend down and cover with soil, and in the high renewal system there is danger of breaking one year old canes, and also danger from winter killing, in either of which cases the crop would be lost. Better results can be obtained here by leaving the arms at least two years after the vines come into full bearing, but not more than four, and the arms may be renewed in alternate years which will prevent a total failure of the crop from injury to young

The amount of wood left on the vine must be regulated by the earliness, productiveness and vigour of the variety. In most cases 40 or 50 buds are sufficient to leave, as a medium crop of well-grown, well-ripened grapes is better than a large crop of inferior fruit. By having the fruit crop as near the ground as possible without the fruit being injured by the soil, the grapes will ripen better than if higher up, on account of the reflection of heat from the ground. When the vines are in full bearing, as they are in the fourth year, considerable pruning is necessary during the growing season. The vines are uncovered as soon as there is no further danger of severe frosts, and before the buds have swollen much, about May 7 being the average time here. The arms are then tied to the lower wire. In about a month afterwards it will be necessary to go through and tie the young shoots to the second wire and to pinch out unnecessary shoots, such as suckers and laterals. In about a week more they will need another tieing and the laterals and suckers again removed. Another pruning is necessary after the vines have grown above the top wire, when they are pinched back to that wire if time will permit, although this is not necessary; and any other unnecessary shoots pinched out as before. This is a rather expensive system, but has been found to give the best satisfaction at Ottawa, where grapes are grown almost entirely for dessert purposes by the amateur.

The system in the best grape districts is quite different. There the vines need not be protected in winter, which is a great saving of time and expense. There the question of getting the grapes to ripen is not as important a one as it is here, and the same care does not have to be taken in pruning the vines to admit sunlight. The most popular system in the Niagara district at present is that known as the Kniffin. trained by this method droop from the wires instead of being trained upright. Only two wires are used, the lower one about 3 feet 6 inches from the ground, and the upper about 51 to 6 feet. If the vine is strong enough a cane is trained up to the top wires the second year, or the third year at the latest. A head is formed at the top wire and arms trained in both directions along the wire. Arms are also trained along the lower wire in the same way. The upper canes are pruned back to from 6 to 10 buds in length and the lower ones from 5 to 8. These arms are cut back to the main stem or near it every winter, and new canes trained along the wire each year. Instead of tieing the new shoots in summer, as in the high renewal system and the modified high renewal system, as adopted at the experimental farm, they are permitted to fall from the wire and are merely prevented sometimes from getting into too big a tangle, by placing them. When most of the growth has been made and the vines trail on the ground, the young growth on the ground is cut off with a sickle. Grapes can be grown very cheaply by this method, as little training is required, and it is necessary to grow them cheaply to make any profit when the price of grapes is as low as at present.

By Mr. Stephens:

· Q. Referring to your system. Do you cut off all the new wood every year to keep it at that height?

A. Yes, we keep renewing these arms; these start in the spring, and during the summer the young vine grows up, and the arms are left standing as a rule two years, because we find there is a danger sometimes where the vine has not made strong growth, of the cane which has not ripened properly being killed by the winter, so the arms are left until two years of age.

Q. You renew all the wood except the arms and the short trunk every year?

A. Yes.

By Mr. Blain:

Q. Does the system of covering you have just referred to apply to every variety just the same?

A. Some of the improved native varieties, such as the Clinton, Canada, Brant, will sometimes come through the winter without covering, but in severe winters they will not. Two years ago we had a very severe frost on May 9, we had just started uncovering our vines the day before, and had a few rows uncovered, and the buds of practically all these vines were destroyed, that is the buds on the arms, showing that we have to be quite careful here in order to get a crop. But there are about 25 varieties of grapes which will ripen practically every year in the Ottawa district, and about 100 which will ripen every other year, and an intermediate number that will ripen nearly every year.

By Mr. Smith (Wentworth):

Q. How do you know when to take the earth off?

A. We leave it on just as long as possible, it depends upon the season. If there is not warm weather to start the buds we leave the earth on until May, the average time is from May 7 to 10.

. By Mr. Robinson (Elgin):

Q. What variety is that you have in your hand?

A. This variety is called Vergennes. This, is one of the latest grapes to ripen in the province of Ontario, and yet that grape ripened well here last year.

By the Chairman:

- Q. In carying out the principle you have just explained, the centre stalk will become much longer, will it not?
 - A. No, it does not increase in length.

Q. Supposing you take your arm from beyond this joint next year?

- A. We keep it right in here, at the crown. There are always buds about the crown. These buds always throw out shoots below and around the crown here, and we keep the crown down to the same place.
 - Q. You don't take them from the branches then ?
 - A. No, we keep it down low all the time.

By Mr. Ingram:

Q. Your rule applies to the Ottawa district where you have severe frosts, but will the same rule apply to a district where there are frequent changes of temperature, although not so severe frosts?

A. Well, of course if one lives in a district where there are frequent changes of temperature, one will have to modify the system to suit the conditions. As I say, there is an immense area of country where the conditions are practically the same as in Ottawa, and it is a very simple matter to hold the snow along the row of vines by planting something alongside, or as we do in our vineyard, instead of taking out the pruned canes in the fall, we allow them to stay on the wires after pruning, and these will catch the snow in the winter so that it falls and stays on the ground and protects the vines.

By Mr. Erb:

Q. Your grape vineyard is on a light sandy soil ?

A. Yes.

Q. Do you believe you would have the same results with respect to earliness if the vineyard was in the north-west part of the farm on clay soil?

A. No, I certainly should not. I would not recommend planting grape vines on a clay soil in the Ottawa or similar districts.

By Mr. Wright:

Q. My vines are planted on the heaviest kind of clay soil, but I agree that light soil like yours is the best for it. However, if a man has a clay garden and no other soil, he must do the best he can?

A. Certainly.

By Mr. Stephens:

- Q. We found the clay land in the west warmer in the spring than the sandy land, and dryer.
 - A. In the summer the reflected heat from that sandy soil is greater.

Q. When do you prune your vines ?

A. We have to prune before winter in the Ottawa district in order to cover them, but in the west they do not need to do so; they can prune them any time during winter.

By Mr. Ingram:

Q. You cut them in the summer season along in June, July, August, or around there ?

A. According to our system, we have to prune them at different times during the summer. Under this system which we have adopted here, and the high renewal system which is adopted in some places in the United States, it is necessary to keep the vine fairly open in order to get the sun on the fruit, and it is necessary to go through and pinch the laterals and tie the upright shoots to the wires twice during the summer, and pinch out the weak shoots that come from buds, because they otherwise would crowd the vine and prevent the sun getting into the fruit. The system adopted in western Canada is different, as has already been stated, but I might perhaps again explain the system which they have adopted there in order to grow grapes for sale, they have to be grown as cheaply as possible. The plan which they adopt is to train the vine right up to a height of about 5 feet 6 inches to 6 feet, straight stem, and tie it to the upper wire. Then a crown is found at the top and an arm comes out at each side with from 6 to 10 buds on each, then there is another wire about 3 feet 6 inches from the ground, and two other arms along this wire, so that there are two tiers one above the other. These two (illustrating) run along the upper wire, and the other two on the lower, so that all that it is necessary to do is to tie each of these upper arms to the upper wire, and all the growth falls over during the summer, and the fruit hangs down and practically no pruning is necessary, or at least very little, so that they can grow grapes at about one-third of the cost that we can grow them here.

By Mr. Wright:

Q. They do not have to cover the vines either?

A. No. The point I wish to make is that thousands of people could grow their own grapes quite easily by the system similar to that which we have followed in Ottawa, and by which they would get much of the heat reflected from the ground which would assist in ripening the fruit.

By Mr. Cochrane:

2-14

Q. What is the object of growing the grapes yourself if you can buy them as

cheaply or cheaper than you can grow them?

A. Some of the people in the west pick their fruit for shipment before it is ripe. I do not know what your experience is, but the experience at Ottawa is that the grapes, and especially the Niagara and Concords, have a very poor flavour indeed. Whereas by having varieties that will ripen in this or other districts people could allow them to remain on the vine long enough to be thoroughly matured.

It has been noticed at the central experimental farm and by observers elsewhere that some varieties which ripen comparatively early when the season is a warm one, do not come any nearer maturity than some of the later kinds when the season is cool but long, thus showing that some varieties require certain high maximum temperatures in order to mature while others only require a moderately high temperature and a longer season.

LEADING VARIETIES OF GRAPES FOR CULTIVATION.

I should like to refer to the varieties which we have found most satisfactory here. These are the kinds of grapes that we have found succeeded here almost every year at Ottawa, those which will mature fruit perfectly. In Black grapes, Campbell's Early, Moore's Early, and the Wilder. In Red grapes we have found the Moyer, the Delaware, the Brighton and the Lindley to grow best, and of white grapes we recommend the Green Mountain and the Moore's Diamond. These are the kinds which I would recommend for planting in districts such as Ottawa, but for colder districts—slightly colder—these are the kinds I would suggest, because they ripen practically every year: Champion, Pattison, Campbell's Early, Moore's Early, Moyer, Golden Drop, Pea-

body, Telegraph, Brant and Marion. Some of these kinds would not be thought very good in western Ontario, but many people would be glad to get them here. In the best grape districts the following kinds are those most generally grown: Worden, Moore's Diamond, Lindley, Delaware, Niagara, Concord, Requa, Barry, Herbert, Agawam and Catawba. The Champion is still planted by some growers for extra early, but the quality is poor. Campbell's Early will probably be largely planted in the near future for an early variety. Vergennes is also grown by some, as it is a very late grape of good quality and a good keeper.

It is unfortunate that so many grapes are picked in western Ontario before they are fully mature, as when received in the eastern markets they are frequently not very palatable. If grapes were picked when they were riper there would probably be a greater consumption of them. The great advantage of growing one's own grapes is

that they may be allowed to thoroughly mature before picking them.

House of Commons,

Committee Room 34,

Wednesday, April 20, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, Chairman, presiding.

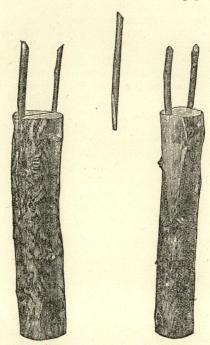
At the request of the Committee, Mr. W. T. Macoun again appeared and made the following statement:—

Mr. Chairman and Gentlemen, the other day I almost concluded the evidence on my division which I was to present this year, but there were two or three matters which I think it is of importance to bring before you, and which will be incorporated in the Report.

EXPERIMENTS IN TOP-GRAFTING APPLES.

I would like to conclude what I had to say the other day regarding the top grafting of varieties of apples, because the winter we have just passed through has been one of the hardest on fruits in this district that we have experienced, and I should like to give you some of the conclusions we have reached at the experimental farm after experiments reaching over 16 years. When the Experimental Farm was first established, some 17 years ago, practically all the well known standard varieties of apples were tested in the orchard here, among such varieties being the Northern Spy, the Baldwin, Ben Davis and King. After a number of years it was found that none of these varieties would succeed in this district, grown in the ordinary way, and when procured from nurserymen on the ordinary stocks used in the trade. We then tried propagating these trees ourselves on hardy roots, the same varieties, and have had practically the same experience; they have not succeeded here. We then tried the top-grafting of ninety varieties of apples on hardy stocks, a large number of which had been found tender in this district and which it was hoped would be found to be After last winter I may say that our experience has hardy on these hardy stocks. been that practically none of these varieties will succeed here even on the hardy stocks, so that we shall have to start some new experiments if we are to get these kinds to grow here. I would just like to give some examples of what I mean in this respect. Those of you who listened to Mr. Stevenson the other day heard him speak of the Hibernal as probably the hardiest large apple in existence. We used the

Hibernal largely as stock for grafting these tender varieties, in the hope that that might perhaps make them hardier, or that more favourable results might be obtained. The experience this spring is that the Hibernal variety has not made the tenderer varieties hardy enough to stand such a severe winter, if it has had any effect at all in that direction. The example shown you in the Mann apple, which is not a very tender kind, but was killed out on the farm this winter when top-grafted, as you see.



By Mr. Ross (Ontario):

Q. Is that the grafted tree ?

A. Yes, it was grafted three years ago, and it was not a success. I have one more example I would like to show you here, that is the Northern Spy, and this is the Hibernal again, this is two years grafted.

By the Chairman:

Q. The stock seems all right ?

A. The stock is quite sound.

By Mr. Robinson (Elgin):

Q. That tree is dead ?

Q. Yes, there is a slight indication of health in some parts, but it is practically dead, it may live two or three years however. I just wanted to bring this point out in addition to my remarks the other day on top-grafting, as I have examined the trees in the orchard pretty thoroughly since that time.

THE FARM VEGETABLE GARDEN.

There is one other point that I would like to bring before the Committee this morning, and that is in regard to the farmer's vegetable garden. That was the sub-

ject I wished to have spoken on the last time I was before you, but there was not time. I will outline the subject, and then if you will allow me, put in a list of a few vegetables which I have here and which I think will be useful to farmers. In the first place I think you will all admit there is a great absence of gardens around farm homes. There are several causes for this; one is that the farmers are usually very busy men in the spring when the time comes for putting in the garden and another is that the farmer very often has the idea that vegetables have to be treated differently from the farm crops. I think, however, that when the question is thoroughly inquired into, it will be found that there is clearly no good reason why he should not have an ample supply of vegetables for his own use through the year. In the first place, there is no reason why the farmer, if he does not find time to make a garden near the house, should not grow most varieties of vegetables in the field just the same as he does his root crops. When he is sowing his root crops in the field he can plant other vegetables in rows two or two and a half feet apart, whatever the distance may be that he has his field roots. Among these being table carrots, onions, beets, parsnips and even cabbage, and other things of that kind, and he can grow these in the field where he does not have to give them any special attention more than the ordinary crops. Another plan which he might adopt is to make the garden near the house before he starts his regular farm work. I know some good farmers who do this, and it is a very desirable practice because one can put in all the garden produce he wants of the hardier vegetables in about a day, and if he does that in the early part of the season he can have that finished before he gets very busy, and the care that is required afterwards is not very much and can be done at odd times.

By Mr. Sproule:

Q. But the work of preparing his garden, will it not come at a time when it interferes with the other work on the farm?

A. Such varieties as onions, carrots, beets, parsnips and pease can all be planted very early in the season; there will be no difficulty at all I think in that respect.

Another plan which has been tried at the experimental farms is to get a lot of five cent packages of vegetable seeds and mix them altogether, cabbage, onions, tomatoes, parsnips, carrots, turnips, and so on, mixing them all together in one package, or mixing the kinds with seed somewhat similar and sowing them with a drill in the field. When this is done the farmer can bring home during the summer each day vegetables for the following day, quite easily when coming home for dinner, and so save a great deal of trouble. It has been found on the experimental farm that this is quite feasible, and I might read to you a few of the results which were obtained there. These are Mr. Fixter's figures, which appear in the Director's Report for 1902: There was a yield of 14 tons 1,535 pounds of cabbage to the acre, 5 tons 1,880 pounds of tomatoes, 5 tons 230 pounds of turnips, 4 tons 1,405 pounds of carrots, and 1,650 pounds of parsnips. These were all grown mixed and gave a total crop of vegetables of 31 tons 700 pounds per acre, grown right out in the fields and cultivated the same as the ordinary root crops. The only information which the farmer needs besides that is the distance at which he has to thin these plants in order to give them the proper area to grow in. I shall be very glad, if it is agreeable to the committee, to incorporate in my report a list of the vegetables and the different distances they should have to grow to perfection. I should like to incorporate, if it is the committee's wish, the list of the best vegetables for farmers which we have compiled after 16 years experience at the farm; that is the different varieties of each kind of vegetable which have proven most satisfactory. These are divided into the early, medium and late kinds, so that the farmer living in northern Ontario or Quebec or in the west, may plant only the earliest kinds, while others in the more favoured parts can plant the main crop varieties. These are the two principal matters I desire to bring before you, and if it is agreeable I should like to put in this list of the best vegetables because I think it would be of much service.

By Mr. Henderson:

Q. Do I understand that you recommend the farmer in sowing his vegetables to mix them all up together?

A. I report these results, and say that the farmer, if he has not time to make a garden any other way, will find it practicable to do it that way, that is what I mean.

Q. Then you say that vegetables should not be planted the same distance apart,

how do you get over that difficulty?

A. When the plants come up, and the farmer is thinning his root crop, the beets, mangels or carrots, he can thin out his vegetables also, so as to leave the cabbage eventually 18 x 30 inches apart each way, and the tomatoes two to three feet each way, and so forth, using the earlier vegetables as they become fit for use.

Q. Do you not recommend transplanting cabbage?

A. I do certainly. If I had the time to go into the subject more fully I would certainly recommend the system known to the market-gardener. My idea, however, in the few minutes at my disposal, was to point out how farmers could grow vegetables with very little trouble, and it is a well known fact I think that farmers have very few vegetables indeed for the table during the summer months.

By Mr. Ingram:

Q. The figures you quoted were for 1902?

A. The vegetables, such as tomatoes, &c., this last year at the farm have not been successful at all ,and these figures were for 1902. For instance the tomatoes will not succeed in a bad season, and I certainly do not recommend as a general system that the farmers should sow their vegetables mixed as mentioned, but as a last resort, and only when the farmer does not have time to make his garden in any other way.

By Mr. Broder:

Q. Do you not think it would be a better idea to give the farmers an idea of the necessity of having a garden near their premises, and that the educating influence which it has is worth a good deal to the farmer?

A. Yes.

By Mr. Blain:

Q. I was going to ask is that table of results for the year before last?

A. Yes, for 1902.

Q. What about the experience of 1903?

A. Owing to the extreme drought here last year, we had six weeks dry weather; seeds sown early in May did not germinate until well on in June, and consequently the results would be entirely misleading, for the tomatoes which came through the drought did not ripen well last year.

Q. Last year that broadcast experiment was a failure?

A. It was a failure last year.

By Mr. Stewart:

Q. Did you find the garden a failure last year from the dry spring?

A. Yes, sir.

Q. On land that is prepared early for the garden with us in the west dries out so that we do not get good results.

A. As you know, I am speaking principally for Ontario and Quebec, my duties do not extend outside these provinces, and I have not taken into consideration the

western provinces at all. There is no doubt but there would be difficulties in certain sections from too early preparation of the land.

Q. These early varieties, turnips, carrots, onions, and perhaps you sow these just

about as soon as the snow goes?

A. Yes, as soon as the soil can be got in condition.

I may say that another year, if it is the desire of the committee, I shall be very glad to follow the suggestion of one member and discuss the value of a farm garden adjacent to the house, because I certainly think that is a very important point, but as I understood I was to take up as little time as possible this morning, at least not very much time, I merely pointed out the ways in which I think farmers could grow vegetables who do not grow them at the present time.

By Mr. Broder:

Q. I think you make it quite clear that you recommend this as a last resort, and only if a farmer could not have vegetables in any other way.

A. That is what I wish to make as clear as possible.

The list of vegetables handed in by Mr. Macoun, with the consent of the committee, is as follows:—

DIRECTIONS FOR THE PROPER CULTIVATION OF VEGETABLES.

Potatoes, rows $2\frac{1}{2}$ feet apart and 12 to 14 inches apart in the row; asparagus, 3 to 4 feet apart, 1 to 2 feet in the row; beans, rows $2\frac{1}{2}$ feet apart, sown thinly; beets, 12 to 18 inches apart, thin to 4 to 5 inches apart; borecole or kale, like cabbage; broccoli, like cabbage; brussels sprouts, like cabbage; cabbage, early, 18 x 30 inches, late, 24 x 30 inches; cauliflower, early, 18 x 30 inches; carrots, rows, 12 inches apart; celery, rows 4 feet apart, 8 inches in the row; corn, 3 x 3 feet in hills; cucumbers, hills, 4 to 5 feet apart; egg plants, 18 x 30 inches; lettuce, 1 foot x 18 inches; melons, musk, 6 to 8 feet apart, water, 7 to 9 feet apart; onions, row 15 to 18 inches apart, 4 inches apart in row; parsnips, same as carrots; parsley, rows 1 foot apart, 2 inches in row; pepper, 15 x 24 inches; pease, rows, $2\frac{1}{2}$ feet apart; radishes, rows, 12 inches apart; rhubarb, 4 x 4 feet; salsify, drills 18 inches; spinach, 12 inches apart, 3 inches in rows; squash, hills, 8 x 8 feet, bush square, 3 x 4 feet apart.; tomatoes, 4 x 4 feet (earliana and dwarf champion, 3 x 3 feet); turnips, $2\frac{1}{2}$ feet apart, 1 foot in row.

LIST OF BEST VEGETABLES FOR FARMERS TO GROW FOR DOMESTIC USE.

Farmers are often puzzled to know what kind of vegetables to select from the long list offered for sale by seedsmen. Following is a list of the varieties which have given the greatest satisfaction in the Horticultural Department at the Central Experimental Farm, Ottawa, which should prove a good guide when ordering seeds:—

Asparagus.—Conover's Colossal is the best all-round variety, but this variety is more subject to rust than Palmetto or Argenteuil.

Beans.—Keeney's Rustless Golden Wax or Wardwell's Kidney Wax, for early crop; Early Refugee, for medium; and Refugee or 1,000 to 1 for late crop, are the most satisfactory dwarf varieties. Asparagus, and Lazy Wife and Old Homestead are three of the best pole varieties.

Beets.—Egyptian Turnip, Meteor and Eclipse are three of the best varieties.

Borecole, or Kale.—Dwarf Green Curled Scotch is the best.

Broccoli.-White Cape.

Brussels Sprouts.—Improved Dwarf is the most satisfactory.

Cabbage.—Early Jersey Wakefield (early), Succession (medium), Late Flat Dutch, Drumhead Savoy (late), Red Dutch (red), is a select list of the best varieties of cabbage. For extra early use Paris Market is desirable, being a week earlier than Early Jersey Wakefield.

Cauliflowers.—Extra Early, Dwarf Erfurt and Early Snowball.

Carrots.—Chantenay is one of the best, but if a good extra sort is required, the Early Scarlet Horn can be planted with advantage. It is a small variety.

Celery.—Golden Self-Blanching (Paris Golden Yellow), Improved White Plume, White Walnut (early); Perfection Heartwell, White Triumph, London red (late) are among the best.

Corn.—Early Fordhook, Early Cory (early); Crosby's Early, Golden Bantam, Henderson's Metropolitan (second early); Perry's Hybrid, Stabler's Early, Early Evergreen and Black Mexican (medium); Stowell's Evergreen, Country Gentleman (late). In planting, the Country Gentleman should not be omitted, as it lengthens the season very considerably, and is of fine quality.

Cucumbers.—Peerless White Spine or White Spine, Cool and Crisp, and Giant Pera are three of the most satisfactory slicing varietis. Boston Pickling is a good pickling sort.

Egg Plant.—New York Improved and Long Purple succeed best.

Lettuce.—Black Seeded Simpson, the Morse and New York (curled), Improved Salamander, Unrivalled, Tennis Ball, Golden Queen (cabbage), Trianon and Paris Lettuce make a good list.

Melons, Musk.—Long Island Beauty, Hackensack and Montreal Market, of the Nutmeg type, and Surprise, Christiana and Emerald Gem of the yellow-fleshed types; all are good.

Melons, Water.—Cole's Early, Imperial, Ice Cream, Phinney's Early are early water melons of excellent quality.

Onions.—Yellow Globe Danvers and Large Red Wethersfield are two of the best onions in cultivation.

Parsnips.—Hollow Crown and Dobbie's Selected are both good sorts.

Parsley.—Double Curled is as good as any.

Peppers.—Cayenne, Cardinal, Chili and Golden Dawn are four of the best.

Pease.—Gregory's Surprise, Gradus, American Wonder, Premium Gem (early), McLean's Advancer, Nott's New Perfection, Heroine (medium). None of these are tall growing varieties. Stratagem, Juno (dwarf), Telephone (late). Excelsior is a promising second early sort.

Potatoes.—Extra Early: Early Ohio, Early Andes (pink), Bovee, Burpee's Extra Early (pink and white). Early: Everett, Rochester Rose (pink), Early Puritan (white). Main crop: Carman No. 1 (white), Late Puritan (white), American Wonder (white), Dreer's Standard (white).

Radishes.—Early: Scarlet White-tipped Turnip, Rosy Gem, French Breakfast, Red Rocket (red), Icicle (white). Late: White Strasburg, Long White Vienna. Winter: Long Black Spanish, Chinese Rose-coloured.

Rhubarb.-Linnaeus, Victoria.

Salsify.—Long White, Sandwich Island.

Spinach.-Victoria, Thick-leaved.

Squash.—Early: White Bush Scalloped, Summer Crook Neck. Late: Hubbard.

Tomatoes.—Early: Spark's Earliana. Main crop: Brinton's Best, Trophy, Matchless (scarlet). Burpee's Climax, Autocrat (purplish pink). There are many varieties of tomatoes which are almost equal in excellence and productiveness.

Turnips.—Early: Extra Early Milan, Red Top Strap Leaf. Swedes.—Champion Purple Top, Skirving's Improved.

Having read over the foregoing transcripts of my evidence, I find them correct.

W. T. MACOUN, Horticulturist, Central Experimental Farm.

EXPERIMENTS WITH CEREALS

House of Commons, Committee Room No. 34, April 19, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock, Mr. Douglas, chairman, presiding.

Dr. Chas. E. Saunders, Experimentalist, Central Experimental Farm, was present at the request of the Committee, and submitted evidence, as follows:—

Mr. Chairman and Gentlemen, this is the first occasion that I have had the honour of appearing before you, and I come as the representative of a new division of the work, the division of Cereal Breeding and Experimentation. Speaking of this as a new division does not imply that such work has not been done before, but merely that it was not organized as a separate division until this past year. From the time when the Experimental Farms were established, this work has been under the immediate charge of the Director, but of late years he has found it impossible to give to it the amount of attention which he thought it deserved, and finally it was decided by the Minister of Agriculture to appoint some one to have special charge of the work, so that it might be extended and amplified. The scope of the division includes, as the title suggests, first of all cereal breeding, that is the production of new varieties of wheats, oats and other cereals, by crossing and subsequent selection, also the production, as far as may be possible, of hybrid grains such as crosses between wheat and rye. The second part of the work of the division includes the comparative tests of varieties. The varieties are sown annually, side by side, in plots of one-fortieth of an This is rather small, perhaps, but the very large number of varieties to be grown makes it impossible for us to use larger plots. The new varieties produced on the Farm are all sown in these plots, together with such sorts as can be obtained in commerce. All are compared together to see how they stand in reference to quality, productiveness, earliness and so forth.

THE CROSSING OF CEREALS.

The method of crossing cereals is similar to that employed in the case of other flowering plants, and I need not describe it in detail. One simply removes the pollenbearing organs from one flower before the pollen has been shed, and then brings to that flower some pollen from a blossom of the other variety which is to be used in making the cross. In such a case, it is customary to say that the flower to which the foreign pollen is brought is being used as the female; while that which supplies the pollen is being used as the male. As you are aware, however, each flower usually contains in itself both the male and female organs.

The work of hybridizing is not without its difficulties, but if done very carefully by one who has good eyesight and sufficient patience, the results are usually satisfactory in moderately cool weather. If, however, the weather is extremely hot, the

more or less mutilated blossoms are very apt to shrivel up without maturing any kernels.

The objects in view in crossing cereals are usually to increase the yield, earliness and quality. Early ripening varieties are especially desirable for the northern sections of Canada, early oats, and early wheat being particularly in demand. year a number of requests have come in for early kinds of cereals, sometimes from comparatively long settled districts, and in other cases from more recent settlements. I may mention in passing that we sent up last autumn to about 20 different farmers in various sections of the Peace river country samples of several early maturing varieties of grain. I believe that some of the varieties of wheat sent will mature earlier than the Ladoga; which is, I am told, the only variety grown at present in the northern Peace river country. It is interesting to notice that this wheat which was introduced by the Experimental Farms some years ago, and attracted a good deal of attention at the time, is not by any means a valueless variety. I believe that at the mill of the Hudson's Bay Company at Fort Vermilion, the wheat ground is entirely Ladoga. Here is a sample of this wheat grown in the neighbourhood of Fort Vermilion in 1902 which I thought would be interesting for the members of the Committee to see. It was given to me by Mr. James Macoun, who obtained it last summer (before the 1903 crop was ripe). In parts of Manitoba and the Northwest Territories there is a decided tendency on the part of some of the farmers to sow earlier varieties of wheat, regardless of every other consideration than earliness. I mention this to emphasize the necessity for the Experimental Farms providing first-class early maturing varieties, because early varieties will be sown to a certain extent whether they are good or inferior.

By Mr. Broder:

Q. Is that generally done in the localities where frost is more prevalent?

A. I believe so.

Another object in crossing is to improve the quality of the grain. In wheat we look for those characteristics which produce strong flour. We are not encouraged by millers to try to improve upon Red Fife, as it is generally supposed that this standard variety cannot be surpassed. We are, however, making some efforts in that direction. Whether these prove successful or not, it is evident that in producing varieties earlier than Red Fife, we must maintain as high a standard of quality as possible.

In oats, we are looking for suitability for the making of rolled oats (as well as for yield and earliness), and that invoves a plump, long kernel, with a thin hull which is easily removed. In barley we have to consider the suitability of the grain for malt-

ing or for feeding purposes, as the case may be.

Last season I did not attempt to take up work embracing a very large field, but confined my attention principally to wheat, wishing to obtain a good start with it. A little work, however, was done in oats, barley and peas, and a few mixed crosses, such as between rye and wheat, were also attempted. There were about 70 crosses accomplished, yielding about 550 kernels. Most of these were between wheat and wheat. They will serve as starting points for a very large number of new varieties, many of which will no doubt be of great interest.

VARIATIONS IN CROSS-BRED CEREALS.

From each flower that is successfully operated upon only one seed, of course, is obtained. This seed is sown the following year and gives one plant, the product of which is carefully saved by itself. The following season this group of seeds produces a number of plants, many of which may be strikingly different from the single plant of the previous year. I have some specimens here this morning which illustrate very

well the variations which occur in the second and later generations from a single cross-fertilized kernel.

By Mr. Wright:

Q. Just allow me to thoroughly understand. You say the first year you sow one seed ?

A. Yes, sir,

Q. Then the next year you sow the product of that seed?

A. Yes, sir.

Q. And it is that second crop which shows such great variation?

A. Yes. I shall illustrate that. Here is a sample of mixed black, white and brown oats which have all come from one original seed in the course of perhaps five or six years. The original seed was a cross between a black and a white oat, and the progeny have been allowed to grow together without selection.

By Mr. Ingram:

Q. What do you mean when you say 'without selection'?

A. I mean that all the seeds produced each year have been kept together and sown in the following year.

By Mr Robinson (Elgin):

Q. Have you a name for this oat?

A. It has been divided into two varieties. It was called Kendal originally, but two types have been separated out, and these are now known as Kendal White and Kendal Black.

Q. How many pounds to the bushel does this weigh?

A. Thirty-nine pounds. It is not, however, a remarkably promising oat for crop, but I brought it as a good example of variation. In wheat the same thing will occur, although not in quite so striking a manner. Here is a rather promising wheat which we hope to introduce in the course of three or four years and which we are now growing under the name of Bishop. It is a cross between a variety with red kernels and a variety with yellow kernels, or as they are commonly called 'white.' This variety shows both types of kernels, and we have separated it into two perfectly distinct sorts. But the kernels with red skin and those with yellow skin have all come from the same original seed. Variation in wheat is more strikingly illustrated in some cases when specimens of the heads are shown, instead of the threshed kernels. Some years ago I crossed Red Fife with Goose wheat, and obtained as a result after three or four years all the kinds of heads here displayed. (Specimens shown.) You will see that there are about twelve distinct types. Another interesting cross which I made a few years ago was between Colorado wheat and the common variety of Emmer, which is generally called 'Speltz.' This is not a Spelt, however, for Spelt has a much longer head. This cross has given rise to a large number of different varieties, some of which one would call wheat, while others would probably be classed as Emmer, and possibly a few might be designated by the term Spelt.

By Mr. Stewart:

Q. Will these different types become fixed after a few sowings?

A. They were not fixed in the third year, but I hope they will be fixed in the fourth. That is to say, I hope no further variations will occur during this coming season.

The most interesting example of all those which I have to bring before you in this connection shows the results of crossing Red Fife with Polish wheat. Pollen from

Polish wheat was applied to the blossoms of Red Fife, and one very poor seed was obtained. The plant produced the next season from this seed gave only one head: a head intermediate in form between the two parents. The next season the seeds from this head were sown and produced about twenty distinct varieties of wheat. The following year—that is last year—the variations still continued, and there were produced altogether about 35 distinct varieties of wheat. I do not know when these changes will cease; but they will probably not continue much longer. These varieties, then, have all arisen from one original kernel. You will notice that they vary in length from 3 inches to $7\frac{3}{4}$ inches; and that both bearded and beardless sorts are present. We propose to grow small quantities of some of the most striking varieties as curiosities, even if they should appear to be without commercial value. As I have said, there were altogether about 35 varieties produced from one original kernel in three years.*

By Mr. Erb:

Q. Do you mean that one head of wheat may contain two kinds of kernels?

A. The kernels of hybrid wheats may appear identical, and yet may produce distinct varieties. I have never found two distinct types of kernels in one head, though of course some may be starchy and others hard.

By Mr. Ingram:

Q. This bottle labelled 'Bishop wheat' seems to contain two varieties?

A. Yes, sir; but they have both arisen from one original seed.

By Mr. Stewart:

Q. Were these two kinds of wheat grown on the same plant?

A. Not on the same plant, but on plants of exactly the same ancestry.

By Mr. Henderson:

Q. Would not the fact that this grain is of two different colours militate against its commercial value when it is graded?

A. I presume it would; but we shall not allow it to be sent out until after it has been carefully purified.

By Mr. Wright:

Q. Its habits are fixed?

A. We believe so, and we have separated out the two principal types during the past winter. We shall find out next season whether it is fixed or not.

THE PROPER METHOD OF SELECTION.

I wish to dwell upon this question of variation in hybrid varieties of grain because of its great importance, and to emphasize the necessity of rigid selection by single plants for a number of years, before any variety can be considered as fixed. This is a very different matter from the selection of a number of heads from different plants in a plot of some variety which is quite fixed in its character. The latter form of selection is no doubt of considerable value when properly carried out; but it may be questioned whether it leads to such permanent improvement of the varieties as some of its advocates believe. There is also an element of danger in this latter method of selec-

^{*} See the accompanying plates.

tion which has not yet, so far as I am aware, been pointed out. If a plot of grain contains a few plants of some other variety having specially large heads not easily distinguishable from the predominating sort, these large heads may be selected by mistake; and this process carried out a few years might lead to the entire falsification of the variety. I have known cases of this kind which were not discovered until after the error had attained very considerable proportions. Any one who has a plot of Red Fife wheat, for instance, containing by accident a very small proportion of White Russian, would do well to hesitate before attempting to 'improve' the Red Fife by the selection of the largest heads. For milling purposes the White Russian is distinctly inferior.

PURIFICATION OF VARIETIES.

Last year, the director mentioned to the Committee that steps were being taken to purify very carefully all the cross-bred varieties of grain which are being introduced by the Experimental Farm. This work was taken up this winter, and the most important varieties have been selected now to one fixed, pure type. The varieties referred to are: 'Preston,' 'Stanley,' 'Percy,' 'Huron,' 'Laurel' and 'Early Riga.' These varieties look very much alike, though they vary somewhat in size and in the hardness of the kernels. All have red kernels, and we believe that they are now fixed in character, so that kernels with yellow skin (which are often called 'white') will not reappear.

By Mr. Wright:

Q. Is there a predominance of superior quality in the red kernels above the white?

A. As a rule we have been led to believe that there is; though not in all cases.

In one instance, Mr. F. T. Shutt, the chemist of the experimental farm, analyzed the red and the yellow kernels, and reported in favour of the red; and in other cases less accurate examinations have led to the belief that the red kernels were superior. In the case of the variety 'Bishop,' however, we have decided to retain the yellow kernels, as they seem to be superior in quality to the red.

The variety called Early Riga which has been mentioned before to the Committee has been separated into three principal types, which will be compared together, and new strains of it are also being started from selected heads. We hope to have the best of these selected types available for general distribution in the course of about three or four years, but at present we are not able to send the variety out. In speaking of this variety I should like to mention the fact that on taking the average of the returns from the experimental farms at Ottawa, Brandon and Indian Head for a series of years, we find that it ripens fully two weeks earlier than Red Fife. The yield, however, is about six bushels per acre less than Red Fife. In making these calculations, the returns from the experimental farms for the maritime provinces and British Columbia have not been considered, since Early Riga wheat is not recommended for cultivation in such climates as are represented by those farms.

It would be unfortunate if my remarks should give the impression that undesirable or false kernels are found only in cross-bred varieties of recent origin. Very few of the standard sorts of grain as found in commerce seem to be strictly true to name; although in some cases the kernels of other varieties present may not lessen the value

of the wheat for milling purposes.

I have here a sample of Manitoba White Fife, from one of the best seedsmen, which, by careful hand picking, I have separated into two distinct types of kernels, yellow and red. The red kernels, which are present to the extent of about 25 or 30 per cent, are of course not White Fife. They are probably a mixture of Red Fife and White Russian. Mixtures of Red Fife and White Russian seem to be extremely

common, and we have some cases under examination at the Farm in which the exact constitution or composition of the variety is extremely difficult to determine. There is no way of separating White Russian from Red Fife, so far as I know, except by some form of analysis of the kernels from each head or plant, a process which is evidently rather too laborious for general use. There appears to be good reason to believe that Red Fife and White Russian in different proportions constitute some of the leading varieties (using that term to include mixtures) now grown in Canada. We are endeavouring to eliminate the false kernels as far as possible from all our varieties of grain, but in some cases the difficulties are very great. Our White Fife was most carefully hand picked during the winter, and we are sowing it this spring quite free from red kernels.

NATURAL CROSSES.

By Mr. Wright:

Q. Supposing that a farmer sowed Red Fife and White Fife mixed together in the field, would there be any likelihood or possibility of one variety cross-fertilizing the other.

A. It is quite possible that it might occur, but probably only in the case of a very few kernels. There is at least one instance on record, which seems to be perfectly trustworthy, of an accidental cross which was discovered in wheat; but if Red Fife and White Fife were sown together, any crosses which might occur would probably never be discovered, because the two varieties are so much alike.

I started an experiment last spring to determine whether it frequently happens in nature that different varieties cross when sown together. I sowed a mixture of white and black oats and a mixture of bearded and beardless wheat. When the grain was ripe some of the lowest heads, on which pollen would be most likely to fall, were selected. The heads saved were all from the black oat and from the beardless variety of wheat. The seed from these must now be grown for two years in order to determine whether any of it has been crossed or not. If they are crosses they will certainly give evidence of it in their progeny.

Q. In the variations?

A. Yes. Bearded heads would appear among the wheat from beardless heads, and white oats would appear where only pure black oats had been sown.

CHANGES IN FIFE WHEATS.

By Mr. Stewart:

Q. White Fife gives us light white kernels when grown on what we call scrub land, wooded land; but take that wheat on the open prairie and it will come red, and the second year a buyer could not tell it from Red Fife.

A. When I speak of red or yellow kernels I am referring entirely to the colour of the skin. The red kernels may be hard and translucent or they may be opaque and starchy. In the latter case they are often called 'white,' even though the skin is red. Pure White Fife is characterized by a yellowish skin whether the kernel is hard or soft. Either Red Fife or White Fife will give soft, starchy kernels when grown on scrub land, but I do not think that the colour of the skin is ever altered at the same time.

Q. Yes, the skin becomes yellow.

A. I have not seen any cases of that kind. Last season I sowed a large number of soft starchy kernels, and in almost every case the plants gave me about 95 to 100 per cent of pure hard kernels. In those cases where I sowed hard kernels only hard kernels were produced. Our wheat at Ottawa was exceptionally free from soft kernels last season, though the crop was of rather poor quality. The previous season, which was

much more favourable, gave us an excellent crop of rather soft wheat. It is clear, therefore, that the season has something to do with it. Many experiments were also carried on last season in reference to possible changes in the colour of the skin of wheat; but in every case the grain produced had skin of the same colour as that which was sown.

I shall now leave this part of the subject, if there are no further questions.

GRAFTING ON INJURED FRUIT TREES.

By an hon. Member:

Q. Might I ask a question not pertaining to grains, or do you wish to confine yourself to grains only?

A. My work is almost exclusively confined to grains, but I shall be glad to answer

your question if I can.

Q. There has been great trouble with rabbits and mice destroying the fruit trees last winter, and I should like to get information as to whether it is really a fact that you can cut down fruit trees nearly level with the ground, graft them, and get fruit from them instead of rooting them up.

A. Unless the trees were quite small I do not think you would find the method

profitable.

By Mr. Erb:

Q. In answer to that question, I might say that when I was a boy I found in the orchard an apple tree three inches in diameter girdled to the ground. I cut it off level with the ground and put on four scions, all of which grew. The following year I cut off two of them, and the following year again another one, and inside of five years we had a nice large tree.

Mr. Broder.—That would not occur in every case.

THE MILLING VALUE OF DIFFERENT VARIETIES OF WHEAT.

Turning to the question of the milling value of wheat, I may say that we have had tests performed for us in the United States by experts for some time past, but the number of varieties we have on hand is now so very great that the Minister of Agriculture has decided that we should have a small mill of our own to enable us to grind our own wheat.

SEVERAL HON. MEMBERS.—Hear, hear, that is right.

A. In that way we shall be able to make the mechanical analysis of the flour ourselves, and the chemist of the Farms will have good flour to anlyse, instead of merely ground wheat, which he has been obliged to use in the past. In the case of any very important variety, we can still have additional tests of baking quality, etc., made elsewhere if it seems desirable.

We propose to test all the important new varieties of wheat which we may produce at the farm, and to take up also the question of the value of the different sorts of winter and spring wheat commonly grown in Canada. It is perhaps not generally known that some of the varieties of wheat grown in eastern Canada are of poor quality. I cannot go into the subject very fully at present, but should like to call your attention to a few interesting facts. We have submitted (under numbers) to the expert of the Pillsbury-Washburn Company of Minneapolis some samples of Ontario wheat, along with some

of the new sorts originated at the experimental farms. The mechanical analysis and baking tests of the flour made from these tests show that every one of the cross-bred sorts to which I have referred this morning (except Bishop, which was not submitted for test) is superior in both quality and quantity of gluten to No. 1 Red Winter, No. 1 White Winter and No. 2 Spring. These latter were official Ontario samples of the crop of 1903. The well known varieties, Colorado, White Russian and Rio Grande also rank, on the whole, distinctly below the new cross-bred sorts.

The following table presents in condensed form the most important points in the analyses and tests referred to:—

Variety.	Colour of Dough.	Action of Dough in washing.	Gluten per cent.	Quality of Gluten
Early Riga Huron Percy Stanley. Preston. Laurel. Rio Grande No. 1, White Winter White Russian No. 2, Spring. Colorado. No. 1, Red Winter.	Yellow Creamy Creamy White White Creamy White Ureamy White Grayish " white	Good	14 · 2 13 · 3 12 · 9 11 · 9 11 · 1 13 · 3 7 · 3 11 · 0 10 · 6 16 · 0 9 · 3	101 100 100 100 100 100 99 99 98 98 98 97

Explanation of table: The figures given in the last column may be translated into words somewhat as follows: 101 = excellent, 100 = good, 99 = fair, 98 = poor, 97 = very poor.

Of course, it is not to be concluded from these analyses that most of the wheat grown in Ontario is of poor quality. Some of the varieties of winter wheat are very good; and even the famous western prairies do not always produce grain equal in quality to Red Fife as grown in some sections of Ontario. It is clear, however, that the cultivation of inferior varieties of wheat in eastern Canada needs to be discouraged, and that efforts should be continued to induce farmers to grow only the best sorts.

FLOUR FROM MACARONI WHEAT.

Before leaving this question of the milling value of different varieties of wheat, I should like to show to you a sample of flour made from macaroni wheat. The flour was made by the Sheffield-King Milling Co., at Maribault, Man. I am not sure what variety of macaroni wheat was used, but it is closely related to the ordinary Goose wheat. You will notice that the flour is of a rich yellow colour. The question is often asked whether good bread can be made from macaroni wheat. bread made several times from this flour, and it has always been considered as of excellent quality by every one who has tasted it. I have a sample of the bread with me, and you will notice that it is of good texture, and quite sufficiently light. yellowish tinge does not render it unattractive to most people. Macaroni wheat is unpopular, however, as a rule, and it would not be wise to advocate its general cultivation where the standard varieties of bread wheats can be profitably grown. roni wheat will stand considerable drought and light soil; and perhaps in some districts of Canada where the rainfall is deficient, wheats of this class may prove profitable.

By an Hon. Member:

Q. Goose wheat is the same ?

A. Goose wheat (or Wild Goose) is one of the varieties of macaroni wheat.

By Mr. Stewart:

Q. Will macaroni wheat give a larger yield in a dry season?

A. Yes, sir, it will as a rule.

Q. In some parts of the western territories, the arid region, it might be profitable.

A. Yes. If those regions remain arid or sub-arid. But they have been rather wet the last two or three years.

Q. Yes, just the opposite of arid.

NEW VARIETIES OF OATS.

I wish to bring before the Committee two or three new varieties of oats which are attracting some attention. Here is a variety called Storm King (sample produced). It was introduced by the firm which originated the Tartar King. Excelsior, a black variety, comes from the same source. These are remarkable looking oats, but they have coarse straw and a rather large proportion of hull. You will notice in the sample of Tartar King the very large percentage of what millers call 'bosom' oats. They object to these very strongly. We submitted the Tartar King to one well-known milling company, and they pronounced it very poor for the purpose of making rolled oats. These oats, which are apparently so very large, are usually empty hulls, enclosing, however, small oats. Thus we have one small kernel enclosed in its own hull and imbedded again in a large empty hull. When these 'bosom' oats are present it is very difficult to avoid having the hulls left in the finished product.

By the Chairman:

Q. You would not say that this was equal to the Ligowo?

A. Both the Storm King and the Tartar King I should consider inferior to the Ligowo for most purposes. The Storm King is being widely advertised as a most remarkable variety, but it has not so far proved especially valuable at the Experimental Farm. We grew it for the first time last season. It did not give a large crop.

By Mr. Robinson (Elgin):

Q. That looks as if it ought to produce a great crop (pointing to sample)?

A. It is certainly very striking in appearance.

OLD VARIETIES UNDER NEW NAMES.

I should like to mention in this connection that it is sometimes difficult to say whether some of the so-called 'new' varieties of grain are really new, or are merely old sorts being sent out under new names. Just at present a good deal of attention is being attracted by the wonderful new 'Corn' wheat. There seems to be no doubt that this is the same as that old and unprofitable variety which has been in cultivation more or less in Canada for many years under the name of Polish or Polonian wheat. I have not yet heard of any district where it has proved a success. With us it has a very strong tendency to rust, and gives invariably a small crop. Furthermore, as it belongs to the class of macaroni wheats it would not be generally acceptable for flour making.

By Mr. Wright:

Q. What do you mean by macaroni wheat?

A. There is a class of wheats with very large and extremely hard kernels. They are usually called macaroni (or rice) wheats, because they make the best macaroni, and are not generally considered to be useful for bread-making. Most of them would probably not make good bread, but some of the better varieties do, as I have already shown. The macaroni wheats vary very much in quality.

OTHER NEW VARIETIES OF OATS.

Another new oat which was sent to us by the Department of Agriculture in the United States under the name of Swedish Select, has proved very good in comparison with the older sorts. I am not prepared to say just how it will stand as compared with Banner, but it is an excellent plump oat, with a long kernel and a hull easily separated. So far as we have examined them, it is one of the very best oats for the proportion of kernel to hull which it holds. A couple of other varieties under the names of 'Golden Fleece' and 'Sheffield Standard' were introduced last season. These gave very fair yields at the Farm last summer.

By Mr. Stephens:

Q. At which farm ?

A. The Golden Fleece was grown at all the experimental farms, and the Sheffield Standard at the central farm only. I mention the two varieties together as they are strikingly similar.

This concludes the matter which I wished to bring before you this morning. I thank you for your kind attention.

Having read the preceding transcript of my evidence, I find it correct.

CHAS. E. SAUNDERS,

Experimentalist, Dominion Experimental Farms.

FEEDING CATTLE STOCK-METHODS AND RATIONS

House of Commons, Committee Room 34, Wednesday, May 11, 1904.

The Select Standing Committee on Agriculture and Colonization met this morning at 10 a.m., Mr. William Ross, Ontario, presiding.

Mr. J. H. Grisdale, Batch. Agr., Agriculturist at the central experimental farm, attended at the request of the committee, and made the following statement:—

Mr. Chairman and Honourable Members of the Committee on Agriculture, I have thought this morning that in view of the ever growing importance of the feeding of live stock in this country, and the increasing interest which is being taken in the feeds available, and in the determination of what are the most valuable feeds for stock-feeding, probably you would be interested if I gave you briefly a resume of our work in this connection with silos and ensilage, therefore, if it meets with your approval, I will take up that subject.

Let me try to give yau as concisely as possible our experience showing the value of ensilage. Its value we have found is due, in the first place, to its succulence. As you all know, cattle do best on grass, and the more nearly we can bring our winter conditions to resemble those of summer, the more likely are we to succeed in winter feeding operations. Ensilage helps to bring about such a similarity, hence the great value of its succulent quality. Roots seem to make the best succulent feed, but they are more expensive, more difficult to use, and take a great deal more manual labour to produce—questions of very great importance in this country. Again, ensilage is very valuable on account of the cheapness of housing or storing it. We find that we can house or protect a ton of ensilage (a ton of dry matter in the form of ensilage) more cheaply than in any other form known for cattle feed. In the third place, it is very convenient in form for feeding; all that the man who is feeding it has to do is to go to the silo, take out the feed, and it is ready to give to the cattle. In the next place it is very palatable. Our cattle all like it, horses like it, and sheep like it to a certain extent. We have not tried it to any great extent on pigs, but all classes of cattle, steers and cows, take readily to it, and like it at all times.

By Mr. Gould:

- Q. You mention horses. Do you feed it to horses ?
- A. We have not extensively, but we have tried it.
- Q. How has it done with them ?
- A. Very well.
- Q. My experience is that it is not good for horses. I have tried it.
- A. I must say we fed it in the winter when the horses were not working very much.
- Q. We found we had to give them considerable to keep the kidneys right when we fed them with ensilage.
 - A. We have not fed it extensively to horses at all.
 - 2-17

By Mr. Wilson:

Q. How long have you fed it ?

A. About a month; I think it was five weeks.

Q. You found no change?

A. We had no difficulties at all.

Q. Not when fed in small quantities ?

A. It was fed as a partial ration, from 10 to 15 pounds a day, which is, of course, a quite limited amount.

By Mr. Wright:

Q. Is it a fact that ensilage should not be given to bulls ?

A. Well, we feed it to them continually, but I believe it has been considered detrimental to their breeding qualities.

Q. It is said so, but I would like to know for a fact whether it is or not?

A. Well I cannot say we have found it so. It puts a big paunch on them, making them rather unwieldy, and for that reason it is slightly objectionable. We have stopped feeding it to one or two bulls occasionally for the reason that they got rather awkward but otherwise we feed it continually.

Q. That does not make them barren?

A. Not in my experience. The chief point is the digestibility of the food, and we have not found there is any food more readily digestible by all classes of cattle than this same ensilage.

By the Chairman:

Q. Is it like pepsin ?

A. It seems to act upon the digestive organs; it works in that way. There is/some acid, of course, a small percentage of acid, for you cannot produce first-class ensilage without its being slightly acid.

By Mr. McKendall:

Q. Your ensilage is nearly all of corn ?

A. Yes

Q. Last Sunday I was driving out there and came across a large quantity of corn stacked in the fields, and I found in the middle of the stocks some milldew in the leaves. I took some of the stalks and chewed them up, and found it tasted very sugary. Is that good food?

A. You mean this was out in the country ?

Q. Yes.

A. Yes, it is good food.

LOSSES IN SILOS VS. LOSSES IN SHOCKS.

The next thing on my notes is the consideration of the comparative economy of the two methods of preserving corn fodder for cattle. Objections have frequently been made where I have spoken in this country, to the great loss which seems to be entailed in the making of ensilage. The losses occur on the bottom of the silo, around the sides, and some on the top. In the early experience of ensiloing corn and other materials, it was found that from one-third to one-half of the dry matter put into the silo was wasted through decay, or by change in the nutritive elements contained in the ensilage. The more modern ensilaging methods and the study and improvement of silos generally has enabled us to save from $\frac{9}{10}$ to $\frac{4}{5}$ of this material put

into the silo, that is, the loss is only from $\frac{1}{01}$ to $\frac{1}{5}$, according to the perfection which has been attained in building the silo. In comparing that with the losses entailed in preserving corn and other materials in a dry form, I may say that in a number of experiments conducted to ascertain the comparative loss, we found that in the silo the average loss has been about 15 per cent of dry matter, while in similar material dry and preserved in that form, such as described by Dr. Kendall, the loss has been 17 per cent. It is not only in dry matter that the loss is greater, where the material is dried and cured outside, but also in the protein which, as you know, is the most valuable constituent of any ration for cattle. Where the material was kept in the silo the loss of protein has been found to be about 17 per cent, but where it has been kept outside the deterioration has amounted to 24 per cent in the quantity of protein. So you see that as far as dry matter is concerned, the silo is more economical thau the field curing, very much more economical.

By Mr. Ingram :

Q. Do you find in any districts that they have abandoned silos ?

A. Yes, sir.

- Q. What is the reason ?
- A. Because the silos were badly constructed.

By Mr. Armstrong:

Q. What are the more important ideas in regard to the building of silos?

A. If you will just defer that for a few minutes, I will take it up.

By Mr. Blain:

Q. In what parts of the country did you say the silos were abandoned?

A. In Quebec, chiefly; all through those parts of Quebec along the St. Lawrence on both sides we have found that nearly all the silos have been abandoned. I have seen a great many of them, and the reasons for their abandonment are quite obvious.

By Mr. Maclaren (Huntingdon):

Q. Have you found that to be the case in the Eastern Townships ?

A. No, I said in the valley of the St. Lawrence. In the Eastern Townships it is as popular as ever.

By Mr. Ingram:

Q. Have you found any cases in Ontario where silos have been abandoned?

A. A few odd cases, yes, sir. But speaking generally and as a whole, along the valley of the St. Lawrence in Quebec, every silo in the hands of the average farmer has been abandoned.

By Mr. McEwan:

Q. What was the difficulty in the silos ?

A. As I said to another gentleman, I would like to take that point up in a few minutes, but I would prefer to conclude with this other matter first.

By Mr. Wright:

Q. In reckoning that loss of 24 per cent protein, you did not take into consideration the loss sustained by mice and coons and such as that in the fields?

2-171

A. No. In the experiments conducted every precaution was taken to keep these away.

Q. That is while it was preserved in stooks in the field ?

A. Yes. It was kept under perfect condition outside. Two years ago, not two years ago, but in the winter of 1902-03 at the Experimental Farm the weight of silage and root put into the silos and root houses was greater by 21'21 per cent than the weight fed out. That is the feed weighed out to the cattle was 21 per cent less than what was put into the silos and root houses. We were unable to keep separate accounts of the ensilage and roots in this case. I am sorry to say. That was, however, the loss there, and I think I am safe in saying that had we weighed the ensilage as it came out of the silo, and weighed the roots as they came out of the root house, we would not have lost over 18 per cent, because, as any one who feeds cattle knows, there is always more or less waste between what comes out of the silo and what goes to the cattle.

CAUSES OF LOSSES.

The sources of loss in silos are various. First, for a depth of four or five inches on top the ensilage will be decayed unless something is put over the top to protect it which is somewhat expensive; second, at the bottom of the silo there is frequently a certain amount that may be wasted; and third, in the case of certain silos there may be a waste of from one-half to five or six inches next to the walls. There is in addition a loss of moisture from the ensilage. The material will go into the silo containing from 75 to 80 per cent of moisture, and will come out containing from 65 to 73 or 75 per cent of moisture. It has lost that much moisture, but although it has lost that much in moisture it does not mean that it has lost that much in feeding value, because there is still enough moisture to make it succulent. Thus where we had a loss of 21'21 per cent of dry matter, it does not necessarily follow that there was that much food lost.

THE LOSS IN OTHER FOODS.

I might just mention, to give you an idea of what the loss is in other foods, our experience with hay, etc. In hay, when the amount which went in was 100 tons, what we fed out was 9176 tons. The loss was 824 per cent of hay, that was in the whole season. In grain we lost about 6 per cent of the amount put into the bins, as compared with that fed out.

By the Chairman:

Q. What kind of grain ?

A. Oats.

Q. Oats? Do they not lose more heavily than any other kind of grain?

A. I do not know. We do not grow any other kind of grain to any extent on the Central Experimental Farm.

By Mr. Wright:

Q. Any kind of grain will lose weight ?

A. Yes, any kind will lose.

By Mr. McEwan:

Q. How long was that period ? Six months ?

A. We kept some grain six months, some longer and some less. I suppose the average would be about five months.

Then we undertook to determine the loss independent of the feeding operations. We took four mows of hay and in each mow we put about four tons. These mows were along in a row at one side of the barn. We weighed the hay as it went in, and then we weighed one at three months, one at four months, one at five months and one at six nonths. We found that the loss was about 1 per cent per month, that is, at three months the loss was 3 per cent, at four months 4 per cent, at five months 5 per cent, and at six months a little over 6 per cent.

By Mr. Maclaren (Huntingdon):

Q. Do you consider that hay has lost any of its feeding qualities ?

A. Not to the extent indicated by the loss in weight, but there was undoubtedly a certain loss in feeding values. It had got dry of course, in the barn but there is always a deterioration.

Q. The same as with oats?

A. Yes, the same as with oats.

By Mr. Wilson:

Q. Had it continued longer, would it still have continued to lose the same percentage each month?

A. No, I think not.

By Mr. Blain:

Q. What about the feeding qualities of the oats?

A. I think at the end of the period, they would be more valuable per 100 pounds for feed than at the beginning. What the oats lost was chiefly moisture and what the hay lost was also chiefly moisture, but there was also a certain change in the composition of the hay which detracted from its feeding value.

By Mr. Wright :

Q. New oats will bring 5 cents a bushel less than old oats ?

A. I think that is too great a difference.

Q. We always make that difference.

Q. The difference is too great.

Q. We can sell that difference without trouble.

A. Of course in the case of oats as in hay there is something not only in the amount of the feeding matter, but in the feeding quality. In the old oats the quality is better than in the new oats, and it is the same with hay.

By Mr. Maclaren (Huntingdon):

Q. Is it not a fact that those who have to feed horses and have them endure hard work prefer old hay and oats.

A. Of course. New hay particularly, is very injurious to horses. We dislike to

feed it to them.

By Mr. Wilson: -

Q. I suppose you are talking of hay of poor quality ?

A. No, mixed hay, second grade hay, one-quarter clover and three-quarters timothy.

Q. Do you mean to say that clover is as good feed for horses as timothy?

A. Yes, if it is well made, I consider it is better.

Q. There would not be as much loss on timothy hay?

A. I am prepared to say there will be pretty nearly the same.

CLOVER, AND CLOVER HAY MAKING.

By Mr. Blain :

- Q. It is not generally understood that clover hay is better for horses than timothy hay?
 - A. Do you know why, sir ? Q. I do not, I am asking you?

A. It is not generally understood for the reason that clover hay is much more difficult to make than timothy hay, and generally speaking the clover hay you can buy is dusty and badly made. Clover hay is very hard to make and for that reason a man knowing that clover hay is likely to be of inferior quality, as far as dustiness and milldew is concerned, is willing to pay a premium for timothy hay.

Q. Do I understand you to say that clover by itself is better for horses than

timothy ?

A. Yes, sir, if it is well made.

Q. You could not get one man out of 25 to agree with that, but you may be correct.

A. I agree with you, but I am telling you what I know to be true.

By Mr. McColl :

Q. That is on the same principle that clover pasture is much better than timothy pasture?

A. Certainly. Protein is the valuable constituent in food, and timothy has about 1 in 17 of protein, while clover 1 in 5 or 6, so that you see it is very much more valuable as a food for cattle.

By Mr. Sproule:

Q. Does not clover hay produce heaves in horses?

A. Yes, sir. But that is from the dust.

Q. But generally speaking?

A. Not if it is free from dust.

By Mr. Maclaren (Huntingdon):

Q. Would you advise farmers in ordinary circumstances to feed pure clover hay?

A. Yes, sir. Do you refer to any particular experiment at the farm? We are

trying experiments there now in curing.

Q. I mean in a general way. I quite agree with what you say about the nutritive quantities of clover, but we are here to ascertain what is best for general farming and from your experience of general farming should a man raise clover or timothy for horses?

A. If he is going to feed it himself, if he is not depending upon the hay market for his revenue, I say yes, grow clover. I may say that wherever I have any influence, I advise every farmer to grow clover, sow a good deal of timothy, but grow clover.

By Mr. Thomson (Grey):

Q. Will you tell us how to cure clover hay?

A. I can tell you how to cure it if you have the right weather. But the weather is what makes good hay, or bad hay.

By Mr. Loy:

Q. At what stage of growth should clover be cut in order to secure the best quality of hay?

A. When the blossoms are just beginning to brown on some of them; that is, it should be cut, red clover or any clover in fact, when about 10 per cent of the blossoms are browning, some of them full out and others just coming. You want to cut it early in the morning. Just as soon as the dew is off, cut it. Leave it drying until four o'clock, rake it up, put it in cocks and leave it till the next day or the day after if your weather is fine, if it not fine, or if you suspect a change of weather, open it the next morning and shake it up and you can haul it in in the afternoon. That is our experience over and over again, provided that the weather has been favourable for a few days before cutting. You require dry weather. For instance, if it had been raining all the day before the ground would be so wet that there would be no drying going on, and you could not possibly get it ready for hauling the next day.

By Mr. Gould:

Q. Have you had any experience cutting it and putting it right in. I know some farmers in our section advocate that ?

A. You might do that if you paid strict attention to the weather for a week ahead. That is, if you intend to cut the clover, you want to be sure and have good weather for several days before, so that the ground is perfectly dry, and will remain so for a few days afterwards. You do not want a moist atmosphere, and you must have quite a dry bottom to your field in order to be able to do that.

By Mr. Sproule:

Q. How would you secure that kind of weather for the farmer ?

A. Get right in with the weather man.

By Mr. Armstrong:

Q. Do you salt clover ?

A. No, we have occasionally salted it with good results, but generally speaking we do not. It is too expensive.

Q. Salting is expensive ?

A. Yes, it adds that much more to the cost of the clover and the labour.

Q. Does it not increase the weight ?

A. I suppose it does, but I do not approve of it.

Q. Is it not beneficial to cattle ?

A. No, and I will tell you why. If a farmer were doing it himself he might work it all right, but when you have to depend upon others, you are likely to have a whole lot of salt in one spot, a little bit in another spot, and there will be a thick layer here, and a thin layer there, and the cattle when they come to eat that clover are likely to be given a heavy dose of salt one day and none the next day, which is bad feeding, and that is why I object to salting clover.

By Mr. Sproule :

Q'. Does not salting bring moisture to it and improve it ?

A. It certainly retains the moisture a longer time, for salt is a great absorbent, and will keep hay in a damper condition.

THE SILO.

Now the question of silos is the next thing. Silos have been of various characters and kinds. The first silo constructed was one that has come to grief, nearly all the

first silos were square. They were usually about 15 feet square and 15 to 16 or at most 20 feet high and using that class of silo brought ensilage into ill repute. In nearly every case the walls of the silo constructed on old lines were insufficiently supported, the uprights against which the sides were nailed were not sufficiently strong, and soon began to bulge. Then again the silo was not built high enough and thus there was not enough weight of ensilage to compact the material and keep it in good shape.

Such silos have been abandoned wherever tried. I know of hundreds of such silos built from eight to twelve years ago and to-day being used as henhouses, etc. That is

the kind of silos to avoid.

But improvement has come, we have learned to build the silo much more strongly than was done at first. We have learned to build them round, and so avoid corners for corners mean loss. We have learned to so build as to insure the walls remaining perfectly vertical because to make a good silo every foot of the surface of the wall must be vertical, not nearly so, but must be exactly vertical. That is one of the chief requirements of a first-class silo. In the next place it must be of considerable depth. We have found that the deeper you build a silo, provided there is drainage the better it is. The silos in the olden time were built, as I stated, 16 to 20 feet high, which was quite insufficient and accounts for more silos being abandoned than any other reason I know of. Another requirement is that the silo must be perfectly air-tight, the cement and stave silo both have this peculiar feature if they are well built, but the old square silo with bulging sides was never air-tight and the ensilage spoiled in every case.

By Mr. Sproule:

Q. What do you mean by drainage, that the ground underneath is dry, or that

the moisture will be drained out after the ensilage is put in the silo?

A. If you are building a silo, you ought to have a good foundation. It is not necessary that this should extend right across the silo, but the parts whereon the walls stand, must be perfectly solid, and must go down below the surface of the soil. That is, they must go down to where the earth is quite hard and it is possibly some better if they go below the frost line. Suppose the silo to be built needs to be 12 feet in diameter then the foundation walls should cover about 1 foot away from the wooden wall thus leaving about 10 feet diameter of a space to have no other floor than the sub-soil. If the soil is pervious so much the better, for it wants to be well drained. With a tile drain under or through the foundation, the soil constituting the bottom of the silo, would have an outlet which would ensure all the moisture being carried away. Many cement silos have been found objectionable, and stave silos also because the ensilage which was put in to a considerable height, 30 to 35 feet, settled, compressing the lower layers, separating the liquid from the solid and allowing the liquid to sink gradually to the bottom. Where there was no outlet and where the bottom was entirely impervious, the moisture or liquid was retained right in the bottom and for from two we will say up to 12 feet all the ensilage, varying in different silos, was so impregnated with this liquid, was so full of moisture that it got too sour. I have had many letters asking me why it was that 8 feet or so of ensilage in the bottom of the sil) was of very little value on account of its being very sour and unpalatable. was because there was no way for the surplus moisture to get out. I built a silo some years ago and made no provision for drainage. I found that the bottom (6 feet deep in this case) was quite sour, very acid. But on my boring several holes through the cement floor the moisture was able to escape and now the ensilage is perfectly good right to the bottom. That is a precaution which is worthy of attention all over the

Any stave or cement silo that is built exactly like a tub without an outlet for the surplus moisture to escape at the bottom is going to prove a similar failure.

Again you want the walls perfectly smooth, because, as you all know, if you fill a silo 35 feet high to the top, it will sink probably 10 or 15 feet and you do not want any obstructions to prevent the sinking of the ensilage or to prevent its proper curing.

To summarize, a silo to be good demands that its walls be perfectly vertical, perfectly air tight and smooth, and that the bottom be drained, that is, there must be some outlet for the moisture. A kind of silo which is now largely used in the stave silo particularly where the farmer cannot afford to invest a large sum of money. It can be built for from \$1 to \$1.50 per ton capacity. That is a 100 ton stave silo may be built for about \$150, having a roof, a good cement foundation and all the requirements of a first-class silo. This estimate includes the labour, stone, cement and every item required.

Q. Would that be a cement silo all the way up ?

A. No, it is a cement foundation, a stave silo. A cement silo will cost anywhere from \$2 to \$4 per ton capacity. I have seen them advertised as being built for about \$1 per ton, but in every case where I have investigated I have found there had been no allowance made for the stone and gravel supplied by the farmers, nor for the work done by the farmer and his men. We cannot build things in this country that way; labour and teams cost money. According to our estimates it would cost from \$2.50 per ton capacity upwards, and it is going to be more nearly \$4 per ton capacity than anything else. Of course, it is likely to be more durable, but if you are going to succeed with a cement silo it must be built by an expert, a man of long experience with silos, or there is going to be a sorry man in a very short time. It must also be filled by a man who understands cement silos, or he is going to waste an immense amount of ensilage every year. Cement is porous, it absorbs an enormous amount of moisture, and it is likely to let that moisture escape when it is exposed to the air. Supposing you have a cement silo 30 feet in circumference, or say 40 feet, the average size, and 30 feet high, you will see that there you have about 1,200 square feet of surface. Now supposing each square foot absorbs only a pound or so of liquid, if you expose it to the air for six months or a year, all the moisture in the cement dries out, and later the wall absorbs or facilitates the descent to the lower levels of all the moisture from the outer layer of ensilage, so that for six or eight inches, and sometimes 12 inches, the ensilage at the outside is spoiled. It is too dry and becomes quite valueless. Many men have asked how to get over that and there is only one way, which is to have some men to slash water over the wall to get it thoroughly moistened before you put the ensilage in, or else as you are filling it have water put in every foot or so in height around the walls. In that way you may hope to preserve the ensilage in good condition.

By Mr. Ingram :

Q. You were speaking about square silos being abandoned, do you know of any round ones?

A. I know of one or two round silos, stave silos, that have been abandoned, although I saw one of them fixed up again the other day.

Q. What size stave should be used ?

A. The cheapest and the handiest in my experience is the stave silo.

By Mr. Wilson:

Q. What size staves should be used ?

A. Two inches by six inches is about the best size.

By Mr. Wright:

Q. I would like to ask a question before closing, it is an article that I have been preserving some little time which appeared in a newspaper, it is headed, 'Millions in

Corn—Missionary Work of a Railroad among Western Farmers.' Here is one particular item in it that I would like to draw your attention to and have your opinion on. 'The principle of heredity—The principle of heredity applies as much to corn as it does to cattle or human beings, says Professor Holden. Just in proportion to the health and vigour of the seed will be the health and vigour of the corn stalk and the new ears.' We all understand that, but here is what I do not understand, 'One stalk in every seven now produces nothing, because it grows from a barren seed. What is more, if one grain of corn is worthless, the chances are that most of those of the same ear are also worthless.' Now, is it possible to have an ear of corn and you plant the kernels of that ear of corn that it will produce nothing but stalks that will be abortive and produce no ears?

A. Yes, sir, it is possible to be so, but I do not know why?

Q. Well, if that be the case, can you tell that corn when you see it ?

A. I could not, but I know that it happens; I know that about one in seven produces nothing, that is a conservative estimate.

House of Commons,

Committee Room 34,

Friday, May 13, 1904.

The Select Standing Committee on Agriculture and Colonization met here this morning at 10 o'clock. In the absence of Mr. Douglas, upon motion Mr. Sproule was called to the chair.

Mr. J. H. Grisdale, Agriculturist at the central experimental farm, was present by re-call and examined as follows:—

Mr. Chairman and Honourable Members of the Committee, I was speaking to you when I stopped on Wednesday about silos, and there is just one more important feature of the silo to which I wish to draw your attention before proceeding to speak of the filling of silos. I spoke of the different kinds of silo, and the construction thereof, and I want to say that in building silos we have found it on the whole advisable to have a roof thereon. Many have been built without a roof in Ontario, and are maintained in that condition, but we have found that there is a considerable loss in silage where there is no roof. I think that the best kind of roof to make is a temporary one that can be removed in the summer or early part of the autumn when the silo is filled, and put on when the ensilage is all in, that is when all that is intended to be put in the silo is in, and allowed to remain there during the winter. The reason I advocate a temporary roof is, that in filling the silo you can put up a few boards upon the outside, the same size as the silo, and fill the silo 6 or 8 feet above its actual height so as to allow for settling. In that way you can make a given silo contain much more than you can if you fill it only to the height of the permanent silo.

By Mr. Blain:

- Q. Might I ask you the difference in durability of a well constructed stave silo and a cement silo ?
 - A. A well constructed cement silo ?
 - Q. Yes.

A. A well constructed cement silo is as far as I know, permanent, and a stave silo should last, I should think, from ten to twelve years, that is the oldest I know of.

Q. What is the difference in cost ?

A. A stave silo will cost from \$1 to \$1.50 per ton capacity, that is a 100 ton silo will cost you from \$100 to \$150 complete. The cement silo of a similar capacity will cost you from \$300 to \$450 for the same size. That is my estimate and that estimate is based upon a silo which is constructed in part of cement at the Experimental Farm. If you note what is being said in the newspapers, you will see they say that they can construct cement silos for somewhere around \$1.50 per ton but I fail to see the possibility of so doing.

By Mr. Wilson:

Q. Tell us how you build a cement silo ?

A. Circular or hexagonal.

Q. No, no, do you build it in blocks or how ?

A. We build it with a frame which is moved up as the wall rises making a concrete wall.

Q. You have to make a special frame for it ?

A. A special frame, movable in sections which you can hold in place and lift up gradually as the wall goes up. That is a big expense of course, it will cost \$50 or more to make these frames but that is an item that is quite excluded by the average farmer when estimating the cost because he thinks these are thrown in.

By the Chairman:

Q. You say you recommend a temporary cover for silos. If the silo is built inside the barn you would not recommend a roof in that case?

A. No.

By. Mr. Blain:

Q. Is it better to have the silo constructed in the barn if possible?

A. The silo will be more durable and will keep ensilage in a better condition if constructed in the barn since there is not as much danger of freezing.

By Mr. McEwen:

Q. When the sile is constructed inside the barn, will the roof of the barn be liable to injury as the result of the steam and moisture which emanates from the ensilage?

A. A ventilator is necessary, but I do not think there is much danger of rotting the roof. We have silos that have been inside for 14 years, and they have not apparently affected the roof at all.

Q. Will the sile built inside the barn last as well as the others ?

A. Yes, we have a square wooden silo that has stood 14 years inside the barn, and the uprights are still all right, but it has been lined two or three times.

By Mr. Blain:

Q. Is it profitable to construct small silos for a small number of cattle?

A. No, I do not think it is for a very small number. But I should say that for anything more than 10 head of live stock it will be profitable. Any silo that is over 50 tons capacity would be quite profitable to the average farmer. If there are no other questions on silo construction, I will proceed to the next branch of my subject.

By Mr. Bell:

Q. How many cubic feet of silo will it take to hold a ton in silage ?

A. A cubic foot will weigh about 45 lbs., so you can estimate readily how much it is.

By Mr. MacLaren (Perth):

- Q. In building a silo, how do you mix the sand and cement, in what proportion ?
- A. It will depend upon the quality of the cement and the quality of the sand.

Q. What do you recommend; first class cement?

A. Yes, first-class Portland cement and coarse sand and gravel.

Q. How much cement will you use, in what proportion will you use it ?

A. I should say about 1 to 6 for the main wall, and you want a lining of about 1 to 3 to put a good finish on the inside.

By Mr. Bell:

Q. You said the other day that in a circular cement silo the wall was porous and absorbs moisture, and that was an objection. Is there any way of glazing that inside surface so as to overcome that difficulty?

A. I do not know, I am not a builder, and I cannot give you any information

about material along that line.

By Mr. MacLaren (Perth):

Q. They say by using whitewash it will fix it !

A. I don't know how that would act on the silo. I have seen it applied elsewhere and it scaled off.

By Mr. Wilson:

Q. It is generally used to 'quick' cisterns after they are done?

A. In all that I have seen done, and I have noticed several cases where they were treated that way, it has scaled off.

By Mr. MacLaren (Perth):

Q. If it is properly done it will not scale off ?

A. It is very hard to get a man who understands cement thoroughly.

Q. I find that it is a hard thing to get people who understand cement ?

A. Yes. it is.

Q. I think it would be a good thing for the government to give instructions in handling cement?

A. Yes.

By Mr. Parmelee:

- Q. How cheap would have have to be to make ensilage unprofitable-\$7 a ton ?
- A. It would have to be less than that—you mean clover hay?
- Q. I mean the average :
- A. Mixed hay ?
- Q. Yes ?
- A. It would need to be \$4 to \$5 a ton to make ensilage unprofitable.

MATERIALS FOR ENSILAGE.

Corn.

Now, the materials that we have been experimenting with have been varied, but I have found that corn is by all odds the most profitable and the most easily handled in silos. The varieties of corn we have grown include Longfellow, Angel of Midnight, North Dakota, Learning, Early Mastodon and Mammoth Cuban. That is the order in which I would plant them, and that is the order in which we would harvest them in the same year, because the ones mentioned first mature first and are somewhat earlier than the others. No corn should be put into the silo until the corn is beginning to glaze, that is, past the milk stage, in the late dough stage. We find it keeps better, it is more nutritious, more palatable to the cattle, and gives very much better results in our feeding operations. Corn for ensilage purposes grows best on clover sod or when clover has been sown the year before, and turned under before planting the corn. The manure—barnyard manure—should be used and ploughed in with the clover at the rate of about 15 to 20 tons per acre, of course according to the quality and condition of the soil. Corn does best where there is a lot of vegetable matter ready to decompose as soon as it is turned under. The more matter there is of this character for decomposition warming up the under layer of the soil, the better will the corn start off, and the better start the more quickly it will grow and the more early will it mature.

The cutting and filling is a very important consideration. If the corn is mature, if it is in the proper state, for making ensilage, it should be cut drawn and put in the silo all on the same day. If it is not mature, it is better to lie outside for 24 or even 48 hours. In filling, if it is a blower that is being used, all that is necessary to do is to have a kind of platform put in a vertical position where the corn will strike it slantingly and will be projected violently into the silo spreading it around, and one man will be sufficient I think to be in the silo. If it is a carrier that is being used, one where elevators are used, at the end of the elevators I would suggest attaching a number of salt sacks with the bottoms cut out and sewn together, making a long sack. A man can hold the end of this and walk around and fill the silo and tramp it

down at the same time.

By Mr. Kendall:

Q. You said the corn would lay on the ground for one day, or two days. Should it be put in green, wet or allowed to dry?

A. I said if it was mature, in the right stage, put it in the silo at once. If not

mature, let it lie and dry out.

Q. In some years it will be more advanced than others, and it will ferment too much if put in very green. What is the result in the silage?

A. If you put it in wet it will be more acid than if partly dried out.

Q. Did you ever dry it sufficiently to get a vinous fermentation instead of an acetic acid fermentation?

A. We did dry it rather much once, and it gave us a somewhat different fermentation.

Q. Alcoholic?

A. Yes.

By Mr. Parmelee:

Q. Smells like beer ?

A. It had a slightly alcoholic smell.

By Mr. Kendall:

Q. In the early 80's, when they began siloing in France, they got it early to secure an alcoholic fermentation. Is that practicable here?

A. No, not in this country at least. I do not know what is done in France.

- Q. That straw with the acid fermentation was objectionable and the alcoholic is better?
- A. Of course, the alcoholic is the earlier stage, it comes before the acetic acid, and it is very easy for the fermentation to go on.

Q. They claim that if it was put in fairly dry the fermentation did not result

in it?

A. There is not so much inducement for fermentation. The elements which ferment, that is the carbo-hydrates, are in diluted strength—there is not the same tendency to ferment.

Q. Do you keep a record of the temperatures in the fermentation ?

A. We have not lately, no. It has been done; we have done it at the farm, though not since my time. It has gone as high as 186°.

Q. What is the result on the silage ?

A. No apparent result, no injurious effect at least, but I have seen it myself at about 150° on the silo.

Now of all the varieties of material to use, corn has been found to be the most palatable. It is the most nutritious, and has been found to have the best effects on the cattle, on dairy cattle, beef cattle and young stock. We find the best way to feed it is to mix it with cut hay or cut straw. Many people who have become disgusted with the silo have reached such adverse conclusions after having tried to feed their cattle on this stuff just as it came from the silo, without mixing it with any other material, and without having tried to vary the ration during the whole season. As a result their cattle when they come out the next spring are in a very bad condition indeed, and they have condemned the silos for that reason.

By Mr. Blain : *

Q. How does it affect the cattle ?

A. They lose flesh; there is not enough nutriment in it alone to maintain cattle in good flesh. They can hardly eat enough of it to keep them going. When pure it has a nutritive ratio of about 1 in 16. If young stock are being fed just give them the ensilage with cut straw and a very small amount of hay, just enough to keep them in the same condition. They will require but a very small amount. If it is desired to make them gain a little a small amount of meal will help them along very much, because the ensilage seems to be so palatable and to aid digestion so much, that every ounce of meal counts when fed in small quantities among the ensilage.

By Dr. Kendall:

Q. A little clover hay would be good ?

A. The very best. I think that is the best thing you can have for young cattle, that is how we feed our young heifers, ensilage, straw and a little bit of clover hay.

By the Chairman:

Q. Do you cut the hay ?

A. We cut the straw but not the clover hay. Where everything is cut there is sometimes a tendency to indigestion, but when you feed part of it long the animals have to masticate it more thoroughly.

The cost of producing this ensilage is a very important question, and I have here the figures for the last four or five years. Taking the first year of which I have a record here, 1900, we had a return of twenty and one half tons to the acre.

Q. Was that weighed ?

A. Weighed, and it cost in the silo, \$1.25 per ton. The cost of cultivating an acre was \$25.50. In 1901, we had 16\frac{3}{2} tons per acre which cost us in the silo \$1.42 per ton. In 1902, we had 29\frac{3}{4} acres of corn, and 15 tons to the acre, and it cost us \$1.76 per ton, and it cost \$26.30 per ton to put it in the silo. In 1903, we had small crops, as you know last year was a very bad year for corn.

By Mr. Bell:

Q. The cost per acre was \$26.30 for cultivation ?

A. That was the cost per acre in the silo.

By Mr. Wilson:

Q. For how many tons ?

A. I have not the number of tons here for that year I am sorry to say, but I think it was 18 tons, I have it for all the others.

Q. That ought to have been there, it is an important part of the calculation.

A. I do not know how I came to miss it for that year. I have it for all the others. In 1903 we were able to cultivate our corn for \$21.73 per acre, that is, to put it into the silo for that, and it yielded 13½ tons per acre, and cost us \$1.64 per ton in the silo.

By Mr. Bell :

Q. When were those weights taken ?

A. As it was put into the silo. The items which go to make up the cost are as follows:—

Rent of land at \$3 per acre; cultivating and ribbing at \$2.50 per day;

By .r. Wilson:

Q. Is that not a very low rental per acre for good farm land, \$3 ?

A. For rent ?

Q. Yes? You can get pretty nearly that by the farm for broken land, but you take land that you have cultivated, and \$3 per acre would be a low price for it.

A. Do you think it is ?

Q. I think so ?

A. Of course that is an arbitrary figure that I have taken.

By Mr. Parmelee :

Q. It does not make any difference if you know the figures upon which the calcu-

lation is based?

A. We charge \$2.50 per diem for the team, and we take one-fifth of the manure applied at 15 tons per acre, at \$1 per ton. That is \$15 per acre, or \$3 per acre per annum. Seed is charged at \$1 per bushel, 25 pounds to the acre, that was in the year 1902. In 1904 it was \$1,25 and \$1.35; hoeing we charged at \$1,33½ per diem, all the manual labour is charged at that rate—\$1.33½ and the use of the machinery at 20 cents per acre; and the use of the engine, fuel, ensilage cutter and engineer at \$6.50 per diem. If we eliminate the manure and the rent and the charge for the machinery you see it would bring down the cost very materially. At the Guelph Agricultural College, in making these estimates of the cost of the different crops, they neglect these items I have mentioned entirely, and so they bring down the cost very materially, but we think these items should be considered.

By Mr. Wilson:

Q. Naturally so, what items are omitted ?

A. The rent, manure, and the use of the machinery; they also neglect anything like twine and cost of seed, they count in merely the labour.

Q. Is it not almost a wonder they count in even the labour ?

A. If there are no other questions about corn, I want to say a few words about other materials which we have tried and from which we have found you can make good ensilage. The different varieties of clover, Red, Mammoth, Lucerne and Alsike.

By Mr. Armstrong:

Q. Did you weigh the corn out when you fed it in ensilage ?

A. Yes.

Q. What was the shrinkage ?

A. From the time it was cut in the fall until it was fed to the cattle the loss in the year 1902-03 was 21 per cent. Now, of course, I do not—

Q. Is that the average loss?
A. That is the average loss.

Q. The average all the way through ?

A. For that one year. We weighed everything as it went in, and we weighed it as it was fed to the cattle and that was the loss. Now a part of that loss is accounted for in the loss of water. Of course, all the liquid that escapes is not pure water, there is more or less nutriment, nutritious matter goes with it, but it is principally water, and I think I am safe in saying that about 21 per cent of loss in absolute weight means a loss of about 15 per cent in dry matter.

By Mr. Bell:

Q. Can that be avoided by preventing the seepage ?

A. Yes, but we have found that it is not advisable to avoid it, that it is better to let it go on and you get a better quality of ensilage, more palatable and more nutritious by letting a large amount of seepage go on. Where we stopped the seepage the ensilage was not so good.

Q. I do not mean that, but cannot you so adjust your crop or regulate the state of

ripeness in which it comes into the silo that you would have no seepage ?

A. If you could control the weather, you could, but some years it freezes in the first part of September, and of course that necessitates cutting it somewhat earlier. Some years, like last year, it will not grow until the middle of June, and that necessitates cutting it at an earlier stage; practically all that was cut last year was cut two weeks earlier than it should have been, and then we did not cut until October, so you see you cannot control that altogether.

Q. No, but if you could you could avoid seepage altogether ?

A. Yes.

By Mr. Blain:

Q. What animals have you found ensilage suitable for in addition to cattle?

A. We have found ensilage suitable for cattle of all descriptions, for sheep to a limited extent and we have also fed it to horses to a limited extent.

Q. Is it good for horses working on a farm ?

A. No, I would not advise you to feed it extensively. If a farmer has a number of horses idle, I would say, give them a certain amount of it, or if he is working them as the average farmers' horses are worked in winter, I would say give them a certain amount because it is succulent and nutritious.

By Mr. Wilson:

Q. Would it be worth while, for what little difference there would be in the cost of feed, between that and hay ?

A. Well, as you see, I say it is succulent, and for that reason it is of some advan-

tage to the horses to give them in winter, when succulent food is scarce.

Q. You seem to say that you think it would keep them in better condition ? A. Keep them in a better condition of health; not fed extensively, but to a certain extent.

CLOVER FOR ENSILAGE.

Now, coming back to the clover, I think I said we had tried the different varieties and we find it is best to cut it just as it is coming into bloom, before there are any brown blossoms at all. It should be cut early in the morning with the dew on it and allowed to remain on the ground until say 10 o'clock, and then hauled in and cut. We have tried to put it in the silo full length without cutting, but got rather unfavourable results. Where there is a second crop that may be put in with the corn in the fall; there is certainly no better mixture than equal parts, that is, equal parts of corn and clover, or two of corn and one of clover, and put them together through the cutting box. This is just as palatable and is much more nutritious than the pure corn. It comes much more nearly being a properly balanced ration. Where clover is put in alone it must be with much care and the silo must be in good condition to ensure its being well preserved.

We have mixed with the clover in addition to corn all kinds of grasses, and have got very favourable results. We have tried the different cereal crops as material for making ensilage, and have not been very much pleased with them, because any hollow stemmed plant carries into the silo too much air, and the decomposition which ensues is too great to enable us to make good ensilage. Therefore, we always advise not putting in any hollow stemmed plant, or at any rate using them to a very small extent. All the cereals have been tried, barley, oats, wheat and rye. Rye cut in a very green stage is sometimes good if mixed with some other material. We have tried horse beans; they have proven very satisfactory if mixed with corn, but they are difficult to grow in most parts of Canada.

By Mr. Kendall:

Q. Are they subject to frost early?

A. No. Down in the maritime provinces the horse bean does very well and may be grown in rows with corn, and in addition it makes a capital ensilage if cut with the corn. But in this district and west of here and even in Quebec I do not think it is possible to succeed, because the horse bean requires a moist climate and our climatic conditions are not favourable.

By Mr. Parmelee:

Q. Have you abandoned sunflowers ?

A. That is just my next item. We have tried them to a certain extent also and they usually have failed, although they make a good mixture with the average corn ensilage, yet the cost of growing them is so great that it does not pay, and we have practically abandoned them. We grew only a few last year and I do not know that any have been planted this year. That does not come in my department, except to experiment with them in the silo. I would not grow them, I would not advise any farmer to grow them for food purposes, otherwise than for chickens or something like that.

RAPE FOR SILAGE.

Rape has been tried, was tried last year, but we found that the loss in dry matter was very great. For instance, we put in 5,620 pounds of rape in a small silo and took out 2,590 pounds, that is a loss of 54 per cent of the actual weight going in. I had it analysed going in and coming out and found that while we put in 784 pounds of dry matter we took out only 564 pounds, a loss of 28 per cent. Thus there is apparently much greater loss in making ensilage from rape rather than corn. I may say however that it came out in a very palatable form. Any of you who have smelled or tasted sauerkraut knows exactly what it is like, for it has just the same kind of smell as sauerkraut. Cattle were very fond of it. They make efforts to get at it, and moved away other feed to reach the rape ensilage.

By Mr. Wilson:

Q. How is that feed compared with other feed that you put in ?

A. It is capital feed, sir.

Q. Does it do better if not put in as ensilage ?

A. Our aim was to try to get something green in winter. It is very valuable for cattle, swine, young stock and sheep in the summer.

Q. Does it do to put away for winter feed ?

A. There has been no way found to preserve it, unless by making ensilage of it so far. You can cut it late in the fall, put it in small piles and if the winter is one of steady frost it will keep. But if it thaws and freezes it will spoil.

Q. You would have to put it in cold storage? A. Yes.

By Mr. Kendall:

Q. Is there more protein than in corn ? A. Yes, it is rich in protein than corn.

Q. Would it be a fair complement with corn ?

We were unable for a certain reason to weigh the We tried it. mixture of corn and rape when it went in but judging by the appearance when it came out it had lost considerable, but had kept well and was very palatable.

Q. It was at least better to use as a complement of corn for dry matter than the

rape alone ?

A. Yes, because there is such a great loss.

Rape is I think the best pasture you can use for sheep or for swine or for calves in summer. That is the use of rape.

Q. Not for milch cows ?

A. Well, it gives good returns. It is likely I think to flavour the milk. I wrote a bulletin on rape some time ago which is widely circulated and in that I tried to make it more popular, and I think it is likely to be one of the most popular forage plants in the country.

By the Chairman:

Q. Do you find rape very hard on the land ?

A. I must say I cannot speak positively about that, for this reason, most of what we have grown has been used as pasture for sheep and swine, and, as you know, these animals being on the land fertilize it very materially, and the land has been kept up in that way.

By Mr. Bell:

Q. How do you feed it to calves? Do they run on it?

A. No, we cut it and give-it to them.

Q. Sheep are allowed to run?

A. Yes, you have to be careful when it is wet or they will bloat. There is danger from that.

By Mr. Blain :

Q. Have you any new results with this ensilage that you would recommend

specially to the farmer during the past year ?

A. Nothing more than the mixture of corn and clover. That is the thing that I would recommend most strongly to any farmer who is anxious to get the very best feed for cattle in the winter.

Q. Do you understand what I mean? I understand there must be a great deal of sameness about the work. The question I want to get at is whether you have specially brought out anything that you would attach a great deal of importance to

and which you would recommend specially to the farmers just now ?

A. Most of these points have never been discussed before this Committee before now to my knowledge, we have been studying these questions for 14 years, and I thought it would be an opportune time to summarize and present to you our findings. That is why this subject was brought up.

Q. I am not objecting at all, don't misunderstand me.

A. I don't think there is anything that we have found out this last year excepting the questions I have mentioned to you about the mixture; that is certainly an important matter.

By Mr. Kendall:

Q. Do I understand that you are mixing clover with the ensilage or feeding clover hay with the ensilage?

A. Both.

- Q. Do you regret the good results ?
- A. The best silage I know of, is mixing clover with the corn.

By Mr. Kendall:

Q. The clover has to be good ?

A. Yes.

By Mr. Parmelee:

Q. That means second crop clover ?

A. Yes. Of course, in some regions where you cannot grow a second crop of clover, you cannot follow this rule. But in this section, and for a considerable distance west of here, it is very, very seldom there is not a second crop of clover. Then also in places like British Columbia where they cannot grow corn very well, but where they can grow clover exceedingly well, if they could grow a small crop of corn and mix it with the clover, they would increase their chances of having first-class ensilage, because it helps to preserve the clover and produces a succulent ration, which is very nearly balanced for the average animal. I think this point of mixing corn with clover is most important for Eastern Ontario, Quebec, the Maritime Provinces and British Columbia. I have received during the last year a great many questions from British Columbia about making ensilage from clover. Of course, as I stated, it is very difficult to make good ensilage from clover; there seems to be so many little things which are almost impossible to control, that to advise the average farmer to build a silo and to make clover ensilage would be like advising to throw away \$200 or \$300. I feel somewhat he sitant because I know that the average farmer will not succeed, while the good farmer, the man who has considerable ability, who knows what he is doing all the

time will succeed, but the average farmer will not, as I know from observing many who have tried.

Q. You speak of mixing corn and clover as good for the eastern parts of Ontario, where do you draw the difference between Eastern and Western Ontario?

A. The second crop of clover in Western Ontario is, generally speaking, very small. That is from what I know of it, of course I am not as familiar with many parts of Western Canada as I am down here.

Q. How much more valuable is a ton of clover ensilage than a ton of clover hay

properly cured ?

A. I do not think it is as valuable for a moment.

Q. What is the advantage of having ensilage then?

A. Because you have a succulent material, and because where you can cut a ton of hay you can cut three tons of ensilage; you see ensilage contains a very high percentage of water, and it is not fair to make a comparison.

Q. Then reduce it to dry matter ?

A. Well, I should say a ton of properly cured clover hay would be worth about two tons of clover ensilage.

Q. But you get three tons of clover ensilage in the place of one ton of clover

hay, would you?

A. Yes. We have sown clover in the spring, grown a crop of oats, and after the oat crop has been harvested we have actually got 7½ tons of clover ensilage off it in this district. Well, now, you could not cut hay, it would be dried out, perhaps a half ton of hay, which would not be worth while cutting, but it is worth while cutting as ensilage.

By Mr. Blain :

Q. Your observations so far have been directed largely towards fattening cattle. What effect would this ensilage have upon milch cows?

A. We feed it very extensively to milch cows; I think we feed as many milch cows as fat cattle.

Q. Do you find it does equally well with milch cows as with fat cattle ?

A. Yes.

By Mr. Kendall:

Q. Have you any results from ensilage made from oats and vetches?

A. From oats and vetches, from oats and peas, from oats and barley, from vetches, and from peas and wheat mixed together. Wherever we put in a cereal, any hollow stemmed plant, then the results were not so good. Any plant having a hollow stem seems to militate very strongly against success.

Q. In some land you find it easier to grow a crop of vetches than to get a clover

catch, do you not ?

A. That is not our experience here, we do not grow vetches very extensively, we have the vetches growing, but with us clover grows very well. Of course, in poor soil, vetches will likely grow more easily than clover.

Q. You could do more with vetches down our way than with clover on poor soil ?

A. Of course, clover will not succeed as well as vetches on a poor soil. There is an incident which comes to my mind which is probably worth bringing to your attention. We tried an experiment two years ago in connection with the treatment of fields put down to meadow. It has been considered, and I agree with the average farmer in this matter, that it is advisable not to touch a field that is going to be put into meadow next year after the grain has been harvested. We took a certain field and divided it

into three equal parts, one-third was pasture, it was a firm clay soil and we pastured it with sheep, one-third we did not touch, and off the other third we cut 7½ tons of green clover to the acre. Next year we kept a record of the hay and made notes of the returns from the different parts of the field, and found there was no difference in the returns at all.

By Mr. Armstrong:

- Q. Did you not find where you allowed the clover to remain it smothered out the roots?
- A. No, it did not. I have seen that happen, but it did not in this case. Of course this year was the first year for the clover. It had just been sown in the spring.

By Mr. Wilson:

- Q. Yes, but you would not recommend that in a general way, would you ?
- A. No.
- Q. What would you recommend to do ?
- A. I would advise very strongly allowing the clover to grow and in dry weather to put on some light animals to pasture, but only in dry weather, and not allow them to remain if there is rain, also not to let them pasture down the grass too closely. That is the ideal treatment.

By the Chairman:

- Q. Have you ever made up any estimate of what the value of ensilage was per ton, in comparison with other lines of feed, say hay, its feeding value?
- A. I have not personally, no sir, except in comparison with one other feed in which I have a note here.
 - Q. Supposing you were buying it, what would you feel like giving for it ?
 - A. I would give \$2 per. ton.

By Mr. Parmelee:

Q. Well you cannot give the prices absolutely, but relatively to the price of hay,

with hay at \$10 a ton, say ?

A. Yes. With hay at \$10 a ton, I would give \$2 or more. I want to say it is not only the food that is in the ensilage that is valuable, it is the succulence, the succulent quality of the ensilage counts, I think for at least one-third of its value in the winter. Of course in the summer that is not such a material consideration, but in winter it is certainly equal to one-third of the value to have it.

By Mr. Armstrong:

- Q. What would you advise to be grown during hot weather in summer when the pastures are dry as something to tide the cattle over, that is milch cows and such as that ?
- A. It will depend somewhat on the locality. We have tried practically everything I think, and we have come back to this that we sow a mixture of two bushels of oats and one bushel of peas, and find that the very best we can get. If you prefer vetches to peas there is no objection, but we find that vetches are dearer than peas and therefore we substitute peas for vetches. Barley is not palatable as soon as it gets out in head unless you get a beardless variety.
 - Q. What time would you sow this ?
- A. I would sow it at different dates, some as early as you could, the next one a week or ten days later, and so on until about June 10. Then I would have sown at

about the middle of May, corn, some of the Longfellow or Leaming, one of those two varieties, and sown it fairly thickly to be cut the first part of September, because the crops that I have mentioned, a mixture of peas and oats, would last until about that time if sown in sufficient quantities.

EFFECT OF ENSILAGE ON MILK.

By Mr. Ingram:

Q. After ensilage for instance ferments to a certain stage would it affect the milk given by milk cows?

At No. I suppose it would affect it if the milk were kept for a long time. Supposing it was for a condensing factory it might affect it then, because the milk is kept for a long time and the fermentation might make a difference. But for the dairy requirements, cheese, butter, or city milk, ensilage is quite a satisfactory feed.

Q. At any stage ?

A. Yes.

By Mr. Parmelee:

Q. That would only be the case when you feed ensilage entirely. If you make a

mixed ration of hay, straw or meal there is no perceptible change ?

A. No, I have never been able to see any perceptible change in the milk, but I know that some men who run condensing factories object. Down in the Eastern Townships there is one who does not object, but in the west at Ingersoll there is a factory that will not accept milk from ensilage-fed cows. Why, I do not know, but they tell me that if the milk is kept a long time after the ensilage has been fed there is an acid flavour. I have never tested the thing; I don't know myself. In Prince Edward Island they have a somewhat similar regulation about the feeding of their cows.

By Mr. Kendall:

Q. If you put an article into the silo that has become too ripe, in which woody fibres are found, does the process of fermentation make that woody fibre any less injurious to digestion?

A. It changes the cellulose in that woody fibre, but I do not think it improves its digestive qualities. I know that it breaks down some of the cellulose, but as to the

digestibility, I don't think it is increased.

If there are no other questions about the silo and ensilage, I will take up some other subject. As I mentioned to you last year, a line of work has been taken up in the last four or five years trying to lead farmers to keep records of their dairy cows.

By Mr. Armstrong:

Q. The oats and peas that you recommended being fed, would they be pastured or would they be cut and thrown over the fence?

A. No, they would not be pastured. I don't know anything that you could pasture

unless rape or white turnips.

Q. Would you advise that for men with milch cows?

A. I am not so positive about that. I have never fed it myself, but I know several farmers who have pastured their milch cows on rape and say they have never had any objection from the factory men.

By Mr. Ingram:

Q. No turnipy butter ?

A. Apparently not, but it certainly has a high flavour, quite as high as the turnip.

By Mr. Wilson:

Q. Have you ever found anything to change the flavour of the butter? Professor Robertson talks about using what he calls a starter.

A. Something to put in the milk. I thought you meant something in the milk.

I am talking about the adulteration of the milk.

Q. Mr. Ingram said the turnips would affect the flavour of the milk, and he asks a question about them.

A. We have used starters in the milk.

Q. Can you get the flavour you desire to have ?

Q. Then it don't matter much what you feed to the cows.

A. I don't know that you could eliminate the turnipy flavour though. If you take and Pasteurize the milk immediately after drawn from the cows, that drives off the turnipy flavour. If you feed the cows half an hour after the milking and let them have no more turnips until after the next milking you will have very little flavour. People will object to turnips being fed when you begin to feed, but if you proceed and persuade them that you are quitting and keep on feeding turnips just the same they will not know any difference and when you stop they will want to know what is the matter with the milk.

By Mr. Armstrong:

Q. I think that is a pretty risky thing to do unless you are sure. I understand that you claim that would not affect the butter.

A. I said a milk customer. It is a different thing.

By Mr. Blain:

Q. Do you find the ensilage taking the place of roots to any considerable extent? A. Well, I think so. Of course that is a thing very hard to ascertain, there are so many farmers. But I may say that the use of ensilage is increasing and I don't think the use of roots is. Roots require much more labour, real hard labour, you have

to get right down to them, while corn requires comparatively little manual labour. The cost of looking after an acre is usually \$7 or \$8 greater than for an acre of

corn.

By Mr. Ingram:

Q. You can raise it in different climates.

A. Yes.

By Mr. Armstrong:

- Q. Have you had any experience with sugar beet tops ?
- A. Of course we have fed them to a limited extent what we grow ourselves.

Q. With what result?

- A. Very good results. Turnip tops however are very injurious, nothing will, affect the flavour more quickly than turnip tops.
 - Q. Will beet tops affect it?
 A. No, not in our experience.

By Mr. Ingram:

- Q. Do you draw any distinction between Swede turnips and other turnips !
- A. I mean the Swedes.

ROOTS VERSUS CORN FOR FEED.

By the Chairman:

- Q. I understood you to say in feeding cattle with ensilage and other food that you could just keep them merely at their status and make no advance unless you feed them a little meal, that when you wanted them to improve you fed them a little meal. Can you not do better with roots and hay and without feeding meal at all.
 - A. Yes, I think you could.
 - Q. If that be so would roots not be preferable to ensilage ?
- A. Roots are a better feed for young stock, ton for ton, than ensilage. For beef cattle to which you are giving meal they are of about the same value.

By Mr. Wilson:

Q. How about the relative cost ?

A. Well, they are about the same in cost, sir, When you consider every side of the question they are of practically the same cost. It costs about the same to produce a ton of roots and a ton of corn ensilage. Of course a ton of corn ensilage contains about twice as much food as a ton of roots, but the quality is not as good as the food from the ton of roots, and the quality of the food in the ton of roots seems to make up for the largely increased amount in the ton of ensilage. For instance 100 pounds of roots contains nine to ten pounds of dry matter all possible of digestion and 100 pounds of ensilage contains from twenty to twenty-eight pounds of dry matter, about three quarters digestible. The dry matter in the roots is of highly nutritive character with a nutritive ratio of about one to eight or nine, the dry matter in corn has a nutritive ratio of from one to twelve down to one to sixteen or even one to eighteen depending on the kind of corn and the season so you see the great difference there is in the quality of the feed from the two kinds of succulent matter. We can produce a ton of roots in the root-house for practically the same as we can produce a ton of corn in the silo, but the kind of labour that is employed is very different. A farmer can grow two tons of corn (I am sure I am giving a conservative estimate) where he can grow one ton of roots, because he can do practically all the work in his corn field with horses, but in the root field a large proportion of the labour has to be done by hand. Now that is the comparative value or standing of the two kinds of succulent feed. All good farmers should grow, I think, one acre of roots for every three acres of corn, he should feed them mixed in about that proportion to his cattle, one of roots to three of corn ensilage, that is to his mature cattle. To his young cattle and sheep he will feed practically pure roots or with a small admixture of corn ensilage and that is what I should consider, from observation and practice, ideal feeding.

By Mr. Armstrong:

Q. Is that for milking purposes or fattening ?

A. For both.

METHODS OF FEEDING ROOTS.

By Mr. Ingram :

Q. In feeding turnips to horses and cattle do you feed them whole or pulp or slice them?

A. I prefer to pulp them, I prefer the pulper to the slicer, for this reason: we have found that the ideal way to feed economically is to mix the cut feed, ensilage and pulped roots thoroughly, give them to the cattle, and then sprinkle the meal on top and give the whole mass a stir with the hand. If we have a row of steers that we are feeding we take, say, 500 pounds of the roughness mixture, mixed in the proportions

of say, 100 pounds ensilage, 30 pounds roots, and about 5 pounds of cut straw and run that along in front of the cattle, shovel in what we know by experience each animal will eat, then take the portion of meal weighed out for that row go along and give each animal on top of the roughness mixture just fed the amount we find that animal can stand profitably mixing the two together.

By Mr. Sproule:

Q. Why would you not find it more profitable to mix it altogether ahead, in the night for the morning and so on ?

A. If you have ever fed steers as any one who has done so knows, there never were nine steers in a given class that would each stand exactly the same amount of meal. They will not stand even the same amount of roughage, but particularly is this the case with the meal fed. One animal can stand say 31 pounds, another 4, and another 41, now that might be an average of about 4 pounds of meal for all that row, that is the way we carry on our feeding experiments, but it is impossible to go on and get, good results by giving each individual of a given number of steers exactly the same amount of all kinds of feed. You cannot do it and get the best results, it is quite impossible. You have to study the character and the appetite of the different animals just as closely as you would have to understand the appetites and dispositions of your pet boarders if you were running a boarding house. Animals are quite as particular in what they eat as people, some eat heavily and some eat lightly and they do not make gains in proportion to the amount they eat. Some light eaters if they are healthy and doing well, will make quite as much gain for a certain amount of food, as will the heavy eaters for the increased amount of food. If we mixed the meal, say we had 500 pounds of roughing and put in with that 45 pounds of meal, then every one of the animals would get 5 pounds of meal; but some steers could not stand it, they would be sick, scouring or off their feed in a day or two while others would be looking for more. So we have to feed them as I indicated above. We know how much roughage each animal can take up, and we feed them just what they will eat. Therefore while your average steer in the row gets 45 pounds of roughage and 5 pounds of meal and 3 pounds of hay, probably one is getting 40 pounds of roughage and 4 pounds of meal, and another 50 pounds of roughage and 5½ pounds of meal and the steers might be practically of the same size.

By Mr. Armstrong:

Q. By sizing up a bunch of steers can you pick out the ones that would be the most expensive in eating or which require the largest quantity of meal and other food or rather can you pick out the ones that would eat least and give the best results?

A. I think so. I would not like to say it could be done just to every steer, but one could come pretty near. Of course there are always some internal things one cannot see, but if you take a class of say nine stockers one could pick out the three best, and could probably pick out the one that was the very best, and the most economical producer, one might not be able to do it, exactly, but one could come pretty near it.

Q. You might do so with horses ?

A. Yes, usually, but not always with steers, it depends upon the general configuration, the nature and the breed, all these things count.

By Mr. Blain:

Q. The breeding would make a difference, you would have to know the different points of breeds?

A. You would have to know all the qualities of the different breeds in order to size them up, but of course you are supposed to know that. Now, if there are no other questions about feeding I will take up this other subject.

DAIRY RECORDS.

As I stated before I have been urging upon farmers the advisability of keeping records of the milk returns from their dairy cows. The average return from the average cow in the country, according to the last decennial census is about 2,300 pounds of milk per annum. Now this is quite inadequate if we are to make a success of the business, we must have far more than this, and in order to get this result I am advocating the advisability of keeping records of the production of the different cows in order that the farmers may know what they are getting from all their cows, and in order that they may learn how to feed cows because it is only by the study of the relation between the feed and the returns we can hope to make any progress in dairying. Further, in order that they may become more interested in their cows and more thoroughly understand the immense importance it is to them if they can succeed in making a cow give 2 or 3 pounds per day more than she has been giving, when they understand that they are very much more interested in the individual, I am sure it is so with a great number of farmers at least. I have induced a large number of farmers to take part in this, and we are supplying them with forms which are sent out free. They can also secure from the government I believe a milk scale which will enable them to weigh the milk quite readily, a small spring balance.

By Mr. Armstrong:

Q. Free of charge ?

A. No, I think they have to pay \$1 for it. It has also been found very valuable as a guide to breeding operations. If the farmers were interested in pure breeding it would do much to help build up the dairy industry of Canada as we should be doing. We want to know the records of the cows from which we are selling bulls and the cows that do not give a sufficient amount of milk, their calves should be sent to the block as soon as dropped. These records have been of great value in this respect. I have here a sample record, 'Milk and Butter Record for 1903 of W. F. Stephen's Herd of Ayrshires, Spring Brook Farm, Trout River, Quebec.' Now this man has at my suggestion kept a record of his pure bred cows for a number of years. This is his record for 1903.

By Mr. Ingram:

Q. Would there be any harm to read that so as to put it on record?

A. No, I will leave it with the reporters. He has arranged his cows in the order of merit. I know of many other men who are doing the same thing. Mr. J. G. Clark of Westboro, Ont., is doing the same thing and he is, I think, one of the most successful Ayrshire breeders that there is in Canada. He tells me that he has never struck anything that has done him more good in building up his herd. It is not only the pure bred breeders that can make a success or help themselves by this means. A young man by the name of D. D. Gray three years ago at my suggestion started to keep a record. He has a herd of thirteen cows. They gave him \$34.50 per annum at the factory four years ago and by selection of the herd his record for last year—

By Mr. Armstrong:

Q. Butter or cheese factory ?

A. Cheese factory. He sent to the cheese factory in 1903 \$601.46 worth of milk from these cows. He sent to the city of Montreal \$183.18 worth of milk. He made besides \$24 worth of butter, and besides he has furnished milk for the house and raised three calves—all this from thirteen cows.

By Mr. Ingram:

Q. Does he say what he got for milk in Mortreal?

A. \$1.30 a hundred.

By the Chairman :

Q. One and a third cents a pound ?

A. Of course that is a very remunerative price, but he just got regular factory prices for his milk which he sent there.

By Mr. Armstrong:

Q. What price did he get at the cheese factory ?

A. Somewhere around 90 cents.

By Mr. Parmelee:

Q. 90 or 95 cents ?

A. Yes, probably. That is what one young man has done; many others have done as well. I got the other day from A. O. Price, of Bridgetown, N.S., this letter:—
'I am again applying to you for more milk recording sheets. I would much prefer those you first issued marked out for a month rather than for a week, if you have any on hand. Since using the records for three years we have increased our yield nearly two fold. Cannot speak too highly of it.' So you see it is not merely the breeders of pure bred cattle who write thus, but any one who is anxious to make a paying business of dairying cannot do better than keep such a record. There is certainly no one thing in dairying that will pay better than keeping a record of the cows. I have here a long list of expressions of pleasure and delight with the keeping of these records.

By Mr. Armstrong:

- Q. Have you any reports from butter factory men, men sending milk to creameries?
- A. I do not as a rule know how these men are disposing of their milk. I do not know them except by correspondence. Some of them have however told me. Price is a butter factory man.

By Mr. Parmelee:

Q. What steps have you taken to advise the farmers to use these records ?

A. I have written a great many factory men and got the names of farmers and have written later on to the farmers and sent samples. I have written articles and spoken on the subject wherever I have had the opportunity. I have a list here of men from the Pacific to the Atlantic, and they are trying it all over. We have men who are quite enthusiastic over this. And there are others who sent for enough sheets to do quite a circuit of members. I am sure there are thousands keeping these records to-day that we never hear about. I have sent out so many on request but not many write to tell that they are doing well; they write and ask for more forms, that is satisfactory.

By Mr. Kendall:

Q. Are these records kept at Reford's and Ogilvie's farms ?

A. I do not know. They were not a few years ago. These are men I am well acquainted with, but they consider themselves—

By Mr. Ingram:

Q. Equally as capable ?

A. And probably more so, and they do not think they can learn anything from what we can do at the experimental farm along these lines.

By Mr. Armstrong:

Have you a copy of any of these records with you ?

A. No, I have not. I intended to bring them. I had them here last year and I had probably—

By Mr. Parmelee:

Q. He means the blank ?

A. Yes, I know what he means.

Q. You might supply the members of the Committee and they might do a little missionary work for you.

A. I should be only too pleased indeed to supply a number to each of you. If any think it would be a good idea I will send them to you.

Q. Yes.

A. I will send them to you to-morrow.

EXPERIMENTAL FARM DAIRY HERD.

We have been carrying on work with the dairy herds at the farm. We have there eight herds, four pure bred and four grade herds. We have been studying first the amount of milk produced by each breed. To do so we have taken three cows on test in each breed. As you know where the herds are rather small as must be perforce the case where you have eight herds on one farm, it would be hardly fair to take the heifer that has calved three months before the end of the year and include her ninety days' milk as though for the year. So we eliminate such things as this and take three cows that have milked at least nine months of the period covered by the reports, so as to get an average of the return from that herd.

AMOUNT OF MILK.

Now in taking the amount of milk we found that the Ayrshires stood first with 7,993 pounds per annum. The Ayrshire grades second with 7,871 pounds, the Canadians 6,440, the Gurnsey grades 6,199, the Shorthorn grades 6,176, the Shorthorns 6,053, the Gurnseys 5,855.

QUALITY OF MILK.

When it came to the quality of milk however there was a very material change. The Gurnseys stood first with an average of 4'96—practically 5 per cent—butter fat. The next class was the Gurnsey grade with 4'95 per cent butter fat; then the Canadians with 4'58, followed closely by the Canadian grade with 4'55. The Shorthorn grade stood fifth with 4'27, followed by the Shorthorns with 4'22, and next came the Ayrshires with 3'91—not quite 4 per cent—and the lowest in fat were the Ayrshire grades, with 3'65.

By Mr. Wilson:

Q. Is that taken into account at the cheese factory?

A. In many factories it is, sir. It is at practically all the butter factories—not all but a great many.

By Mr. Armstrong:

Q. Don't these vary? For instance there are Ayrshires that give better results than that.

A. Yes, we have one Ayrshire that gives over 4 per cent milk while the average from the Ayrshire herd is only 3.91 per cent.

By the Chairman:

Q. You have not included the Holsteins or Jerseys?

A. No we have none of them at the farm. We have one Channel Island breed and the British breeds.

By Mr. Kendall:

Q. The Ayrshires give more butter than the others notwithstanding the low percentage?

AMOUNT OF BUTTER.

A. Here is the amount of butter. The first is the Ayrshires with 386 pounds of butter. The Gurnsey grades come next with 361 pounds, then the Ayrshire grades with 338 pounds, then the Canadians with 347 pounds, the Gurnseys with 342 pounds, the Shorthorn grades with 310 pounds and then the Shorthorns with 301 pounds.

VALUE OF BUTTER AND SKIM MILK.

We value the butter at 20 cents a pound. We got more than that, but we thought that price was probably as much as the average farmer makes, from the creamery. The Ayrshires gave us \$85 a year, the Guernsey grades \$80.97, the Canadians \$78.54, the Guernsey \$76.64, the Ayrshire grades \$78.96, the Shorthorn grades \$70.86, and the Shorthorns \$68.84.

By Mr. Wilson:

Q. Is that for each animal?

A. That is the average for each animal at the prices I have mentioned.

By Mr. Kendall:

Q. What are the highest and the lowest ?

A. The Ayrshires \$85 are the highest and the lowest is \$68.84 for the Shorthorns.

By Mr. Parmelee:

- Q. You have made no calculations showing the percentage of profit ?
- A. Yes.

Q. That is in relation to cost ?

A. I have it here, sir. Taking the Guernsey grades the cost of feed to a Guernsey grade on the average was \$34.42 for the year, which leaves a net profit of \$46.55 for the Guernsey grade. It costs to feed the Canadian cows \$33.43 leaving a net profit of \$45.12. It costs to feed the Ayrshires, pure bred, \$40.18 which leaves a net profit of \$44.82. It costs to feed the Guernsey pure bred \$37.53 which leaves a net profit of \$42.45. The cost of feeding an Ayrshire grade was \$37.43 which leaves a net profit of \$41.54. It costs to feed the Shorthorns \$34.80—but this is hardly a fair comparison with the rest because some of the Shorthorns which are included in that were not in our stable the whole year, so we cannot properly put them in.

Q. Why not leave them out then ?

A. Very well.

By Mr. Wilson:

Q. That does not include anything for labour ?

A. Just the feed. The Shorthorn grades cost us \$40.87 which left a net profit of \$29.99. They were the lowest in profit, whereas the Guernsey grade was the highest with \$46.55 and the Canadians next with \$45.12 and the Ayrshires third, with \$44.82. the first three come very close together.

VALUES OF CATTLE AND PROGENY.

By Mr. Wilson:

Q. That is the profit over the feed, what is the relative value of the animals?

A. The Guernsey grades would be worth I suppose \$40 each. Just now the Guernsey grade costs about that. The Canadian pure breds cost us an average of \$125 each.

By Mr. Wilson:

Q. They would not be worth that I suppose ? A. Oh, yes. They are pure bred Canadians.

By Mr. Parmelee :

Q. They sell them in New York for \$1,000 each ?

A. If we had bought the most expensive we would have paid much higher than that, but I did not buy the most expensive, I bought the best, the two do not always go together.

The Ayrshires, they happen to be all imported, the one I think costs \$150 over there, and about \$40 to bring her here, making a total cost of \$190, that she cost us. Of course we have sold a lot of valuable calves from her, and you should not put against her the whole cost, but leaving this out, that is what she cost us. Another one cost us \$125 over there, and about the same amount to bring out, which would make the cost \$165, or an average cost of \$175, somewhere about that the Ayrshires cost us.

Q. Taking the average value of the average cow at \$40 and the other cows at the

high price, how do they compare ?

A. So far as profit and feed are concerned, supposing you put the original cost of these cattle, ten per cent would be a fair percentage I suppose, you have to allow for loss, and put it at ten per cent that would be \$17.50 you would have to add, and still you see that does not come up. But you see here is an item you might jot down, the value of the offspring from the Shorthorns has been about \$75, from the Ayrshires \$30 and from the Ayrshire grades \$2.

Q. A slight difference, is there not?

A. Yes, that makes up, more than makes up the difference in the cost of the ani mals, because these cattle are valuable. I can sell a good Ayrshire heifer almost any day for \$50, but for an Ayrshire grade and the grade Shorthorn bull some man might give you \$5, he does not feel like giving it but might possibly do so. The value of the progeny I have calculated as follows: Shorthorns \$75, Ayrshires \$30, Guernseys \$25, Canadians \$25, Shorthorn grades \$5, Ayrshire grades \$2, Guernsey grades \$1, and Canadian grades \$1.

COST OF PRODUCING 100 LBS. MILK.

The cost of producing 100 lbs. of milk is an important consideration, and I have prepared a statement of the cost for the different herds. The Ayrshire grades cost us 47'54 cents to produce 100 lbs. of milk, the Ayrshires cost us 50'26 cents, the Canadians, 51'90 cents, the Guernsey grades 55'51 cents, the Shorthorns 57'49 cents.

the Guernseys 64'09 cents, and the Shorthorn grades 66'15 cents. If a man knows what 100 lbs. of milk cost him, he knows what he can sell it for, and he can soon see where his profit or loss comes in.

COST OF ONE POUND OF BUTTER.

The next item for consideration is the cost of producing a pound of butter. The Guernsey grades produced one pound of butter for 9.5 cents, the Canadian for 9.6 cents. The cost of a pound of butter by the Guernseys was 10.9 cents, by the Ayrshires it was 10.92 cents, the Ayrshires grades 11.05 cents, the Shorthorns 11.56 cents, and the Shorthorn grades 13.07 cents per pound. These items relate to feed alone, there is no estimate of the amount of labour included in making up these calculations.

By Mr. Armstrong:

Q. Is that during the winter season? A. It is during the year—12 months.

Q. How many months in the year do you propose milking the average cow ?

Q. If she is a heavy milking cow when she is at it, we like to milk her ten months, if she is not a heavy milking cow we milk her eleven months. A heavy milking cow wants a period of rest between the periods of lactation, for instance, we have a cow that has been calved three months, and she is giving us 50 lbs. of milk per day; she was giving us a month ago 65 lbs., and that cow wants to have a rest between periods or she will not be so good next year.

Q. That is a Canadian cow?

A. No, that is an Ayrshire cow, the one that cost us \$190.

By Mr. Armstrong:

Q. Why do you not keep Jerseys at the experimental farm ?

A. I have not the say as to what breeds we shall keep.

Q. Would it not be wise to have a comparison between the Jerseys and these other breeds?

A. I think, sir, it would be impossible to keep all the breeds, and we have one Channel Island breed now, the Guernseys, which are quite similar to the Jerseys as you know. They give about the same amount of milk, they have a higher colour, but not quite such rich milk, and are somewhat larger and some say more robust animals, although I cannot say that I find them more robust than the Jerseys.

Q. Do you not find that men who are sent out from the experimental farm advise the farmers, to a certain extent, who were sending milk to the creameries to keep Jerseys on the ground that they would give a higher percentage of butter fat?

A. No. I think I am the only one that talks along dairy cattle lines from the

Experimental Farm at Ottawa.

Q. I mean from the Argicultural College ?

A. Yes, I believe they do.

Q. You do not advocate any breed ?

A. No, I tell a man the results we obtain from the different breeds and he may choose for himself.

Mr. PARMELEE.-These tables, I think, are good enough for any one.

By Mr. Armstrong:

Q. You have no Jerseys at the experimental farm?

A. Neither have we any Holsteins, nor Polled Angus, nor Herefords, nor Galloways, none of those breeds. But it would be quite impossible, as you will understand,

to have herds of each of these breeds. It is, I assure you, quite difficult to keep decent herds of the breeds we now have. This, you will readily understand, when I explain—at present we have about 110 head of cattle on the farm. In the winter, we had about 140, including steers. Now we cannot very well carry more than 100 head through the summer on our limited area, and if you are going to have a good herd you must have I think, about 40 head, so that you may really have something good. You simply cannot keep up a decent herd of eight or nine pure bred cattle without having the expense of maintenance out of proportion to the possible revenue.

Q. You have given us a report of the best cattle you have there?

A. Yes.

Q. Would it not be well to put in some other grades there so as to be able to let us have a report next year with reference to the Jerseys and other breeds that you have

not got this year ?

A. I think that is a good idea, of having reports say from grade cattle of these different herds. There are Holsteins, probably they would be a good breed as an additional herd. It would be a good idea, and I believe Mr. Hodson, Live Stock Commissioner, is trying to do something like that outside the farm, but I think it would be well to do it at the Experimental Farm. However, it would necessitate going out and buying the best cows we could get of each of these grades.

Q. How long have you been working before preparing a report with reference to

these ?

A. It is three years we have been working for this. Of course we are trying to build up our herds. I may say that before we started with these pure breeds, we had a herd of grade Ayrshires. They had only commenced with it when I went there. I worked with them for three years and brought the herd up from a production of 6,300 pounds of milk to over 8,000 pounds of milk by careful feeding and selection. Now we have got to start with each one of these breeds, work up, and improve each breed, and we cannot work up as rapidly, because the number of cattle in each breed is limited. We have eight herds, with 10 or 12 animals in each herd, hence, improvement is slow as it is, and would be proportionately more slow if the herds were increased in number. The value of the data secured would also be less, since the fewer the animals in the herd the less likely are findings to be near the average value for the breed or Thus, I think that unless we dropped breeding operations entirely and depended upou purchase for renewal of herds, it would be impossible to carry on this work on a larger scale with good results. Now, I think that while I agree with the gentleman that it would be a good idea to test a grade Jersey herd and a grade Holstein herd, that we are doing some good; we are building up these herds and we are showing what can be done in building up grade Guernsey, grade Ayrshire and grade Canadian herds from very commonplace foundation stock. If we can show the farmer that he can start with the average or even the inferior cows of the country and build up until he gets herds that will give him an average return such as we have shown here in these breeds, of \$80.97 per cow from grade cows, why, I think it is something for him to act upon, and I know many farmers who get great inspiration and benefit from records. These records appear in our reports and there is nothing to hinder any farmer from doing as well as we do. Besides the ordinary farmer can make more net profit, because he does not have to pay as much for his labour.

By Mr. Blain:

Q. At what age does a cow commence to fall off in the milk?

A. That depends upon the particular cow. Generally speaking, it is at the age of from 11 to 12 years. I have seen cows milk quite as well at 13 years as ever they did, but they were exceptional. Others begin to fall off at nine years.

Q. Does that apply generally to every breed ?

A. I think so, all those breeds mentioned, and to the Jerseys and Holsteins as well. I may say that I am supervising an experiment with Holsteins, not at the Experimental Farm, but elsewhere, but I have no Jersey grades. I believe in the Holstein myself, I think they are a splendid breed, quite equal to any other of the purely dairy breeds.

IMPROVED MOLASSES CATTLE FOOD.

Now, leaving the question of dairy cows, I want to bring to your attention an experiment with dried sugar beet pulp. You have all heard of this material, which was put out by the Dresden factory last winter, and was quoted by them at \$10 per ton. f.o.b. cars at Dresden. We got a number of tons, brought it here and fed it to different classes of animals. We fed it to calves, and when fed at the rate of about a pound a day to our young stock it gave most excellent results. It seemed to brighten them up and give them an appetite. They went along fine. Given to the dairy cows it did not take the place of a pound of meal, but fairly well on to it. Given to steers it seemed to improve the appetite and make them eat considerably more food if given in small quantities. We conducted a special experiment feeding it as roughness to steers. We took three steers of the same age and form as nearly as possible and put them under exactly similar housing conditions. Taking lot No. 1 we fed them just on our regular rations of ensilage, roots, cut straw and a little bit of long hay. They started out weighing 3,880 pounds and ended up weighing 4,380 pounds, that is in eighty-three days they made a gain of 500 pounds, the three steers in eighty-three days made an average gain of 167 pounds, or an average gain of 2 pounds daily. They consumed of roughness, 8,106 pounds of ensilage valued at \$8.11; 1,621 pounds of roots, valued at \$1.62, and of straw, 996 pounds valued at \$2. The total value of the roughness consumed was \$11.73. The cost of the roughness used to produce one pound of gain live weight was 2.35 cents.

The next lot were fed 8 pounds of pulp,—dried sugar beet molasses feed, per diem, and half as much roughness as the others. They weighed at the start 4,115 pounds or an average of 1,372 pounds, and ended up weighing 4,730 pounds an average of 1,577 pounds making a total gain in 83 days of 615 pounds, or an average gain of 205 pounds or a gain at the rate of 2 17 pounds per day. These three steers consumed of roughness, ensilage 4,053 pounds, valued at \$4.05; roots 810 pounds valued at \$81; straw 497 pounds, valued at \$1; beet pulp 1,992 pounds, valued at \$14.94, or a total cost of the roughness of \$20.80, or 3 38 cents per pound of meat produced. Now, when I was making this out I estimated the beet pulp at \$15 a ton. I might say that some of it cost \$15 a ton and some of it more, but we will take that as the average cost.

By Mr. Ingram :

Q. You mean of the beet pulp ?

A. Yes, landed here.

Q. You say it cost \$10 at Dresden? What do you mean by beet pulp?

A. They call it 'Improved Molasses Cattle Feed.' Have you ever seen it ?

Q. I have never been in the business.

A. It is a special preparation made by The Dresden Beet Sugar Co.

Q. Dry pulp ?

A. Yes, they take the pulp and dry it and as it is being dried the refuse molasses is poured over it and the whole mass dried, so that the whole thing is very dry. To show you how thoroughly it is dried I might say that I put four pounds of it in a pail, and with it I put 16 pounds of water, and the next morning it was a mass of wet pulp, the dry material had absorbed the water.

By Mr. Ingram :

Q. You paid \$10 for it at Dresden, and estimated it cost \$15 here ?

A. We bought one lot here at \$15, and we bought the other lot at Dresden at \$10 per ton.

By the Chairman:

Q. How did you feed it ?

A. This pulp was fed mixed with ensilage and roots.

Q. Is it ground up fine ?

A. It resembles dried lawn grass, or tea. You have seen the pulp as it comes out of the factory possibly, string like material, and these strings are dried out and look very much like tea.

By Mr. Armstrong:

Q. It is rich in protein, is it ?

A. No, not very rich. I think the nutritive ratio is about 1 in 9. Mr. Shutt took up the analysis, I do not know whether you were here when he was before you or not, and I would not like to speak positively as to the analysis, but I think it showed about 8 per cent or 9 per cent of protein, and about 65 per cent of carbohydrates. There is about, I think, 6 to 8 per cent of sugar which is of course perfectly digestible and makes it valuable. The cost of roughage to produce one pound of meat when 8 pounds pulp was fed each steer each day, was 3.38 cents, that made the total cost \$20.80 for feeding that lot. You will notice that the other lot only cost \$11.73, and the cost of roughness to produce one pound of meat, live weight, was 3.38 cents.

Then to another lot we fed 12 pounds of pulp per day and 4 pounds of straw.

By Mr. Bell:

Q. Are you not making a mistake when you say 'cost of roughness'?

A. I am calling the sugar beet 'roughness.'

Q. Oh yes, you include that as roughness?

A. Yes, in these calculations. It has been stated that the sugar beet and molasses pulp was equal to bran, but we exploded that theory the first week we were feeding it to the cattle, we found that it would not take the place of bran, or any similar feed. A little bit of it was a good appetizer and all that, but it would not take the place of bran or other meal. We therefore decided to carry out the experiment I am reporting upon to determine its value as roughness. To one lot we fed none of the pulp, to another lot, one-half the regular roughness and 8 lbs. improved Molasses Cattle Feed per steer per diem, and to the third lot, no roughness other than the Improved Molasses Cattle Food, save about 4 pounds of chopped straw to give bulk to the pulp. They all got the same amount of meal, and the same amount of long hay. The lot getting no roughness save the Improved Molasses Cattle Feed weighed at the start, 3,990 pounds, an average weight of 1,330 pounds, that was on the 28th December. They ended up on the 22nd March, 83 days afterwards, weighing 4,455 pounds, or an average of 1,485 pounds, making a total gain in 83 days of 465 pounds. One steer gained 155 pounds and the gain was at the daily rate of 1.87 pounds. They consumed 2,928 pounds of the preparation costing \$21.97 and 996 pounds of straw of the value of \$2, making a total of \$23.97, so that the cost of roughness used in producing one pound, live weight was 5:15 cents. Now, according to these findings, were sugar beet to take the place of ensilage and roots entirely, it would be worth to us \$6.10 per ton. If it were to be used in the place of half the ensilage and roots roughness, it would apparently be worth about \$8.65 per ton. If, however, I wished it merely as an appetizer, condiment or palatable morsel for calves, cows or steers, I consider it worth about \$12 or \$13 per ton in the barn. I think

its place is rather that of an appetizer or a condiment than a staple food, unless it can be produced at less than \$10 per ton. But the manufacturers say that it costs them practically \$10 per ton to desiccate or make it perfectly dry, such being the case, I do not believe it will ever pay them to manufacture it. Certainly it will not pay them to ship it down to this part of the country.

The following is Mr. Stephens', of Trout River, Milk and Butter record referred

to by Mr. Grisdale:

MILK AND BUTTER RECORD.

From January 1st, 1903, to January 1st, 1904.

Name.	Age in years.	Pounds of Milk.	Average p. c. of Butterfat.	Pounds of Butter.	Value.
				Carlot (i)	\$ cts
Gipsey. Spotty Carrie. Missie Liney. Flossie. Infelice Miss Violet Clara. Lady Ethel Irena. Dinah Delta Maid Pegotty. Peace Jersey Iona Ladysmith Winnie Maggie Vernie. Dorothy.	7 11 8 11 7 4 6 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	8,129 7,448 7,707 8,451 7,186 7,736 6,712 6,916 6,430 6,247 6,447 5,602 6,429 - 5,858 4,164 5,581 5,384 5,183 5,145 4,502 3,341	4:0 4:3 4:2 3:6 4:2 3:8 4:2 3:6 4:0 4:0 3:6 3:6 5:2 3:6 5:2 3:8 3:6 5:2 5:3 6:3 6:3 6:3 6:3 6:3 6:3 6:3 6:3 6:3 6	380 372 370 355 353 348 329 317 300 291 289 274 270 269 258 258 252 248 240 233 216 190 145	83 60 81 84 81 40 78 10 77 66 76 56 72 38 69 74 66 00 64 02 63 58 60 28 59 40 59 14 54 56 52 44 54 56 52 40 51 26 47 52 41 80 31 90

Total amount of milk 136,096	lbs.
Average per cent, butterfat 3.95	"
Total amount of butter 6,299	"
Value at 22 cents per lb\$1,385.78	
Value of skim milk at 15 cents per cwt	

House of Commons,

Committee Room 34,

Wednesday, May 18, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock a.m., the Chairman Mr. Douglas presiding.

THE CHAIRMAN.—Mr. Grisdale is here to finish his evidence this morning.

Mr. Erb.—Before taking up any new evidence there are some matters which I think we might probably consider for a few minutes. I was not here the other day 2—19½

and in reading over Mr. Grisdale's evidence I find some statements according to the report which to my mind require explanation. For instance at page 37 in comparing the relative reeding values of corn and roots and the relative cost of producing the two Mr. Grisdale says 'Roots require so much more labour, and real hard labour; you have got to get right down—manual labour; and corn requires very little labour, because the care of looking after an acre of roots is usually seven or eight times greater than corn.'

Mr. Grisdale.—That is a mistake, it should have been \$7 or \$8 per acre greater than corn.

Q. Well I am glad of that explanation because this certainly would have been a very great mistake for it to have gone to the country.

A. Yes.

By Mr. Wilson:

Q. Have you read your evidence ?

A. No. I just happened to notice that one figure. I got the report of my evidence last night and noted that one feature in glancing through it.

Mr. Cochrane.—Read that again.

Mr. Erb.—'Corn requires very little labour because the care of looking after an acre of roots is usually seven or eight times greater than corn.'

Mr. Kidd.—Not according to the reports of the farm.

A. I might say that the manual labour of looking after roots is probably seven or eight times more than the manual labour of looking after corn, but that is not what I tried to say. I remember distinctly saying that the cost—

Q. You said that the cost of looking after an acre of roots was \$7 or \$8 an acre

greater than that of looking after corn.

A. Yes. It is very seldom that you have to hoe unless it is a very twitchy piece of land.

By Mr. Cochrane:

Q. What kind of corn do you raise without hoeing ?

A. Corn for ensilage.

Q. You ought to make it clear because in our section of country there is a good deal of corn grown as a crop, not for ensilage at all.

A. That is what we were talking about, corn for ensilage.

By Mr. Erb:

- Q. In your report, the Agriculturist's Report for 1902, which is the last one in our hands you have given the cost of different crops.
 - A. Yes.
- Q. You have given the cost of growing corn, for instance, in which the hand labour comes to \$10.60 per acre. By that you include hoeing, loading and unloading, trampling and putting into silos. Ensilage corn \$10.60 is the hand labour?
 - A. Yes.
 - Q. For mangles \$14.84 ?
 - A. Yes.

Q. That is about \$4 more. In the case of turnips it is \$12.50, that is only about

\$2 more than in the case of corn.

A. Yes, manual labour. I might say that in each of these cases we took the actual cost of a given field. We kept track of every day's labour as put on it and in 1902 the field happened to be twitchy and we had a little more hoeing than usual. If you compare that year with other years, if you will compare the different years, you will find a very considerable divergence in the cost of the manual labour required. Now when I said \$7 or \$8 per acre more I included all kinds of work and I think if you will look into it you will see that an acre of roots costs us somewhere about \$33 on the average and an acre of corn somewhere about \$24 on the average. Of course when I gave those figures and said \$7 or \$8 more I did not try to be accurate. I was only giving what I thought was a general average. Besides the corn is ready to feed while the roots must all be handled again, that is pulped or sliced, at a cost of say 50 cents per ton at least which added to the \$33 per acre would bring the true cost up to from \$40 to \$45 per acre ready to feed.

Q. What do you mean by \$32 or \$33 an acre for raising roots? Is that the actual

cost ?

A. Full cost of rent, manure, and labour, till put into the root house.

Q. Seed and everything?
A. Seed and everything.

Q. And what do they bring a ton ?

A. The number of tons to the acre do you mean ?

Q. What is it worth to sell at ? If it cost \$32 to raise I want to know what is the profit.

A. Well, the returns vary very greatly. We expect from 18 to 35 tons to the acre and we value them at \$2 a ton. It depends a great deal on the season you will understand. Now, last year was practically a failure.

By Mr. Kidd:

Q. A wet season requires a great deal more work.

A. It takes more work, but you get bigger returns.

Q. Not always.
A. Not always.

By Mr. Wilson:

Q. It is not overly profitable according to that.

A. Well, they are about an average crop so far as profit is concerned. Supposing it cost you \$35 an acre and you get an average crop of 22 to 24 tons.

Q. I thought you said about 18.

A. Well, from 18 to 35, sir. The lowest we have had is about 18, and the highest we have had is about 35.

By Mr. Kidd:

Q. Do you think it requires \$24 to handle an acre of corn ?

A. That is everything taken in, sir. The cutting and the filling in of the silo.

Q. The filling in ?

A. Everything and putting in the silo. It takes about that.

Mr. Ers.—As to the value of turnips I might say that in Waterloo and Wellington some farmers have sold turnips this winter at from 20 to 22 cents a bushel, teaming them to the station.

Mr. Wilson.—That is exceptional.

The WITNESS.—Yes, it is exceptional. That is only a local condition.

By Mr. Erb:

Q. There is another statement of yours at page 38, which reads "Roots are a better feed for young stock, ton for ton, than ensilage. For beef cattle, to which you

are giving meal, they are about the same value." Is that your opinion?

A. That is my opinion and that is the finding of our experiments. So far as beef cattle and dairy cattle are concerned, that is the finding of experiments all over Canada, that the roots and ensilage are practically on a par, ton per ton. For young cattle there are no definite experiments that I know of, but I am judging from the weight of our young cattle when they are fed on roots and when they are fed on ensilage.

By Mr. Cochrane:

Q. When you are giving the committee information, is it based on experiments at the farm or some information that you get from outside ?

A. It is based on experiments and observations at the farm. I merely brought this other point in to show that the outside findings agreed with our own, corroborate our own.

By an Hon. Member:

Q. Speaking of ensilage, you mean well matured corn ?

A. Good ensilage. Of course you can make a very inferior ensilage.

By Mr. Erb:

Q. Well, if that is correct, should not more stress be put on the raising of roots than on the raising of ensilage, because you can grow far more roots to the acre one

year with another than you can grow corn, that is far more tons.

A. I think probably you can grow more roots, tons of roots, to the acre on the average than you can of corn, but as I stated the manual labour, generally speaking, required for an acre of roots is greater than for an acre of corn and it is of a character that nobody likes; you have to get away down and scratch. We make it as easy as possible. We have special hoes. (I might say we grow about 11 or 12 acres of roots a year.) We have special hoes that cut out just the right number of roots and leave the right space between the roots left to grow. We have hand-wheel hoes that we run astride the rows, cleaning each side of the row and materially lessening the cost of production. Still there is a great deal of hand work and stooping to do, and no person likes the work very much.

Q. Well, taking your own figures in the report of 1902, you give the cost of grow-

ing a ton of corn and putting it into the sile at \$1.76.

A. Yes sir.

Q. You give the cost of growing and putting into the root house a ton of mangles as \$1.23 ?

A. Yes.

- Q. A saving of 50 cents on the mangles notwithstanding the extra hard labour.
- A. Yes. But you forget the additional labour of pulping or slicing the roots.
- Q. Then if a ton of mangles is worth as much or even more than a ton of corn, I think there would be more saving in growing roots than corn.
- A. Yes. These figures show that, but for the reason I have given we still think that corn would probably be the more acceptable kind of succulent forage for the average farmer to grow.
- Q. The statements you made of course I could not reconcile with the figures you give in this report of 1902 ?
 - A. The seven or eight times you mean ?

Q. Not even this.

A. I see.

- Q. If a ton of roots is as good as is a ton of corn and it costs 50 cents more a ton of corn than a ton of roots and you grow, according to this report, 11 tons more of roots than of corn it would be far more profitable?
 - A. Was it 11 tons difference that year?
 Q. 15 tons of corn and 26 tons of roots.
- A. Yes. Well, I have nothing to say against roots. I am a great believer in roots. We grow roots very extensively at the farm, and wherever I have an opportunity, I put in a good word for them. The average farmer, however, does not like to grow roots, but objects less to growing corn, hence, my taking this question up before your committee this year. Many farmers do not grow either corn for ensilage or roots, although the addition of the one or the other to his list of forage crops would help him greatly. But if you go amongst the average farmers of almost any of the provinces, barring possibly the maritime provinces, you will find that while they do not grow an acre of roots all told, they do grow a considerable area of corn for grain and stover. If we could manage to get them to increase the acreage of corn, it would be that much added to the capacity of their farms for bearing stock, and that much added to the wealth of the country. You have there my object in bringing this matter to the attention of the committee.

By Mr. Cochrane:

Q. Give us an idea of the effect the two crops have on the soil ?

A. So far as we may judge by the crops which follow them, sir, there is practically no difference. The corn land is a little more difficult to handle, it is a little bit rougher the next year, and the corn stalks are some bother.

Q. The stubble ?

A. Yes, the stubble. You cannot cut right down to the ground with the present machinery, and they always give us more or less trouble; but so far as the returns are concerned, I think they are about on a par.

Q. Can you give us an idea of what it costs on a farm with all your modern ap-

pliances, to thin an acre of turnips ?

A. To thin an acre of turnips ?

Q. Yes.

MR. ERB.—The cost is given in the report of thinning turnips.

A. That particular item is there.

Q. 'Thinning four days at \$1,333 a day to \$5.53 for the two acres.'

By Mr. Maclaren (Huntingdon):

Q. That would be \$2.50 an acre?

A. We count that a man should do half an acre a day in thinning. It takes a good man to do it, however.

By Mr. Cochrane : .

Q. He would not hurt himself at that.

A. It keeps him going very steadily.

Q. Yes, he would go too steadily, that is the trouble.

A. I do not believe I could thin more than half an acre myself, and these men that we have working are not working for themselves, their hours are limited. They don't start at sunrise and continue till sunset.

By Mr. Wilson:

Q. You would not like to do it every day?

A. No.

By Mr. Kidd:

Q. A good deal depends upon the soil?

A. There are a great many influences affecting all these results. Now, Mr. Chairman, the last day I was here—

By Mr. Cochrane:

- Q. Before you leave that subject, do I understand that a ton of corn is equal to a ton of mangles?
 - A. A ton of corn ensilage.

Q. Yes?

A. About the same in feeding value. That is in the effect upon the cattle. But for all young stock I would prefer a ton of roots.

Q. With meal or without ?

A. With meal, of course the same amount of meal being given in each case.

By the Chairman:

Q. Is there anything that can take the place of sweet turnips for the development of young stock ?

A. I do not think there is anything that will take the place of turnips. Turnips are better, I think, for young stock and even for aged cattle than mangles.

By Mr. Cochrane:

Q. Did you ever try mangles for swine ?

- A. Yes, very extensively. We feed them tons and tons every year. I think probably sugar beets are preferable to mangles, although they are somewhat more expensive to grow ton for ton.
 - Q. Sugar beets should produce more food per acre for hogs ?
 - A. I think so, it would probably bring more money.

Q. Do you pulp them ?

A. We pulp them for the young pigs, but for pigs that are running around we find it more convenient to throw the mangles to them whole.

DAIRY RECORDS.

If there are no other questions, I might say that the last day when I was here speaking of milk records a member of the committee expressed a wish to have samples of those record forms so I brought some to-day and will hand them to you to be passed around. Those are the daily forms, and here we have a form for keeping a monthly summary. At the end of the month you can sum up what your cattle have given and keep it for reference. We have another form of making a record for the year. On the back of the daily record forms you will notice a few notes, amongst these notes are mentioned some feed forms. I have brought two or three of these feed forms thinking you might be interested in seeing some of those also. I think there are enough here of all kinds to go around if you would care to see the different ones. I might just say that this matter of keeping records has been attracting attention within two or three years in the United States also, and I have a paper here—

By Mr. Wilson:

Q. Why did you not give the quantities of meal ?

A. Any one can get them by applying.

Q. But you have given the times and not the quantity?

A. That is to be filled in.

Q. I thought that you might give us a sample one.

- A. Well I did'nt think of that sir. I could have brought you lots of them because we keep them right along. You see we just fill in that space after 'Sunday 3 or 4 pounds of meal, etc.
- Q. I quite understand that, but if you had this filled in to show what you have done it would be a lesson to the farmers I should say.

A. Well I did not think of that sir.

Q. There is an average that does pretty much for all ?

A. Of course the amount given to different cows varies very greatly. stance, one cow at present is getting 12 pounds of meal a day and other cows are not getting more than a pound or so.

Q. That happens in all walks of like, even in men ?

A. I just wanted to bring your attention to this one point that the daily record is attracting attention all over. Here is what 'Hoard's Dairyman,' which is recognized as a good dairy paper the world over has to say: 'Did you ever keep a record of your cows? If so, you have felt the need of a convenient, simple and handy record sheet. We have had so many requests for these record sheets that we concluded to get up one that would fill the long felt want.' We have a very simple and complete record sheet for ten cows, one month, that is printed on heavy Manila paper, we can send post-paid at the following prices: Price, 5 cents each; six for 20 cents; 12 for 30 cents; 25 for 50 cents. So you will notice these forms really have a merchantable value. If they can command 5 cents a piece for them, you have some idea of the estimation in which they are held by men who are really progressive dairymen. These here are scales. Some gentleman, I do not see him here this morning, asked me to bring these scales. This is a scale which can be purchased from the Live Stock Commissioner, I think.

By Mr. Cochrane :

Q. Yes but you would not be able to use them in our country.

A. Yes, in your stables.

By Mr. Ross (Ontario):

Q. You would not be allowed to sell them here. A. No.

Q. Is that the Fairbank scale ?

A. No, it is the Chatillon Improved Spring Balance.

By Mr. Erb:

Q. What do they weigh ?

A. This one weighs up to 40 pounds. It can be purchased for \$1. I do not like this one.

By Mr. Kidd:

Q. Can you get this, the same kind, that would weigh more ?

A. Yes. Here is one (exhibiting a scale), a similar class only it has a dial instead of a running up and down hand, and you can set the pointers. Here is the nil point. You notice it is fixed at 14; that is the weight of a pail 6 pounds that we use in the dairy at the Experimental Farm. The advantage is that it gives you the net weight whatever is in the pail without you having to do any mental calculation.

By Mr. Cochrane:

Q. What kind of pail do you use that weights 14 pounds ?

A. A strong zine pail. It is a large pail and is strong and we think that class of pail is the most economical. It does not weigh 14 pounds however, but only 6 pounds. The pointer standing at 14 requires 6 pounds weight to bring it to 20 or 0 at the top of the dial.

By Mr. Erb:

Q. What is the cost of that scale ?

A. This scale is \$2.50 in New York, \$2 wholesale.

By Mr. Richardson:

Q. Will that scale pass inspection ?

A. No, I do not think it will.

By Mr. Ross (Ontario):

Q. Who are the makers ?

A. Chatillon, 85 Cliff street, New York. -

By Mr. Blain:

Q. They are not the legal scale, however, I think ?

A. No, they are not the legal scale. This one has been in use for three years; I tested it yesterday, and found it exactly correct for any weight from one pound up to sixty pounds.

Q. These are not manufacured in Canada?

A. No, nor sold, I believe. They are sold occasionally, and sometimes the inspectors let them go by, but sometimes they confiscate them.

By Mr. Blain:

Q. There is a very heavy penalty ?

A. But if they are used by the farmer in the dairy—

By Mr. Kidd:

Q. Where he is not selling ?

A. Where he is not selling by them, they are all right, I should think.

By Mr. Avery:

Q. I do not see why the inspectors should go around and take them from one person from one place, as they have done in my part of the country and not take them from others?

A. I do not see either.

By Mr. Blain:

Q. But this is a dangerous thing to introduce in this committee, because there is a very heavy penalty for using them in Canada for any purpose.

A. I did not know that.

Q. If you are found with one in any hardware store in this city there is a heavy penalty.

A. I was not aware of that, but I know you cannot sell them.

Q. It is not a question of opinion, it is a question of fact. I know it, because, talking about the law, the law in Canada says these may not be manufactured in any place in Canada, and if a man has them in his establishment to sell there is a heavy penalty, and if they are found in any man's place the inspector can take them out. Therefore, I say it is rather dangerous to have this put in.

A. I did not know you could be fined for having them for your own use. They

are quite commonly sold in the United States.

The Witness.—Well, if there are no more questions upon this subject I will take up the question of beef-feeding. We have been working for the last number of years along three lines of experiments with beef cattle: First, feeding loose vs. tied; secondly, feeding cattle of different ages from calves up to four years, to determine the cost of producing a pound of beef at the different ages; third, we have been trying to produce mature beef, or beef ready for the market at as as early an age as possible, that is, 'baby' beef. These are the three lines of experiment we have been conducting, in addition to feeding exepriments with certain foods, one of which I took up on the last day I was before you.

LOOSE versus TIED.

Taking up the experiment of loose versus tied, I may say we have tried feeding at different ages loose vs. tied, and last year we had both two-year old and three-year old lots under observation. I will bring to your attention first the results of the three-year olds. Those fed loose were eight in number. We started to feed them on November 13, and they were fed until March 22, a total of 129 days. They weighed 1,236 pounds to start with, the average weight, and they ended up with 1,530 pounds, that is a gain of 294 pounds each, as average gain, in the 129 days, making an average daily gain of 2½ lbs., or to be more accurate 2'28 lbs. The cost of feeding one steer one day was 11'9 cents, and the cost of feeding one steer for 129 days was \$15.36. The cost of 100 lbs. gain was \$5.22. The feed for the eight steers cost \$122.89, and the cost of the steers was \$395.60, making a total cost of \$518.49. These steers were sold on March 22 for \$518.49, making a profit on the lot of selling price over the cost of steers and feeding put together of \$62.91, or an increase over gross cost, or profit if you like to put it that way of \$7.86 per steer.

Q. What about labour ?

A. I am not figuring that in.

By Mr. Cochrane:

Q. You are not figuring the labour in ?

A. No. I am not mentioning the labour in this calculation.

By Mr. Wilson:

Q. The profit is on the wrong side, I am afraid in that case?

A. Oh no; 129 days is only three months, or four months rather, and you have the manure, and \$62.91 over and above for the steers. Eight steers are not a very large number, and a man can feed quite a number of eight steer lots.

By Mr. Cochrane :

Q. You have not counted the labour attending to them either ?

A. No, and I did not count the manure either.

By Mr. Kidd:

Q. Did these eight steers run together in one box ?

A. Yes.

Q. Were they loose ?

A. Yes. I suppose it would take a man an hour a day to look after these eight steers, to feed them twice a day.

By Mr. Cochrane:

Q. One hour a day ?

A. Yes.

Q. Then he must be a much smarter man than those you had to thin out the turnips ?

A. No, I think the same class of man would do it, sir. I am certain a man could feed eight steers once in fifteen minutes.

By Mr. Maclaren (Huntingdon):

Q. And prepare the feed for them ?

A. In feeding operations like that, he feeds them twice a day, and it would take him fifteen minutes at each feeding, that would take him half an hour, and he could prepare the feed in another half hour, making an hour altogether.

Q. He has to clean out the stable as well ?

A. They were loose, sir, and the manure had to be taken out once a month only, we just haul it out from the box into the field.

Q. What do you bed them with ?

A. Long straw.

LONG versus SHORT STRAW FOR BEDDING.

By Mr. Kidd:

Q. Can you keep them dry and fairly clean only hauling the manure out once a month and by using long straw?

A. Yes, but it takes twice as much, sir, as when tied.

Q. Have you tried it cut ?

A. Yes, and it takes twice as much more.

By Mr. Gould:

Q. Does the short straw absorb the urine better ?

A. I think probably it does, but it takes so very much more straw that it makes them more expensive.

Q. Your experience is that it takes less long straw, and you get more benefit from

A. That is when they are loose. In connection with the use of straw, I may say, we took a row of nine steers last winter and bedded them a certain length of time with cut straw, then we bedded the same steers the same length of time with long straw, and it took almost twice as much cut straw as long straw to keep them in similar condition.

Q. Loose ?

A. No, tied. You would think to see these steers bedded with cut straw that they were not taking as much, but when we put it on the scale we found they were taking nearly twice as much. You can put 100 pounds of cut straw loose into a very much smaller space than you can put 100 pounds of long straw loose, the loose straw shows up more, and looks as if they had a large quantity, whereas in reality they have a much smaller amount. I am not an advocate of long straw for bedding, but I wanted to know the truth of the matter, and that was our finding. It took almost twice as much to bed the tied steers with cut straw as with long straw.

Q. And you had the labour of cutting besides ?

A. Yes, but then it is a much nicer manure and I think it is probably better.

LOOSE VS. TIED.

Another lot of steers were fed tied, they were nine in number and they averaged on November 13th when we comemned feeding, 1,233 pounds and they came out on the 22nd March after 129 days feeding at 1,507 pounds each, having made an average gain of 2'74 pounds or an average gain daily of 2'12 pounds. You will notice about 3-20 of a pound less per diem than the others which were fed loose. The cost of feeding them was 11'9 cents per steer per day, the total cost being for 129 days \$15.31 per steer, and the cost per 100 pounds gain was \$5.59, whereas when steers were fed loose the average cost was \$5.22 per 100 pounds. The cost of these steers originally was \$444, and the cost of the feed was \$137.78 making a total cost of \$581.78. They sold for \$644.35 leaving a balance or profit if you like to call it so of \$62.27 or \$6.95 per steer. The steers comprising both these two lots were bought for 4 cents a pound, and they sold at 5 cents per pound.

By Mr. Gilmour:

Q. How did they compare in quality? Much would depend upon that?

A. They were as nearly alike as we could get them. We had the bunch of steers, and we took one steer that we considered the best and put in one lot, and then we took the next best one and put in the other lot and so on until they were divided.

Q. And they got the same kind of feed ?

A. Exactly.

By the Chairman:

Q. Were they grades ?

A. Good grade Shorthorns, some of them were very well bred indeed.

Q. What was the difference between those tied and loose ?

A. In the cost of grain ?

Q. No, in weight.

A. The average weight of those fed loose at the start was 1,236 pounds, and the average weight of these fed tied at the start was 1,233, so you will see they were as nearly alike as we could get them.

By Mr. Wilson:

Q. What was the difference in the cost of feeding, in grain I mean ?

A. The cost of 100 pounds of gain when fed loose was \$5.22, and the cost per 100 pounds of gain when fed tied was \$5.59. Now that does not include the labour and I may say that if you take any number of steers loose, and the same number tied, you can do the feeding of the loose steers in about one-half the time, and the care and attention required for the loose steers is less than half that required for an equal number of steers fed tied.

Q. For which bunch ?

A. For the loose. The loose steers are very much more easily fed and looked after than the tied steers, there is no cleaning after them.

By Mr. Kidd:

Q. But they take more room ?

A. No, they do not.

Q. Not for loose cattle ?

A. No, we have tried, I have not the report of that experiment here, but we have tried them with different spaces loose and tied, and we found that when they are

fairly comfortable, say about 50 square feet to the steer, they will do better than when they have more room.

Q. That would be a pretty small space?

A. That is about the amount of space that a steer usually gets. We gave 40 square feet to one lot and to another lot 80 square feet, and those with lots of room did not do as well as those which were rather cramped for room.

By the Chairman:

Q. Were they dehorned ?

A. Yes, some of them were dehorned when we got them, and the rest we dehorned ourselves.

By Mr. Cochrane:

Q. What did you feed them ?

A. These steers that I have been talking about ?

Q. Yes?

A. This group of eight were fed 4,127 pounds of meal, 49,728 pounds of ensilage and roots, 6,328 pounds of hay, and 4,872 pounds of straw.

Q. For bedding?
A. No, for eating.

By Mr. Blain:

Q. Do you mix straw and hay together ?

A. No.

Q. Everything is cut up for them ?

A. Everything except the hay. We find they do better with a certain amount of long hay.

Q. You just feed them twice a day.

A. Yes, twice a day, in this way; meal and ensilage are fed together, and as soon as they are done with that a fork-full of hay is thrown in. The value of the feed which we gave this lot of 3-year-old steers which ran loose was for the meal \$41.27, for the ensilage and roots \$49.73, for the hay \$22.15, and for the straw \$9.74, a total of \$122.89. To produce one pound of gain in live weight we fed 1'7 lbs. of meal, 21'2 lbs. of ensilage and roots, 2'7 lbs. of hay, and 2'1 lbs. of straw, making a total of 27 7 lbs. of feed to produce a pound of gain. These steers were bought at four cents a pound and sold at five cents. They were fed from November 13 to March 22, 129 days. Their average weight at the commencement was 1,236 lbs, and at the conclusion, 1,530 lbs. Their average gain was thus 294 lbs., or an average daily gain of 2'28 lbs. The cost to feed 1 steer 1 day averaged 11'9 cents, or for the 129 days \$15.35, so that the cost of one pound gain was 5'22 cents. The total cost of the feed for the eight steers was \$122.89; the steers cost \$395.60, making a total cost of \$518.49. The steers sold at \$581.49, so that the profit on the lot was \$62.91, or a profit on each steer of \$7.86.

Now, taking the 9 three year old steers which were fed tied. We bought them at four cents a pound, and sold them at five cents a pound. They were fed during the same period, from November 13th to March 22nd, 129 days. Their average weight at the commencement was 1,233 pounds, and at the conclusion 1,507 pounds. They thus made an average gain of 274 pounds, or an average daily gain of 2'12 pounds. The cost of feeding one steer one day was 11'9 cents, of for the 129 days, \$15,31. The cost of one pound gain was thus 5'59 cents. They were fed 4,662 pounds of meal, valued at \$46.62; 55,536 pounds of ensilage and roots, valued at \$55.53; 7,119 pounds of hay, valued at \$24.92; and 5,355 pounds of straw valued at \$10.71, the total value of their feed being \$137.78. To produce one pound of gain thus, required 1'8 pounds of meal,

22'5 pounds of ensilage and roots, 2'9 pounds of hay and 2'2 pounds of straw, a total of 29'5 pounds of feed. This group of steers cost \$4.44, their feed cost \$137.78, making a total cost of \$581.78. They sold for \$644.35, making a profit of \$62.57, or a profit on each steer of \$6.95.

It will thus be seen that there is a difference of about 2 pounds of feed for each pound of gain, that is, that the tied steers required nearly 2 pounds of feed more to produce a pound of gain than the loose steers.

By Mr. Ross (Ontario) :

Q. What kind of meal was that ?

A. That was a mixture of bran, oil meal and ground oats.

Q. What proportion ?

A. During part of the time it contained also gluten meal. To start them with, it was half gluten and half bran, then as we went on we added oil meal, making it about one quarter oil meal, one quarter gluten, and half bran. That was until about the first of February. From that on there was a more rapid increase in oil meal.

By Mr. Cochrane:

Q. How long did you feed oil meal ?

A. Not all the time. We fed gluten meal about two months and oil meal about the last two and a half months. We started off with a very small quantity and ended up with a considerable feed of oil meal.

Q. Had you any experience as to the results from oil meal?

- A. Not within the last four or five years, not any experiments that I would like to speak positively about at this moment. We have had experiments, however.
- Q. Have you arrived at that conclusion by experiments, or are you experimenting
- A. We arrived at the conclusion that these were the right feeds by experience. I would not like to speak positively about the experiments without some data before me. Now coming to the next point-

By Mr. Blain:

- Q. I think I remember the result of your experiments last year was rather in favour of tied cattle, was it not, as against loose cattle ?
- A. Not last year. It was two or three years ago. Not last year—if I remember aright—there was not much difference, but I think it was in favour of loose cattle.

Q. You recommend the feeding of cattle loose ?

A. Yes, on the average we find it is profitable to feed them loose.

By Mr. Cochrane :

- Q. Were these steers dehorned before being put in ?
- A. Yes.
- Q. How long before ?

 A. They were not all dehorned at the same time. Some were dehorned when we got them, some of them were dehorned afterwards.
- Q. Did you notice as to whether they would go back for a month or so after being dehorned ?
- A. We weighed them when they went in and two weeks afterwards. not notice very much difference this year, but about four years ago we conducted an experiment to determine the loss from dehorning cattle, as they were going in, and I may say that so far as that experiment goes it is quite safe to dehorn them

going in; there is practically no difference. There will be for four or five days a shrinkage, they will not do quite as well, especially those that have very heavy coarse hours, which suffer a little when dehorned. That is the experience of every man who has experimented with dehorning going in; the dehorning operation is a very simple one, and it is not hard on cattle when properly done.

By Mr. Avery:

Q. Do you use the saw or the knife ?

A. We have used both, and we now use the clipper. If you have a proper sort of clipper it is not hard on the cattle, and the wound heals as quickly as when cut with a saw. I have discontinued the cutting with the saw because the wound will heal as quickly with the kind of clipper that I have. This clipper cuts on the four sides in a sort of double V-shape and does not crush, the wound heals up very quickly.

By Mr. Stewart:

Q. Do you take part of the scalp off ?

A. One-quarter of an inch; it heals better and is less painful to cut. Wherever you cut it beyond the skin at the base of the horns it is very hard to cut.

By Mr. Gould .

Q. Do you think a farmer putting in steers loose would have the same results as you have described? Our experience is that a farmer feeding his own cattle, putting the large ones with the weaker ones, the weaker ones don't do well at all.

A. You mean in a box stall ?

Q. Yes. My brother put them in loose and the weaker ones suffered a great deal.

A. I don't believe in putting too many together.

- Q. He didn't put too many together, but it is difficult for a farmer to get them all of the same mould.
- A. If a man is feeding a considerable number and has only nine or ten in a group he can size them pretty well.

Q. Our farmers feed only eight or nine altogether.

A. Yes, there would be considerable difference. I would not put them together. The small ones have no chance. I had a bunch of yearling steers and one of them, two of them I put in as strangers at a year old, last fall. One of them was dehorned, and that steer never did anything for three months, because the others abused him. I could not take him out because I had no other place to put him.

Q. That is the difficulty we have found?

A. If you have steers of different sizes and ages, I do not think it would be pos-

sible to get good results from them running loose together.

I will just give you the results of my next point. We fed a lot of six yearling steers from November 13 to March 22, 129 days. When they went in they weighed on the average 727 pounds, and where they came out they averaged 1,001 pounds, a gain of 274 pounds each. The average daily gain was 2'12 pounds, the cost to feed one steer one day averaged 10'68 cents, or a total for the 129 days of \$13.78, or a cost per pound for the gain of 5'03 cents.

By Mr. Cochrane:

Q. Cost how much to produce ?

A. 5.03 cents per pound.

Q. How old were the steers ?

A. They started about 1½ years and ended up about 2 years. The steers cost \$127.23, their feed cost \$68.93, making a total cost of \$196.16. They sold for \$213.98,

so that the profit was \$17.82, or an average profit on each steer of \$3.56. During the 129 days, they consumed of meal 2,561½ pounds, valued at \$25.62; of ensilage and roots 25,250 pounds valued at \$25,25; of hay 3,720 pounds, valued at \$13.02, and of straw 2,520 pounds, valued at \$5.94, the total value of the food consumed being \$68.93. To produce one pound of gain required of meal 19 pounds, of ensilage and roots

18'4 pounds, of hay 2'6 pounds, of straw 1'8 pounds.

Taking the group of 2-year-old steers which were loose, in this group there were 8 steers which were fed from November 18 to March 22, 129 days. On going in they weighed 967 pounds each, and on coming out 1,303 pounds. They made an average gain of 337 pounds, or an average daily gain of 2.53 pounds. The cost to feed one steer one day was 10'9 cents, and for the 129 days, \$14.04. Thus to produce one pound gain cost 4'30 cents. The steers cost \$304.39, the feed cost \$122.89, making a total cost of \$427.28. The steers sold for \$480.34, so that the profit on the lot was \$53.06, on the profit on each steer \$6.63. They consumed of meal 4,102 pounds, valued at \$41.02, of ensilage and roots, 43,110 pounds, valued at \$43.11, of hay 6,328 pounds valued at \$22.15, and of straw 3,032 pounds, valued at \$6.08. The total cost of the rieed was \$112.36. To produce one pound of gain required of meal 1'6 pounds, of ensilage and roots 16'5 pounds, of hay 2'4 pounds, of straw 1'2 pounds, a total of 21'7 pounds. The three-year-olds cost us \$5.22 to produce 100 pounds of gain, and they made gains at the rate of 2.28 pounds per day. Now, all these gains were made in 129 days. I may say that we have been feeding during past years for about six months-from five to six months-and this year we fed only four months and a few days, 129 days. Here is a comparative summary for the last five years:

1900-Fed 181 days, 271 pounds gain, a daily gain of 1'49 pounds and a cost per

pound of 6'2 cents. These are two-year-olds in each case.

1901—Fed 203 days, gain 331 pounds, or at the rate of 1.58 pounds per day, at a cost of 5.7 cents a pound.

1902—Fed 186 days, gain 311 pounds, at the rate of 1.67 per day, at a cost of

1903—Fed 180 days, made a gain of 298 pounds, at the rate of 1.65 pounds a day, and at a cost of 6.03 cents a pound.

1904-Fed 129 days, a gain of 327 pounds, or 2.53 pounds per day at a cost of 4.3

cents per pound.

The reason I bring this to your attention is to show the great difference we have found in the cost of feeding steers for a long period and for a short period. I do not know that it would always be advisable to rush steers in that way. It would depend on the market. By feeding them rapidly and shoving them along you will make greater gains and more economical gains than the other way. We shoved them, we were short of roughage, last year was a bad year for forage crops, and we wanted to get the steers off by Easter, and they made fully as heavy gains, I think heavier gains than the other way, and at a lower cost. I intend to repeat this experiment to determine if it is really true that on the average short fed steers will make so much more gains than long fed steers.

In the case of baby beef we have been feeding for a number of years, but there is so much on this subject in my report for 1903, that I do not think I need take any of it up this morning at all. You will find a full summary of all our work up to

November, 1903, in that report.

The following tables show in concise form the various phases of our steer feeding experiments:

STEER FEEDING EXPERIMENT.

LOT I, THREE YEARS (TIED UP.)

Week ending.	Meal.	Ensilage and Roots.	Hay.	Straw.	Nov. 13 to March 22, 129 days.
Nov. 21, 1903. " 28, 1903. Dec. 5, 1903. " 12, 1903. " 19, 1903. " 26, 1903. Jan. 2, 1904. " 9, 1904. " 16, 1904. " 23, 1904. " 30, 1904. " 13, 1904. " 13, 1904. " 13, 1904. " 20, 1904. " 12, 1904. " 12, 1904. " 12, 1904. " 12, 1904. " 12, 1904. " 12, 1904. " 12, 1904. " 12, 1904. " 12, 1904.		2,457 2,772 2,835 2,835 2,835 2,835 2,835 2,835 2,835 2,835 2,835 2,835 2,835 2,835 2,835 4,284 4,284 4,284	630 630 630 630 504 504 504 315 315 315 325 252 252 252 252 252 252 7,119	252 252 315 315 315 315 315 315 315 315 315 315	9 steers. 1st average weight 1,233 lbs Lost " 1,507 " Average gain 274 " Average daily gain 2 12 " Cost to feed 1 steer, 1 day 11 9 cts Cost to feed 1 steer, 129 days \$15 31 Cost 1 lb. gain 5 59 cts

Value of feed To produce 1 lb. req'd.		\$55 53 22 5	\$10 71 = 2·2 =		
				\$137 444	
			-	\$581	78
	Profit on lot		 		35 57 95

CONCLUSIONS.

LONG vs. SHORT FEED.

1900	181 da	ys.	271	gain.	1.49 da	aily gain.	6.2 cost	, 1 lb.
1901	203	11	332	11	1.58	"	5.7 "	***
1902	186		311	11	1.67	11	5.7 "	"
1903	180	1	298	11	1.65	11	6.03 "	"
1904	129		327	11	2.53	11	4.30 H	11

STEER FEEDING EXPERIMENT.

LOT II, TWO YEARS (TIED UP.)

Week Ending.	Meal.	Ensilage and Roots.	Hay.	Straw.	Nov. 13 to March 22,129 days.
Nov. 21, 1903. " 28, 1903. Dec. 5, 1903. " 12, 1903. " 19, 1903. " 26, 1903. Jan. 2, 1904. " 9, 1904. " 16, 1904. " 23, 1904. " 30, 1904. " 13, 1904. " 13, 1904. " 20, 1904. " 27, 1904. Mar. 5, 1904. " 12, 1904. " 12, 1904. " 12, 1904.	63 94½ 126 189 252 283½ 315 346½ 378 409½	2,142 2,457 2,457 2,457 2,457 2,457 2,457 2,457 2,457 2,457 2,457 2,457 2,457 2,457 3,087 3,591 3,591 3,591	630 630 630 504 504 504 315 315 315 3252 252 252 252 252 252 252 252	252 252 252 252 252 252 252 252 252 252	9 steers. 1st average weight 1,024 lbs Last "
	4,613	47,943	7,219	4,536	
Value of feed To produce 1 lb. mea required	t	\$47.94 19:3	\$25.26 2·9		= \$128.40 = 26.8

To produce 1 lb. meat		P11.31		φ33.01			EL.
required	1.8	19.3	2.9	2.8	= 26	3.8	
	Feed cost Steers cost				\$128 368	40 80	
					\$497	20	
	Steers sold for Profit on lot.				59	05	
•	" on 1 st	eer		• • • • • •	6	34	

STEER FEEDING EXPERIMENTS.

LOT III, THREE YEARS (LOOSE.)

•	Week ending	Meal.	Ensilage and Roots.	Hay.	Straw.	Nov. 13, March 22, 129 days.
Jan. " Feb. " Mare	21, 1903 28, 1903 5, 1903 12, 1903 19, 1903 26, 1903 2, 1904 9, 1904 23, 1904 30, 1904 6, 1904 13, 1904 20, 1904 27, 1904 15, 1904 16, 1904 17, 1904 18, 1904 19, 1904 19, 1904 10, 1904 10, 1904 11, 1904 12, 1904 12, 1904 19, 1904	56 84 112 148 227 252 252 280 308 336 364 364 364	2,184 2,464 2,520 2,520 2,520 2,520 2,520 2,520 2,520 2,520 2,520 2,520 2,520 2,520 3,920 3,920 3,920	560 560 560 560 560 448 448 448 280 280 280 224 224 224 224 224	224 224 280 280 280 280 280 280 280 280 280 280	8 steers. 1st average weight 1,236 lbs Lost " " 1,530 " Average gain 294 " " daily gain 2°28 " Cost to feed 1 steer 1 day 11°9 cts 129 days \$15°36 Cost 1 lb. gain 5°22 "
		4,127	49,728	6,328	4,872	

Value of feed To produce 1 lb.			\$49 73 21 2	\$22 15 2·7	\$9 74 = 2·1 =		
						\$122 395	
						\$518	49
	Profit on	lot		*****		581 62 7	91

STEER FEEDING EXPERIMENTS.

LOT IV, TWO YEARS OLD (LOOSE.)

	Week ending.	Meal.	Ensilage and Roots.	Hay.	Straw.	Nov. 13, March 22, 129 days.
						8 steers.
Nov.	21, 1903		1,904	560	224	1st weight 967 lbs
	28, 1903		2,184	560	224	Last " 1,303 "
Dec.	5, 1903		2,184	560	224	Average gain 327 "
"	12, 1903	46	2,184	560	224	Average daily gain 2:53 "
11	19, 1903	84	2,184	448	224	Cost to feed 1 s. 1 day. 10.9 cts
11	26, 1903	112	2,184	448	224	129 days \$14.0
Jan.	2, 1904	168	2,184	448	224	Cost 1 lb. gain 4:30
"	9, 1904	224	2,184	280	224	
11	16, 1904	252	2,184	280	224	
11 -	23, 1904	252	2,184	280	224	
11	30, 1904	280	2,184	280	224	
Feb.	6, 1904	308	2,184	280	224	the first of the second second second
11	13, 1904	336	2,184	224	224	
11	20, 1904	364	2,184	224	224	
11	27, 1904	364	2,734	224	224	
Mar.	5, 1904	392	3,360	224	224	
11	12, 1904	448	3,360	224	224	
11	19, 1904	462	3,360	224	224	
		4,102	43,110	6,328	3,032	

Value of feed To produce 1 lb. required.	\$41.02 1.6	\$43.11	\$22·15 2·4	\$6:08 = 1:2 =		
	Feed cost			\$	122	89
	Steers cost	P			304	39
	Steers sold Profit on lot.				480 53	34

STEER FEEDING EXPERIMENTS.

LOT V, FULL FATTENING YEARLINGS (LOOSE.)

Week Ending.	Meal.	Ensilage and Roots.	Hay.	Straw.	Nov. 13 to March 22, 129 days.
Nov. 21, 1903 " 28, 1903. Dec. 5, 1903. " 12, 1903. " 12, 1903. " 19, 1903. " 26, 1903. Jan. 2, 1904. " 9, 1904. " 16, 1904. " 23, 1904. " 30, 1904. " 30, 1904. " 13, 1904. " 13, 1904. " 20, 1904. " 27, 1904. Mar. 5, 1904. " 12, 1904.	56 84 112 168	1,904 2,184 2,184 2,184 2,184 2,184 2,184 2,184 2,184 2,184 2,184 2,184 2,184 2,184 2,184 2,184 2,188	448 448 560 560 560 448 448 448 280 280 280 280 224 224 224 224 224	224 224 224 224 224 224 224 224 224 224	8 steers. 1st weight 808 Last " 1,050 Gain 242 Average daily gain 1 9 lbs Cost to feed 1 steer, 1 day 10·5 cts Cost to feed 129 days \$13.60 Cost 1 lb. gain 5·62 cts
ıı 19, 1904	4,102	1,960 38,360	6,104	4,032	

Value of feed...... \$41.02 \$38.36 \$21.36 \$8.06 To produce 1 lb. gain required.

 Feed cost.
 \$108 80

 Steers cost.
 226 10

 \$334 90

 Steers sold for.
 \$375.67

 Profit.
 40.77

 u on steer.
 5.10

STEER FEEDING EXPERIMENTS.

LOT VI, YEARLINGS LIMITED GROWING.

Week ending.	Meal.	Ensilage and Roots.	Hay.	Straw.	Nov. 13 to March 22, 129 days
Nov. 21, 1903. " 28, 1903. Dec. 5, 1903. " 12, 1903. " 12, 1903. " 26, 1903. Jan. 2, 1904. " 9, 1904. " 30, 1904. " 13, 1904. " 13, 1904. " 27, 1904. " 27, 1904. Mar. 5, 1904. " 12, 1904. " 12, 1904. " 19, 1904.		1,190 1,225 1,365 1,365 1,365 1,365 1,365 1,365 1,365 1,365 1,365 1,365 1,365 1,365 1,365 1,365 1,365	280 280 280 280 280 280 280 280 175 175 175 175 175 140 140 140 140	140 140 140 140 140 140 140 140 140 140	6 steers. Last weight

Value of food To produce 1 lb. gain req'		\$25 25 18·4	\$13 02 2.6	\$5 04 = 1.8.	= \$68	93.
	Feed cost Steers cost					
		•			\$196	16
	Sold				17	

4 EDWARD VII., A. 1904

STEER FEEDING EXPERIMENTS.

LOT I ON LIMITED GROWING RATION.

Week ending.	Oats.	Gluten.	Oil Meal.	Bran.	Ensilage.	Hay.	Roots.	Straw
Nov. 7, 1903. 11 14, 1903. 12 11, 1903. 12 12, 1903. 12 12, 1903. 12 12, 1903. 13 19, 1903. 14 19, 1903. 15 19, 1903. 16 1904. 17 19, 1904. 18 16, 1904. 19 1904. 19 1904. 10 20, 1904. 11 13, 1904. 11 20, 1904. 11 27, 1904. 11 27, 1904. 11 21, 1904. 11 12, 1904. 11 12, 1904. 11 12, 1904. 11 12, 1904. 11 12, 1904. 11 12, 1904. 11 12, 1904. 11 12, 1904. 11 12, 1904. 11 19, 1904. 11 19, 1904. 11 19, 1904. 11 19, 1904. 11 19, 1904. 11 19, 1904. 11 19, 1904. 11 19, 1904. 11 19, 1904. 11 19, 1904. 11 19, 1904. 11 19, 1904.	35 35 35 35 35 35 12½				1,372 1,372 980 980 1,050 1,050 1,050 1,050 1,050 1,050 1,050 1,050 1,050 1,050 1,050 1,050 1,050 1,050 1,225 1,225	147 105 105 105 105 105 105 105 105 105 105	105 105 105 105 105 105 105 105 210 210 350 350	70 70 70 70 70 70 70 70 70
	387	$255\frac{1}{2}$	1011	154	23,219	1,967	2,520	84

LIMITED.

Total weight, Nov. 1, 1903		
No. of steers	5	
No. of days on feed	152 days	3.
Total gain	930 lbs.	
Average gain		
Daily gain.	1.22 "	
Cost to feed lot	\$43.88	
ıı 1 steer	8.78	
" 1 day	5 71 ets.	
Cost to produce 100 lbs	\$ 4.71	

STEER CALF EXPERIMENTS.

LOT II ON FULL FATTENING RATION.

Week ending	Sugar Beets.	Milk.	Oats.	Gluten.	Oil Meal.	Barley.	Bran.	Shorts	Pease.	Roots	Straw.	Hay.	Ensilage.
Nov. 7, 1903 " 14, 1903 " 21, 1903 " 28, 1903 Dec. 5, 1903 " 12, 1903 " 19, 1903 " 19, 1904 " 9, 1904 " 16, 1904 " 13, 1904 " 13, 1904 " 13, 1904 " 127, 1904 " 17, 1904 " 17, 1904 " 19, 1904 " 19, 1904 " 17, 1904 " 19, 1904 " 19, 1904 " 17, 1904 " 19, 1904 " 16, 1904 " 17, 1904 " 19, 1904 " 16, 1904 " 17, 1904 " 17, 1904 " 18, 1904 " 19, 1904 " 10, 1904	28 28 28 28 28 28 35 35 35 35 35		63 63 52 52 52 52 52 52 52 52 52 52 52 52 52	422 422 35 35 35 35 35 35 35 35 35 35 35 35 35	21 17-1-17-17-17-17-17-17-17-17-17-17-17-17		21 171-17-17-17-17-17-17-17-17-17-17-17-17-			35 35 35 35 35 35 35 35 35 35 35 35 35 175 175 175	70 70 70 70 70 70 70 70 70 70 70 70 70 7	105 105 105 105 105 105 105 105 105 105	1,176 1,176 875 875 875 875 875 875 875 875 875 875

\$59 83	2.57	11.76	8.05	5.34	3 41	1.12	1.06	6.27	10.95

Total weight, Nov. 1, 1903	1,930 lbs.
" April 2, 1904	3.265 "
No. of steers	5
No. of days on feed	152 days.
Total gain	1,335 lbs.
Average gain	267 "
Daily gain	1.75 "
Cost to feed lot	59.83
" 1 steer, 152 days	\$11 96
" " 1 " 1 day	7 87 cts.
Cost to produce 100 lbs	4 48

These as calves in 184 days.

Or	 1.48 lbs.	per d	lay.				
Calves 6 months. Yearlings 2 years olds	 1·48 1·75 2·12 2·15	at \$2	2 17 4 48 5 03 6 16	"	100 100	"	
3 " " "	 2.12	11 8	59	11	100	- 82	

4 EDWARD VII., A. 1904

PIG FEEDING EXPERIMENTS.

There is just one other little point, and I am through. We have been feeding during the last year a number of pigs outside and a number inside. There are here some photographs illustrating the outside feeding operations (photographs produced.)

By Mr. Cochrane :

Q. What do we understand by that ?

A. We have little cabins, sir, about 8 feet by 6 feet. These cabins are battened, and there are little yards in front of them, The pigs can go in these cabins to sleep.

Q. Each pig separately ?

A. No.

INSIDE VS. OUTSIDE FEEDING.

By an Hon. Member:

Q. For the winter ?

A. All winter they were out. They were September and October pigs. In the group of four months old pigs, we fed them for 66 days and made experiments in comparison with lots of the same age and from the same litters, inside and outside. Those inside made a gain of '73 pounds per day at a cost of 4.57 cents per pound. Those outside made a gain of '62 pounds per day, at a cost of 7.21 cents per pound.

By Mr. Kidd:

Q. They were fed outside ?

A. Yes. You will notice the great difference in the cost of producing a pound of gain. The inside lot of five, weighed 496 pounds at the start and 735 pounds at the conclusion, an average gain of 48 pounds. They were fed 993 pounds of meal, 175 pounds of milk, the meal mixture being 100 pounds of shorts and 100 pounds of gluten. The outside lot of four, weighed 430 pounds at the beginning and 592 pounds at the end, an average gain of 41 pounds. They were fed 1071 pounds of meal, 171 pounds of milk, the meal mixture being 100 pounds of shorts and 100 pounds of gluten.

By Mr. Cochrane:

Q. Whose notion was that feeding outside?

A. That is an idea that is growing in favour in some parts of Canada to have the pigs outside, and I wished to get some exact data as to the comparative cost of producing a pound of pork under these conditions.

By an Hon. Member:

Q. This was an exceptional winter.

A. It was that.

By Mr. Stewart:

Q. How often did you clean them ?

A. Not every day—

By Mr. Cochrane:

Q. I thought it was necessary to keep them warm ?

A. That is my experience too. I am giving you the exact figures we got. Then we took another batch three months old, fed them for the same time and here are the

results. The four pigs fed inside weighed at the commencement 181 pounds, and at the end 324 pounds, an average gain of 36 pounds. They were fed 400½ pounds of meal, 175 pounds of milk, the meal mixture being 100 pounds of shorts and 100 pounds of oil meal. The rate of gain was '55 pounds per day and the cost per 100 pounds of was \$3.28. The batch of four pigs fed outside weighed at the start 171 pounds of the conclusion 196 pounds, one pig having died. The average gain was therefore only 22 pounds. They were fed 285 pounds of meal and 150 pounds of milk, the meal mixture being 100 pounds of shorts to 100 pounds of oil meal. The rate of gain was '35 pounds per day and the cost per 100 pounds gain was \$4.71. There again it is very strongly in favour of inside feeding. I may say that the inside pigs were not any more healthy than the outside pigs. A pig pen to be perfectly sanitary and wholesome for young stock must be well ventilated. I regret to say that our piggery is not very well ventilated. We have tried various ways of ventilating it, but have not succeeded very well yet.

Another line we have been experimenting on is to determine the best kind of meal to feed young pigs. Here is a mixture: Oats 100 pounds, oil meal 100 pounds. On that feed they gained at the rate of '45 pounds per day and cost \$6.13 per 100 pounds gained. They were three months old. The gain you see was not a half pound a day and the cost 6'13 cents to produce a pound.

By Mr. Kidd:

- Q. That would be only for a few days ?
- A. For sixty-six days.
- Q. What were they fed on ?
- A. Oil meal and oats, equal parts.

By an Hon. Member:

Q. You would not make pork profitable with that kind of feed.

A. No, that is what I want to show. Now, we fed another lot on 400 pounds of shorts to 100 pounds of oil meal. They gained about the same, that is :36 pounds per day, at a cost of \$6.40 per 100 pounds. Another lot were fed on oats 200 pounds to shorts 100 pounds. They gained :54 pounds per day at a cost of \$3.66 per 100 pounds. Another lot were fed shorts 200 pounds, oil meal 200 pounds, gluten 200 pounds, ground outs 100 pounds, and skim milk. They gained :71 pounds per day and cost \$3.03 to produce 100 pounds, and were in good health and thrifty under these feeding conditions. Another lot were fed on nothing but shorts and skim milk which I think is the ideal ration. They gained at the rate of :87 pounds per day, which is a little over \$ of a pound, and they cost \$2.33 to produce 100 pounds of pork, and were in first-class health right through.

By Mr. Gould :

- Q. Don't you think it would be better if these pigs were fed in the way the average farmer has to feed them? He can't buy oil meal.
 - A. He has shorts and milk.
- Q. Oil meal is in the list. If these experiments will do the farmers any good they must be conducted with the kind of feed the farmers grow themselves.
- A. If the hon, member will allow me to explain. We are in receipt of frequent inquiries about the kind of feed to feed pigs, that being one. And as you know it is becoming harder to get skim milk we have been trying to replace it.

By an Hon. Member:

Q. I notice you feed oil meal, and so on, to your steers.

4 EDWARD VII., A. 1904

A. Gluten meal pound for pound will produce a great deal more flesh than oats. I think these by-products if fed to farmers, will enable them to make more money. But of course we feed these as I have said in a ration and not exclusively. I do not think that oats fed exclusively is a good ration for steers.

By Mr. Cochrane:

Q. Did you feed your steers any corn ?

A. No, not this year.

Q. Are you satisfied it does'nt pay ?

A. We are satisfied that it is a good ration. We are experimenting with other rations now.

By Mr. Avery :

Q. Have you fed the pigs dry feed ?

A. For the young pigs it was warmed up; it was in winter and they were outside.

By Mr. Kidd:

Q. Would it be profitable to feed cornmeal and ensilage? There would be a great deal of corn in the ensilage.

A. Corn for the last three or four years has been so dear—for two years at least—that it doesn't pay and we had to use some other feeds. That is one reason we did not feed it.

· By Mr. Cochrane :

Q. In my section of Ontario we raise our own corn.

A. Yes, but we are not so fortunate as to be situated where we can grow our own corn. I think Mr. Chairman, if there are no other questions—

By Mr. Erb:

Q. In estimating the cost of producing 100 pounds of pork do you take into account the cost of heating the feed.

A. No.

Q. You make no allowance for that !

A. No, but we take the feed at the price which it cost us.

By Mr. Richardson :

Q. Do you ever raise hogs for the production of bristles ?

A. No.

Q. I am informed that the Russian hog produces about 3 pound of bristles which are sold in Canada at about \$3 a pound.

A. No, I have not heard of that. It may be worth while making some inquiry.

By an Hon. Member:

Q. Is there any object in heating the feed ?

A. When they are outside I think there is.

Having read over the foregoing transcript of my evidence I find the same correct.

J. H. GRISDALE.

Agriculturist, Central experimental farm.

FARM POULTRY BREEDING

House of Commons, Committee Room 34, Thursday, May 19, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, Chairman, presiding.

THE CHAIRMAN.—We will hear this morning from Mr. A. G. Gilbert, of the experimental farm, on poultry raising.

Mr. Gilbert.—Mr. Chairman and Gentleman, allow me to express the great pleasure I have in again appearing before you and giving an account of such features of my work during the past year as I think will be of benefit to the farmers of the country and of interest to your Committee. I, therefore, with your kind permission ask your consideration of the following points which I submit to you and briefly:—

First, the nature of the information asked for by farmers and the value of the experience of the past in giving correct replies to the many questions asked by them.

Second, the breeds or varieties of breeds of fowls which experience has shown to be the best for farmers.

Third, the proper management and treatment of fowls so as to secure the best results.

And if time will permit, one or two interesting results of the experimental work of last year.

INQUIRIES UPON POULTRY BREEDING.

In regard to the nature of the information asked for by farmers it is eminently practical. The farmers are practical men, and in very many different points of the Dominion represent many varied interests. Direct and correct replies are asked for as to the breeds which make good layers and the quickest growing chickens of the most acceptable market types. I may instance what I mean by quoting from a letter received from a farmer a few days ago as follows: 'Please tell me what you have found to be the best all round fowl for the farmer so that he can have eggs in winter and chickens in early summer which will make good table fowls.' Inquiries as to the advisability of artificial hatching by incubators and the rearing of the chickens by brooders in preference to the natural hen mother have become very numerous. Not only have these inquiries come from farmers, but from residents in cities, towns and villages, or those in the neighbourhood of such. All seem to be desirous of catering to the winter markets of high prices, but as compared with the farmers these well intentioned people are handicapped, for not only must they be specialists to a greater or less extent, but their accommodation is likely to be limited and they will require to purchase their feed. As I have remarked to the Committee on a previous occasion, it is after all from the farmers of our country that the great bulk of eggs in winter and of the superior quality of table poultry in summer must come, and it will not likely come from the few farmers with a large number of fowls each, as it will from the large numbers of farmers with comparatively few fowls each, say, from 50 to 100. So gentlemen of the committee you will, I am sure, see the force of the farmers being instructed correctly from the first. Farmers cannot afford to do experimental work. We do that for them and give the results to them in our annual reports and through this committee. As applying more directly to the value of experience as a factor in arriving at correct conclusions, allow me to say that an experience of 17 years at the experimental farm, and some years previously as an amateur, has permitted me to answer the many questions asked from very many different sources in a direct and practical manner with satisfactory results, it is to be hoped, to the inquirers. I shall be happy to answer any questions, if you feel inclined to ask them, as I go along.

As to the breeds or varieties of breeds which are the best for the farmer, experience permits us to state with no uncertain sound that the following breeds or varieties are eminently fitted to be farmers' fowls from both egg and flesh producing standpoints, namely: Barred and White Plymouth Rock, White Wyandottes, Buff Orpingtons, or one of the Dorking family. These birds are all of American origin, with the exception of the Buff Orpingtons and the Dorking family, and they have the benefit of being acclimatized. It has been said that the Dorkings are apt to be tender, but that may be a matter of strain.

BEST BREEDS OF FOWLS FOR THE FARM.

By Mr. Ross (Ontario):

Q. Are they all equal?

A. Yes, they are all equal in value, as winter egg producers and table fowls. Much is dependent upon strain, and some strains as I will show later on are hardier than others.

Q. Is not the Rock the easiest to raise ?

A. Yes.

Q. It is the most common fowl?

A. Yes, and the most popular.

Q. Are the barred easier to raise than the white breeds ?

A. In some cases it may be so. It is to be remembered that there are strong and weak strains of fowls as there are good and poor egg laying strains. It is important to buy stock, or eggs from a good strain of whatever variety is chosen. This is often overlooked, but it is nevertheless important. As winter-egg layers all the varieties named have proved themselves excellent and no difficulty should be experienced in obtaining Barred or White Rocks or White Wyandottes in any part of Canada. I think that will answer your question, sir.

By Mr. Ingram:

Q. Can you give us the price that ought to be paid for that class of fowl ?

A. That ought to be paid per fowl ?

Q. Yes.

A. Well, Barred Plymouth Rocks are perhaps the most universal and the cheapest fowl to purchase to-day. The eggs are sold by farmers among themselves for hatching purposes at from 50 to 75 cents and a dollar and a dollar and a-half per dozen, according to the value they place on them. In some places higher prices prevail than in others. The chickens are sold to the Toronto and other city purchasing houses, at from 12 to 15 cents per pound, going down as the season progresses to 10, 9 and 8 cents.

By Mr. Ross (Ont.):

Q. What, for the eggs ?

A. No, per pound, for the chickens.

By Mr. Henderson:

Q. Live or dressed weight ?

A. That is live weight, sir. It pays the farmer to have a correct type of fowl, and to rear his chickens carefully until they are three or four months of age, when they are of a saleable age. He will have no difficulty then in disposing of them to the large poultry purchasing firms of Toronto, Montreal and other points, provided they are of the right type. In fact, the purchasing companies are more anxious to buy the correct type than, I am sorry to say, the farmers are to produce them. That is the condition of affairs to-day.

By Mr. Ingram :

Q. Take a person going into the poultry business. I want to find out what they would have to give for this class of fowl?

A. You can buy Plymouth Rock hens from a farmer probably for 50 cents each; that is birds for commercial purposes. If you went to a fancier he would charge you all the way from a dellar to \$5, according to the value he places upon it, perhaps for show purposes. But the farmer is really the man for another farmer to buy birds from for commercial purposes, as a rule, and he sells from 50 to 75 cents and perhaps \$1 each, according to quality and value of strain.

Q. Now, give us the style of hen coop you think should be constructed ?

A. Yes.

By Mr. Ross (Ontario):

Q. We get that a little later on, do we ?

A. Yes, I will touch on that later on.

Q. What is the commercial value of these eggs ?

A. The commercial value in the winter?

Q. Yes

A. From 35 to 40 and 50 cents per dozen according to the market they are sent to. I speak only of new laid eggs. They bring in Montreal, Toronto, Halifax, St. John and the west—Vancouver and Victoria—during the winter season from 40 to 50 cents per dozen. Last winter was an extraordinarly cold winter; there were comparatively few new-laid eggs and prices went up to 60 and in some cases to 75 cents per dozen.

By Mr. Maclaren (Huntingdon):

- Q. Do they bring any more for commercial purposes than the eggs of other kinds of hens?
 - A. No.

Q. Then you are only stating the price of eggs irrespective of breed ?

A. Yes, that is what I mean. My teaching to the farmers for years has been to produce new-laid eggs in winter when they are worth the most.

Q. Certainly.

By the Chairman:

Q. What is the highest price paid in winter for new laid eggs-5 cents apiece ?

A. Yes, strictly new-laid eggs are sold as high as that figure on the best markets. Under ordinary conditions this is exceptionally high. In Toronto last winter new-laid eggs, in some cases, sold as high as 10 cents each, but this was owing to their very great scarcity.

By an Hon. Member:

Q. An egg would fetch that last winter ?

A. Yes. The high-priced eggs were not from any particular breed, but it is to 2-221

be remembered that there are some strains of fowls that lay larger eggs than others, and it is from these large egg-laying strains of fowls that the farmer should breed.

By Mr. Maclaren:

Q. You ought to sell them by weight ?

A. That is a matter for your committee to recommend.

By Mr. Bell:

Q. What is the distinction you draw between breed and strain? You want to

make that plain ?

A. With pleasure. A breed is composed of so many varieties. For instance, we have the Plymouth Rock breed, composed of Barred, White and Buff varieties. Three varieties in one family, but each variety has different characteristics and markings.

Q. Do you use the word 'strain' in the same sense as 'variety'?

A. No, I was about to explain that. Strain is the development by careful selection and breeding of the best points of merit of each variety. You will sometimes hear a dairyman say that he has a good strain of milch cows. His neighbour may have a poor milk-giving strain. There are good and bad strains of milch cows and there are good and bad strains of egg layers.

By Mr. Ross (Ontario):

Q. But they belong to different families ?

A. Yes, for bad or good features are not confined to one particular family.

By the Chairman:

Q. The same as Booth and Cruikshanks in fat cattle.

A. We use the word 'straim' to distinguish good from poor egg producers, or in cows to distinguish good from bad milkers, and the teaching to the farmers should be to breed, as they are doing in the case of the dairy cow, from the varieties with the best points.

By Mr. Henderson:

Q. How do you make that selection ?

A. Partly by observation, and then we have an invention called a trap nest into which the hen enters to lay her egg and cannot get out until released. The breeder puts a label or other mark on each bird to distinguish one from another. When he releases the hen from the trap nest he registers the number or mark on that fowl and so keeps track of his good and bad layers. He discards the poor layers and breeds only from those that give him the most eggs.

By Mr. Gould:

Q. He also registers the eggs from the different numbered fowls ?

A. Yes, that is one of the objections to this practice in a wholesale way. It takes up a good deal of the time of a man. He must make that record carefully in order to have satisfactory results.

Q. He can also put a date on the eggs if he likes ?

A. Yes.

By Mr. Maclaren (Huntingdon):

Q. Do you think that would be practicable for ordinary farmers?

A. No. Permit me to explain that in my report of the year before last I pointed out the difficulties in connection with the method. I said it might do for a careful

breeder who had only a small number of fowls, but the man who had a hundred of fowl might find it take up too much time to successfully operate.

By Mr. Kidd:

Q. It would certainly not pay to have to hire a man to make the records?

A. I am of your opinion. As to securing the best egg layers and market types, careful selection of the fowls which embrace the most desirable features and mating them with a typical male bird, is likely to bring about best results. It is most important that the breeding pen should be composed of birds of the best market types with good egg laying records.

By Mr. Maclaren (Huntingdon):

Q. Supposing I sent to the experimental farm for eggs of the kind you have

described, could you furnish them ?

A. I would certainly try to. We carefully select in order to obtain best results. Some three or four years ago we were singularly successful in the case of White Leghorns. We set none but large eggs—not the abnormally large eggs, for they do not hatch well—but large and perfectly shaped eggs, and we got not only large egg layers, but large fowls.

By Mr. Ross (Victoria):

Q. What would be the price of those eggs ?

A. We sell our eggs at \$1 for 15.

By Mr. Robinson (Elgin):

Q. Do you pay the freight on them ?

A. No.

SELECTION OF BEST STOCK FOR THE PEN.

Allow me to repeat that it is most important that the breeding pen should be composed of birds of the best market types and good egg laying records. The male bird should come from a strain of good laying parentage. By so breeding from carefully selected birds the farmer goes on from good to something as good, if not better, but the hap-hazard mating of good and bad layers, small and large fowls, with any sort of a male bird of the same, or other breed, is likely to produce most unsatisfactory specimens.

By Mr. Heyd:

Q. Supposing you started out with your breeding stock in good order, is there

any danger of the quality running out from want of new blood ?

A. I would not recommend a farmer, if he had an excellent egg laying strain, to introduce new blood without knowing all about it. I would have him to be mighty careful where he bought a bird from in order to change blood or he might injure his strain. He should be careful to know that the bird he buys comes from as good an egg laying strain as his own, or he would be going backwards.

Q. The strain does not lose its value then unless it is mixed with an inferior one?

A. No, I think not. We not only keep up the quality of the strain but improve it by careful selection.

By Mr. Bell:

Q. Is there any danger from inbreeding ?

A. There is less danger from inbreeding than there is from indiscriminate purchasing and mating. The mixing of one pure breed with another is bound, in the

course of time, to produce nondescripts. Speaking of hap-hazard mating and its vicious effect upon the market poultry in recent years, Mr. J. M. Wilson, manager of the Toronto Poultry Company, wrote me during last fall to the following effect: 'We get,' he said, 'so many small chickens of Leghorn or Andalusian cross that we suffer serious loss. These chickens are sent with others and we do not like to refuse them. They cannot be shipped to the English dealer, and we cannot put them on the local market as good quality, so we are glad to take what we can get for them. The farmers of the country cannot be too strongly impressed with the fact that the breeding of these nondescripts neither pay us nor will it pay them.' That is strong language from a buyer on a large scale. It just shows you how this indiscriminate hap-hazard breeding affects the poultry on the market. It is most important—and you, gentlemen of the committee, will see it—that the farmers should be fully impressed with the vital necessity of having the proper varieties and keeping them up to the correct market type. You will, I am sure, see the importance of this line of instruction that we have been giving to the farmers of the country for some years past at the Experimental Farm.

While on this phase of the subject allow me to quote from my annual report of the past year, and which will soon be in your hands, the following extract: 'A practice which seriously retards the quicker and greater production of the superior type of market chickens is that of using a Leghorn, Andalusian or Hamburg male with pure bred or mixed fowls of larger size, presumably with the object of having better layers. While such a course may be permissible from an egg standpoint, it is not advisable for farmers to adopt who have the dual requirements of eggs and better quality of chickens in view. The result is sure to be chickens of smaller size and much less value than those of the English or American utility breeds.' In reports of previous years I have given similar advice to the farmers.

The different varieties of poultry at the Experimental Farm at present may be classified as follows:—

By Mr. Ross (Ontario) :

Q. Have your experiments shown that it is possible to have a breed which will lay well and provide good meat for the people as well?

A. Yes. That is a most important point. It is one of the points, too, that certain people have expressed a doubt about, but it is nevertheless true that we can have both, and with no doubt at all as to results, if the fowls are of the proper type and they are kept under proper winter conditions.

By the Chairman:

Q. I suggest you add a foot note for the west that farmers should keep Leghorns. It is the only breed that can escape the cayote.

A. Yes, I will do so with pleasure. They escape probably, because they are so active.

By an Hon. Member:

Q. Why not add game fowls ?

A. They may not be quite as suitable.

By Mr. Ross (Ontario):

- Q. When the hens are laying in the winter, do you allow the males to run with them ?
 - A. No. Not unless we are trying experimental work in winter incubation.

Q. The hens lay better when alone ?

A. Yes, and not only that, but if the male bird is kept in the pen with the hens which are being gently stimulated to lay, the rather forcing food will make him too fat

and simply ruin him as a breeder. Allow me to illustrate what I mean by stating that one winter three or four years ago I was at a meeting in Sussex, N.B., and towards its close one of the audience said that a few mornings ago his Plymouth Rock rooster had fallen off its perch dead. 'What was the matter with him?' I asked if the rooster had been among the hens which he was feeding in order to have them lay eggs. He answered, 'Yes.' I replied, 'By so keeping him the bird had probably become too fat and had died of apoplexy. 'Was his comb blue black in appearance at time of death?' Yes,' was the reply. 'Almost a certain sign that apoplexy was the cause of death,' I answered. And the incident closed, but useful information had been conveyed. It is certainly better to keep the male bird away from the laying stock in winter and mate him with selected hens in spring.

By Mr. Ingram:

Q. Does that apply to all classes of fowl?

A. Yes, all classes. But more particularly to the heavy varieties.

By Mr. Robinson (Elgin):

Q. Would the eggs be valuable to raise chickens from under those circumstances? A. No.

Q. Do eggs which are not fertilized keep longer than those which are fertilized? A. Yes, that is a most important point that you have just brought out, they do.

Many fertilized eggs go to the market partially hatched and the party who sends them does not know that they are in that condition, but nevertheless they are; and in this way: In a fertilized egg, as soon as conditions are favourable, the germ begins to develop. Say the egg after being collected is put in a warm closet near a stove, or in a hot room, the germ starts to germinate, and the egg reaches the market in a partially hatched condition. If there is a cessation of germination, caused by change of temperature, or rupture of the germ by sharp jolting, the work of decomposition soon sets in and the flavour of the egg is affected to a greater or less extent, according to age of the egg.

Now, allow me to draw your attention to the utility breeds. We have at the experimental farm, Barred, White and Buff Plymouth Rocks; White and Silver Laced Wyandottes; Light Brahmas; Silver Grey Dorkings; Buff and Jubilee Orpingtons, and Rhode Island Reds. By utility breeds I mean fowls which are good winter layers and acceptable market types. The varieties I have named are good for eggs in winter and for flesh in summer.

FOR EGGS ALONE.—White and Buff Leghorns; Silver Spangled and Black Hamburgs and Black Minorcas.

Eggs from these different varieties are sold to farmers at \$1 per setting of fifteen, the purchaser paying express charges.

PROPER HOUSING OF HENS.

I now ask your attention to the proper housing, management and feeding of fowls, so as to have the best results from them. As to a proper house there is no east iron rule, for conditions vary in different provinces. The poultry house with open shed attachment, as shown in the following diagram, is becoming popular among farmers as a winter hous gram shown was in 1902 report.) This diagram (Gilbert says) is in the Printing Bureau. The birds go from the poulary house into the shed during the day and return to the poultry house at night or whenever they are inclined.

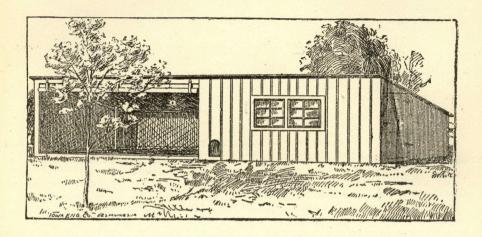
By Mr. Ingram:

Q. Is the poultry house part of lath and plaster?

A. If you like it may be so, but we have found that tar paper, double boards with tar paper between and an air space and then another wall of boards, answers well.

Q. Do you think that a better style of poultry house than lath and plaster?

A. I would not like to say positively, but I think the boards, and air space have their advantages.



By Mr. Ross (Ontario):

Q. The house and shed have a southern exposure?

A. Yes, it would be better to have them so situated. The poultry house with the open shed attachment is in use by several farmers of the country; I have seen them in different places; the farmers speak very highly of them. The house which is shown in the diagram was the property of Mr. J. S. Jeffreys, of St. Catharines, Ont., and was put up by him with a view of testing its usefulness. He wrote the following description of it: 'The house is 12 x 60 divided into four pens, each having a roosting and laying house 7 x 12 and scratching shed 8 x 12. The roosting room is built of double boards and battens outside, then paper and matched sheeting on the inside. The sheeting and all studs are of hemlock, the outside boards pine, and sills of cedar set on cedar posts 6 feet apart. The hemlock sheeting was used for two reasons. First, because it was cheaper than pine, and second, rats do not go through it as much as they do pine. There are no floors, but the earth on the bottom of the pens is raised three feet higher than the ground outside.' The shed faces the south, if at all possible. I differ from Mr. Jeffreys in one respect, my experience of 20 years goes to show that earth floors are a mild delusion and a snare, and for this reason, that unless the top dressing of the earth floor is renewed from time to time the excreta of the birds becomes mixed with the loose earth, and when their grain feed is thrown onto, or on it, in picking it up they pick up a certain amount of the filth, and suffer in consequence from an acute and infectious disease known as canker. I therefore prefer a board to any earth floor. If you have a board floor it should be covered to a depth of three or four inches with some sort of chaff or straw litter. I can speak with no uncertain sound on this point. I trust you see the force of my remarks, which are based on experience, for we once had canker brought on by having earth floors.

Q. Where was the canker, in the stomach?

A. At first in the throat, but it may eventually make way to the stomach.

n di de al acció 1996. Na acid les event l'estaglists

. Description of the following of the contract of the contract

APPENDIX No. 2

By Mr. Ingram :

Q. What kind of floor do you recommend ?

A. I prefer, as I have said, a board floor covered with chaff or straw litter to a depth of three or four inches. To my mind, there is no material better to put on the floor than chaff, which is generally to be found in abundance on farms throughout the country, and if you have an earth floor I would certainly have it covered with this chaff, because it is so easily removed and renewed. Another reason why I prefer board floors in the pen to earth is that earth is likely to become damp and to so remain during the winter.

By Mr. Erb:

- Q. A poultry house of the size described should accommodate about how many fowl?
 - A. We allow six square feet to each hen.
 - Q. About 120 ?
 - A. Yes, divided among the pens.

By Mr. Ross (Ontario):

Q. What would it cost to build that house, roughly ?

A. I fancy about \$120 or \$150, less or more, according to locality.

By Mr. Ingram:

Q. Is there a glass window ?

A. The diagram shows a window.

Q. Do you ever use any glass screened by wire ?

- A. Wire screens are certainly used in certain cases, generally inside. An oiled curtain is sometimes put in front of the shed. I have been told by a correspondent who had one that after a rain storm followed by cold weather the curtain was apt to warp. In a more southern clime an oiled cotton curtain might do very well. I am inclined to think that a board front with a large square window in front of the shed would answer far better.
 - Q. For the use of farmers you recommend the shed attachment.
 - A. Yes.
- Q. In our cities and towns we have breeders of fancy fowl, who don't breed them in large numbers. Will you describe to us a building that would cost say \$30 or \$40 which would be suitable for them?
- A. Allow me to answer your question as follows:—The experience of past years has shown fanciers as well as farmers the absolute necessity of giving their stock more fresh air and exercise, during winter, than they have been in the habit of doing, and as a result the poultry house with scratching shed made its appearance. Experience has shown that this kind of shed is adapted to both city and farm. I would recommend no better house to the city fancier or to the more practical farmer than this kind of house, and you will find that I am a great deal more right than wrong in this. But in some cases, where a city man has only, as you say, a limited number of fowls which he keeps for fancy purposes, a part of shed or stable ought to be utilized to good so long as he admits fresh air to his stock. Proper feeding and treatment of the fowls are also factors in ensuring good health. But fresh air is a prime factor in keeping the winter stock on farm or in city, in good condition.

By Mr. Ross (Ontario):

Q. In keeping all kinds of stock in good condition ?

A. Yes.

By Mr. Robinson (Elgin):

Q. What kind of grit do you feed your chickens ?

A. What is called mica crystal grit. Q. Do you put that in the troughs?

A. Yes. Small troughs which are divided into two parts. In one side we put ground oyster shells, and in the other mica crystal grit. The latter has an element of iron in it, which is a tonic for the fowls.

Q. Every fall we draw a load of gravel to put next to the fowl pen. Is that of

any use ?

A. If it is sharp gravel, it is all right; if the gravel is round and smooth, it is not so good.

By Mr. Henderson:

Q. Would such a house as you have described, built in the way you speak of, be

sufficiently warm in the winter without artificial heating?

A. Yes. I have not time this morning to enter fully into this phase of poultry keeping, but it is a very interesting point. We have found in poultry keeping, as may have been found in other lines of stock, that it pays best to make our poultry suit the climate rather than to attempt to make the climate suit our poultry. We have been trying to make, as it were, the tail wag the dog far too long. I have had experiments going on at my private house at the Farm, and under my own immediate supervision for four or five years past along this line of work. I had my youngest boy put up rather roughly 'tis true, but cheaply a small house. I believe in making the boy and girl on the farm factors in poultry keeping, and as they are generally bright, they are well qualified to be so. In these pens, roughly put up as I have stated, we placed birds which never knew what a warm place was. These birds not only laid well during the winter, but the germs of the eggs laid by them in early spring, were strong and hatched out robust chickens which lived and made rapid growth, while eggs from the hens in our comparatively warm farm poultry houses did not give nearly such satisfactory results, as will be seen in my annual report which will soon be in your hands.

By Mr. Ingram:

Q. That would be an argument against artificial heat in the pens ?

A. Yes, that is really what it amounts to. Experience so far goes to show that artificial heat is detractive rather than beneficial under our winter conditions.

By Mr. Erb:

Q. Have you discarded artificial heat in your poultry houses ?

A. No, but we purpose putting up experimental winter houses with the shed

By Mr. Ingram:

Q. You recommend a rather comfortable building instead of artificial heat in winter?

A. Yes, I believe the more pure air in the building the better. The poultry house described a short time ago, is erected on the open scratching shed plan. The house itself is fairly comfortable at night. We really desire the hens to only lay and stay in that house during the night. I beg to remark that this is a very important phase of modern poultry keeping that we are now discussing. Let me emphasize that the object of the poultry house, with shed attachment, is to afford the hens opportunity to enjoy more fresh air and exercise. We wish the hens to come to the poultry house to lay in during the day and roost at night. We do not desire them to loiter there. We

want them to keep to the open scratching shed and exercise there as much as possible. The fresh air and exercise are not only conducive to egg laying but to good health.

By Mr. Ross (Ontario):

Q. Is the house frost proof ?

A. It ought to be. Sometimes when green lumber is used in construction of a house it is not so for the first winter.

Q. If the temperature went above 32 degrees rather than below, would results be

apt to be hurtful at night?

A. No, a good deal would depend upon how the house was ventilated. If there is a ventilator for the heat of their bodies to escape, overheating would be prevented. That is an important point.

Q. Do you know anything about the total value of the trade in poultry and eggs

in this country? Perhaps that is not in your department.

A. I have, a few figures, but I did not come prepared to answer that question.

Do you mean the export trade?

Q. Everything—the entire trade through the country. Is there any means of getting at it to know the extent of the trade and the size of it?

A. The Dominion statistician could doubtless give figures.

Q. Will the census show it?
A. I really could not say.

By Mr. Ingram :

Q. In Ontario they give it ?

A. Yes, but I presume the hon. member means for the whole Dominion.

By Mr. Erb:

Q. When speaking of windows in the poultry house you recommended the square window. Do you find it gives better results than one of any other shape?

A. No.

By Mr. Wilson:

Q. It is easier made.

A. Yes, you will see the value of experimenting along these lines in order to satisfactorily answer these questions as they come up.

By Mr. Erb:

Q. You really mean any rectangular window.

A. Any kind of window, so long as it is large enough.

By Mr. Wright:

Q. Where do you get this mica grit ?

A. We get it at Graham Bros., this city. You can get it at any poultry supply house. It is cheap and effective.

By Mr. Ingram:

Q. In the matter of farmers raising eggs in the winter, I regret that it is too true that in too many cases the eggs from their fowls are small, the fowls themselves are small and the eggs are not laid in winter. What is the difference between their method and the method you recommend?

A. I am afraid that there is a great deal of 'don't-care-ativeness' about their methods. Indifference, if you like, which is a mighty hard quantity to buck up aganst

in any department of life whether it be religious, social or political. Our advice to farmers is to obtain eggs at the season of high prices, viz,: winter time, and to raise none but chickens of the most acceptable market types. All the breeds I have mentioned in the first part of my evidence will not only give them—if properly handled—eggs in winter—but their progeny will make market birds of the best types. I trust I have answered your question to your satisfaction.

Q. I understood that one trouble with farmers is that they do not keep their fowls

warm enough ?

A. Yes, in many cases, and again in other cases they are kept a great deal too warm by a number being overcrowded in a small house. You can see, gentlemen, what an immense amount of missionary work there is yet to be done among the agricultural population in regard to poultry keeping.

By the Chairman:

- Q. Am I right in coming to this conclusion from your teaching that dryness and fresh air are more important than artificial heat?
 - A. That is the concrete of it. Q. That is the whole thing?
- A. That is the teaching of to-day in modern poultry keeping. Dryness and fresh air are most important factors to success.

By Mr. Ross (Victoria):

- Q. Would it not be well that you should go among the farmers and give such practical instruction to the different agricultural societies ?
 - A. I have been doing so.
- Q. I would like you to come down to Cape Breton and give instruction to the people there.
 - A. I should much like to do so myself.

By Mr. Ingram :

Q. Taking the case of men who make a specialty of poultry-raising, is it not a fact that they keep their different breeds of fowl in separate pens. The difference between them and the ordinary farmer is that the latter too often allow all the fowls of every breed to run together?

A. Yes; that is a point of vital importance in obtaining the superior quality of poultry. You may remember my saying that hap-hazard mating, too commonly practiced, is detrimental to the poultry interests of the country.

Q. And by reason of that, the eggs of the farmers' fowls are not large and their chickens are mongrel?

A. Yes, I am very glad you have emphasized this important phase of poultry breeding.

By Mr. Henderson:

Q. Yes, but why should the farmer have half a dozen breeds of fowl on his farm? Should he not restrict himself exclusively to one kind, make a good selection, and have no mixture?

A. Yes, most decidedly. That is what I said at beginning of my evidence, that it is better for the farmer to have one variety and keep on by careful selection improving it so as to have good winter layers of large eggs, and the chickens which will make the best type of market fowls for sale in summer.

By Mr. Ingram:

Q. Can that be done? You want a good egg layer and flesh maker combined. Is it not often the case that the first-class egg layers are not a good table fowl. That is, they are not a large table fowl?

A. That is certainly true where unsuitable varieties are kept. We, fortunately, have varieties that are suitable. It is most important to have the winter egg layer and flesh maker combined, and we have that in breeds such as I have named as utility breeds, viz.:—Plymouth Rocks, Wyandottes, Dorkings and Orpingtons.

By Mr. Ross (Ontario):

Q. You perhaps will give us that later on ?

A. That was my intention. But as the subject is an important one it may as well be discussed now as again. The utility breeds, and by the word utility I mean good winter layers, and which are also the best types of market fowls. Allow me to repeat them, viz.: Barred, White and Buff Plymouth Rocks, White Wyandottes, Silver Grey Dorkings, Buff Orpingtons and Rhode Island Reds. All these breeds answer the purposes that you mention, but they have different characteristics and markings, but all are good utility birds.

By Mr. Gould:

Q. Do you not recommend some as being easier to obtain and as good as others?

A. Answering from that standpoint, I can safely say Barred Plymouth Rocks, because they can be got in greater number, and for that reason cheaper than any other variety. And they are certainly as good as any.

By Mr. Ross (Ontario):

Q. And they are a tougher breed ?

A. Constitutionally they are as tough as any, perhaps a little more so.

By Mr. Ingram:

Q. What are the best egg layers ?

A. They are just what you make them. It is a matter of intelligent manipulation. Select your best egg layers and market types and breed from them. First get a good varietly and keep on improving it. A skilled breeder can make a strain just as he wants it to be. I will illustrate the point in this way. You remember some years ago there was a craze for buff colour. In response skilled breeders produced the Buff Rock; Buff Wyandotte; Buff Leghorn, and later the Buff Orpington and so on. No matter which of the utility varieties you have, by careful selection and mating you can build up a good strain. To the intelligent man, such breeding is an art both delightful and edifying. On the other hand, the haphazard style of breeding poultry, so common throughout the country has resulted in many nondescripts and small eggs.

By Mr. Ross (Ontario):

- Q. When should a winter layer be hatched?
- A. The first part of May.
- Q. Not later ?
- A. No.
- Q. When will she commence to lay?
- A'. She ought to lay in November.
- Q. Will she lay all winter ?
- A. All winter and with proper care and management, until the moulting season of the next year.

By Mr. Ingram:

- Q. That really is the most profitable hen for the farmer ?
- A. Yes, for the farmer, or any one else.

4 EDWARD VII., A. 1904

By Mr. Robinson:

- Q. Some years ago the Cochin China was in great favour. Where is he now?
- A. He is out of date, and he has gone out of date because he was too long in maturing.
 - Q. Is there any danger of these Orpingtons going out of date?
- A. I do not think so. I think they have the utility points to make them stayers. They have become very popular in a short time.

By Mr. Ross (Ontario):

Q. Is the utility hen you have described a profitable layer after the first season?

A. Yes, the first and the second season, but no longer.

By Mr. Wright:

- Q. Is it not well to mention this fact, that some are discarding the Barred Plymouth Rock for the reason that they have dark pin feathers, whereas, with the white varieties you have white pin feathers, and there is less labour in dressing them in consequence?
- A. That is quite possible, but we have never found that difficulty where careful plucking has been done.

Having read over the preceding transcript of my evidence, I find it correct.

A. G. GILBERT, Poultry Manager, Central Experimental Farm.

House of Commons, Committee Room 32, Tuesday, May 31st, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., the Chairman, Mr. Douglas, presiding.

Mr. A. G. Gilbert, Manager of the poultry branch at the experimental farm, was present, by recall, and addressed the Committee as follows:—

Mr. Chairman and Gentlemen of the Committee, I am happy to answer your summons of recall. There were points of very great importance and interest touched upon and brought out at the last meeting of Committee, and some of them I have summarized as follows:—

ESSENTIAL CONDITIONS TO PROFITABLE POULTRY RAISING.

First, it was known that the instructions calculated to be of benefit to the farmers of the country must be practical, simple, and easy to be put in operation.

Second, that the breeds best adapted to the farmers are, Plymouth Rocks, Wyandottes, Orpingtons and Dorkings, because they are good winter layers and their progeny are rapid flesh makers of acceptable market type.

Third, the importance of the proper caring for the chickens from the time of hatching to the saleable age of three and a half or four months, when, if in proper condition, the city wholesale purchasers will send for them, the market, in this way, actually coming to the farmers. I have a note here. I want to 'Emphasize this.' I wish to emphasize in this connection the following important points, viz.: That the chicken must be of one of the utility varieties such as I have mentioned, and next it must be properly cared for from the time of hatching, particularly during the first six weeks of its existence. It is well known in England and in France where much attention is given to poultry raising of the superior quality, that if a chicken is allowed to become 'stunted' during the early weeks of its existence, from being 'stinted' of its food, it never recovers from that neglect. You will, I am sure, see how important it is that the farmer should understand this elementary fact in raising chickens of the superior quality. If the farmer attends properly to his chickens, up to the saleable age of three and a half or four months they will be then ready either for sale to these wholesale purchasing companies of Toronto and other cities, or for the fattening crate, if it is found necessary to further fatten them. I must, however, say in this respect that our experience goes to show that if the farmers chickens are of the proper type and are properly cared for, they will require no crate fattening by him to be acceptable to the large purchasing companies. It is to be remembered that I am not speaking against crate fattening. What I desire the farmers to do is to have their chickens of the best market type and in the most acceptable condition as soon as possible and with as little trouble as possible.

A fourth and important point brought out was that a good egg laying strain is the result of intelligent manipulation. A good laying strain is the work of the man behind the gun. It was shown that a skilful dairyman, breeds from his best milking strains carefully weeding out the poor milkers. The up to date poultryman breeds from his best birds.

A fifth point brought out was that the cause of undersized chicken and small eggs is due to hap-hazard methods of breeding on the part of farmers. The result of this hap-hazard manner of breeding are chickens of all sorts and sizes and colours, the great majority of them of a very objectionable type.

A sixth point made clear was the importance of farmers sending or selling none but strictly fresh eggs on the markets, or to collectors, or dealers for shipment. This is a very important phase of the egg trade. We read that there are no eggs, from any part of the world, that are more acceptable in the British markets to-day than Canadian eggs, because they are of good size, clean and arrive in good condition. is the result of the adoption of specially constructed boxes, with the cardboard divisions which permit of the eggs arriving in clean condition and with the flavour as it was when shipped. It is all important then that the egg should leave the farmers hands with the flavour intact. I beg to draw your attention to the fact that too often the egg leaves the farmer with an impaired flavour, and in this way as a rule there are several male birds running with the hens in the great majority of the barnyards of the country. As a result the eggs are all strongly fertilized. In the new laid eggs, which are generally laid in the early mornings of summer, a succession of layers have probably sat on, or may sit, and very frequently a broody hen may take possession of the nest until the eggs are collected, which may be that afternoon, or, not until next day. At any rate, not until the lapse of several hours. Meanwhile, the germ has started and if from sudden change of temperature or other cause the progress of the germ is arrested there is just so much decomposition sets in as to ruin the flavour of the egg. I have a work with me here kindly lent me by Prof. Shutt on 'Emryology' by Messrs. Foster & Balfour, and it shows the progress of the germ from the first eight hours after the egg is laid, until the chicken is fully formed. You will, I am sure, see the very great importance of the farmer putting an egg with the flavour intact into the hands of collector, store-keeper or shipper. What remedy is there against the loss of flavour ?

By Mr. Ross, Ontario :

Q. It is evident that the male bird should be kept from the hens?

A. Yes, it is imperative that no male bird should be with the hens which lay the eggs sent to market or for shipment. It is of first importance that the egg should be put into the hands of the shipper as soon after it is laid as possible and with the flavour intact.

Q. The hens will lay as well without the male birds anyway ?

A. Yes, they undoubtedly will. Q. And for breeding purposes?

A. I would recommend the farmer to select for breeding stock nine or eleven of his best layers and best shaped birds—taking for granted they are one of the utility varieties—and mate them with a cockerel from as good a strain. He will be so going on from something good to something better.

By Mr. Wright:

Q. You recommend system ?

A. Yes, I do not recommend the adoption of free and easy methods.

You will, I am sure gentlemen, realize the importance of what I have said as it really affects the egg trade of the country. I beg to emphasize that if the eggs do not reach the dealer or the shipper with their flavour intact, no subsequent treatment can restore the lost flavour.

By Mr. Ingram:

Q. Would you recommend any kind of a nest in order to keep the hens from sitting on the egg for any length of time ?

A. Yes. I might recommend in the first place more nests than there are usually in the poultry houses of the country. And then there is a nest which is made with an incline which permits the eggs to run below into canvas receptacle under-

neath. It is handy and not expensive to make.

I desire to bring out all these points of vital importance to the development of the poultry interests of the country on this occasion, for the reason that I had a letter from a farmer making this request, 'Please send me a copy of your evidence before the Committee. I attach more importance to the evidence given before the Committee than I do to any other publication, because there are so many sections of the country represented by so many different members that the questions asked bring out just such information as we farmers want to know in regard to the different conditions of the country.'

HOW TO PRESERVE EGGS FOR MARKETING IN PRIME CONDITION.

By Mr. Leblanc :

Q. You were going to tell us how to preserve the eggs after they are saved pro-

perly ?

A. First, the eggs, not being fertilized, should be collected once or twice every day and put into a cool, sweet cellar, or room. They should be marketed once or twice every week. I hardly intended to bring that point out, but it is an important one, and I am glad you mentioned it. As a rule farmers do not market their eggs often enough. Whenever we hear of a farmer bringing in 30 or 40 dozen eggs at one time, the question immediately occurs, 'how many hens has he got?' because if he has only a limited number, the eggs first saved must be stale by the time he has collected the last of the lot. You will see the importance of having these things thoroughly understood by the man who brings in the eggs. I remember a case in point. One day two weeks ago, I was in a leading grocery store of this city, when a farmer came in and said to the clerk, 'do you want any eggs?' The clerk said to him 'how many months old are they?' I thought at once that he was chaffing the farmer with the intention of beating him

down his price. But I found out afterwards that the clerk knew more about his business than I gave him credit for. He repeated the question 'how old are the eggs ?' 'How many have you got ?' The farmer said : 'I brought in ten dozen this morning. I have sold five and I have got five dozen left.' 'Well,' said the clerk, 'I will give you 25 cents a dozen.' The farmer said he would take that price. I went out to the farmer afterwards and found out his name and I said, 'I belong to the poultry departmnt of the Experimental Farm and I like to look after the interests of farmers such as you are. Why did you take 25 cents when new eggs are selling for 35 cents a dozen ? If your eggs are new laid, you will have no trouble in disposing of them at 30 or 35 cents a dozen. Now, I will tell you what I will do. Will you guarantee to me that you will send in your eggs once every week and I will find a purchaser for your eggs in this city at 35 cents a dozen for the present and 30 cents for the rest of the winter ?' He said he would. I said, I will write you when the sale of your new laid eggs is arranged. I then went and made arrangements with a well known storekeeper to give the farmer, whose name I mentioned, 35 cents per dozen, as long as that price lasted, for a strictly new laid article. When I got home I wrote to the farmer where to take his eggs and told him that it remained for him to carry out his part of the compact. I do not know whether he did or not, but it is certain that if he kept his eggs for some days or probably weeks, he would have got an inferior price for them when he brought them in, because the eggs would have been gauged by the shop clerk as being anything but a new laid article. The importance of farmers being correctly informed in all these points is patent.

By Mr. Wright:

Q. In our section this difficulty is being got over in this way. Our farmers get so many eggs in winter now that there is an egg dealer who goes around every day and collects them ?

A. That is one of the points I want to impress upon farmers—the importance of collecting or bringing to market many times rather than a few times per month or

week.

Q. A wagon with a rack literally filled with egg cases is used ?

A. It is all important that these eggs should be perfectly fresh, and with

flavour intact when collected.

While on this important subject, permit me to remark that while the farmer is not supposed to be in the van of poultry lore as to the means of distinguishing partially hatched or ill-flavoured eggs from the new-laid ones, yet there are simple precautions which he may take, in order to secure the new laid article and which he is in duty bound, in the interests of his customers, to take. By observing the following, eggs of fine flavour may be sold during the entire summer season:—

Keep no male bird with the laying stock.
 Collect the eggs once or twice every day.

3. Take no eggs to market gathered from under barns, nests in the field or from stolen nests.

4. Prevent, if possible, the laying hens eating decayed vegetable or animal sub-

5. Keep the eggs, after gathering them, in a cool sweet atmosphere. If in a cellar let it be dry.

6. Keep the nests the layers use clean, comfortable and free from vermin.

7. Have a sufficient number of nests for the layers. Offer every inducement to the hens to lay in these nests and not to shun them.

8. Allow no brooding hen to sit on the new laid eggs, be it for ever so short a period.

9. Take the eggs to market clean and inviting in appearance.

10. Make a rule to take no eggs to market that are not strictly fresh, or that you are doubtful about the flavour being good.

2 - 23

4 EDWARD VII., A. 1904

There is not one of the above suggestions so difficult as to prevent its being put into immediate practice.

By the Chairman:

- Q. Do you recommend that the farmers keep their breeding and their laying birds entirely separate?
- A. I do. I would recommend the farmer to select a certain number of his fowls to breed from in spring.

Q. The best he has got?

A. Of the best shape and of the best egg-laying strain. Let him mate them up with a male bird that has not been with the hens during the winter. There must be the same intelligent effort in the poultry department of the farm as there is in others, if satisfactory results are to be attained.

THE EGG AND POULTRY TRADE.

I was asked at the last meeting to furnish some figures conveying an idea of the value of the poultry industry in this country. I received some figures from Mr. Geo. Johnson, the Dominion Statistician, who is always kind in furnishing information to me. The value in Canada last year of the living hens was \$3,500,000. Value of the hens slaughtered during the year \$1,369,260. Value of the eggs produced during the year amounted to \$10,386,158.

Q. Does that include total production ?

- A. That is the value of eggs sold, I presume, it does not include what was consumed in the farm houses.
 - Q. Then the hens produced three times their own value in eggs ?

A. They did.

By Mr. Stevens:

Q. Would that be the amount of money received from the export trade?

A. No. Permit me to read the figures for the export trade. I should say that Mr. Johnson made the remark at the time he gave me these figures, 'that it would be well to draw the attention of the committee to the fact that perhaps the capital invested in the production of the \$10,386,158 worth of eggs would amount to only the value of the hen-houses, and \$500,000 would be a full valuation of the poultry houses in the whole country. A mighty good return for the capital invested.

I have before me here, if you will kindly allow me to read it to you, an extract from the report of Mr. A. W. Grindley, the agent of the Department of Agriculture in Great Britain regarding the egg trade of Canada. He says 'that the Canada egg trade is in a good way, the best brands selling as high as the "fresh" or "daily collected," which always commanded, after the French eggs, the best price. During 1903 the United Kingdom imported eggs to the value of £6,617,000 sterling, amounting to about thirty-three million and some odd dollars. Canada's share of this large trade amounted to \$1,092,000. We have a large field for development here. The market for dressed poultry of a superior quality is almost unlimited. The countries which supplied the \$33,000,000 worth of eggs were'—

By Mr. Ross (Ontario):

Q. Have you the imports into England of dressed poultry :

A. No, I have not. The countries other than Canada which supplied this \$33,000,000 worth of eggs, roughly calculated, were as follows:—

Russia, \$5,399,824.

Denmark, \$4,494,645.

Germany, \$4,949,979.

France, \$4,221,989.

Belgium, \$3,569,471.

Canada, \$1,092,855.

Now the dressed poultry market:—

By Mr. Clancy:

Q. Excuse me, Mr. Gilbert, you have not made up the \$33,000,000?

A. No. There were other countries which supplied the lesser amounts; I only mentioned the countries which supplied the greater bulk.

By Mr. Wright:

Q. In what year were these imports made?
A. I quote from the year ending June 30, 1901.

By Mr. Wilson:

Q. Will you kindly tell us the date again-was it 1901 you said?

A. Yes. These are the figures up to June 30, 1901.

Q. Have you nothing later than that ?

A. No. I only desire to call your attention to the large field open to Canada. At that date the export dress poultry trade is put down at many millions of dollars.

By Mr. Stephens:

Q. The export trade last year of Canada was \$20,000,000 ?

A. I know it has rapidly increased, but I do not know the figures.

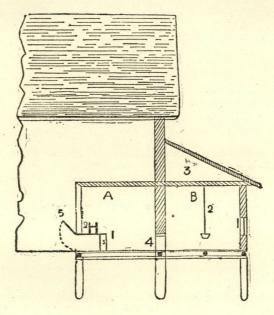
DIFFERENT STYLES OF POULTRY HOUSES.

At last meeting there was discussion of suitable types of poultry houses. I have brought two charts showing suitable styles of winter and summer houses which I desire to submit to the committee. It was brought out at a previous meeting that it was quite possible to keep fowls in a poultry house without artificial heat, have them lay well during the winter and then in spring have eggs with strong germs that will hatch out robust chickens which will live. The result of mollycoddling our fowls during the winter, by keeping them in artificially heated houses has been to bring them out in the spring time so enervated that we do not get strong germs to make robust chickens. Strong germs are an actual necessity if we are to have early chickens. Now one means of attaining this desirable end is the poultry house with scratching shed attachment. Here is a plan of a house that I got up in 1896 for the farmers, a plan that could easily and cheaply be constructed at end of barn, shed or outbuilding:

A section is the poultry house with the scratching shed attachment, B, for exercise. In a section is the roosting and laying room. All we want the fowls to do in this room is to roost and to lay their eggs in the nests underneath the platform. The room is a little dark, and we wish it to be so, as we do not want to offer any inducement to the fowls to stay there in the day time. In the morning we desire them to go out into the scratching yard, the floor of which is covered with litter to a depth of 4 to 6 inches. There is a window facing the south through which the birds get the benefit of sunshine during the winter days. By keeping the fowls out of the laying and roost-

2-231

ing room egg eating is prevented. By keeping them busy in the shed feather picking is avoided. We scatter the grain feed into the litter on the floor in order to keep the fowls in exercise searching for it, which they are likely to do in the well lighted shed attachment. No. 2, B, is a cabbage suspended from the roof. We sometimes vary the cabbage by putting a piece of meat in its place. There is room above B for straw if the farmer desires to have it so that he can let it down to the floor beneath, or he can bring the straw from the barn to the door. There are doors to permit the litter on the floor being taken up at cleaning time. This form of house has been approved of by the farmers. The ceiling is 6 or 7 feet from the floor to ground.



Explanation of the above is as follows:—

- A. (or left section)-
 - 1. Platform.
 - 2. Support for roost with notch.
- Entrance to nests under platform.
 Slide door to scratching house.
- 5. Hinge board or door by which access can be had to nests from barn.

B. (right section)-

- 1. Window facing south.
- 2. String with cabbage attached.
- 3. Space for straw, sand, gravel, etc., to be let down below.

By Mr. Wright:

Q. Allow me to say that last Wednesday I was at the junction at Golden Lake, and Mr. Joly there has a number of white Wyandotte fowls. He has a chicken house very much like that, about 7 feet high. I asked him how he kept his fowls warm in the winter time with artificial heat? He said, 'Not a bit and the combs and wattles of the birds were not frozen.' I thought it strange. He said he hung burlap over the roost and that kept the fowls warm at night. During the day time there was no trouble to keep them warm, in fact they kept themselves warm by searching for their grain in the straw on the floor of their shed.

A. That burlap arrangement is easily made, but it must not be too heavy. If it is too heavy the birds are apt to overheat during the night and catch cold when they come down from their roost.

Q. I saw the burlap; it was very thin.

A. Doubtless it was, for Mr. Joly knew what he was about. Allow me to call your attention to another modern poultry house with scratching shed attachment. The curtain in front is taken off in order to show interior of shed. It differs a little from

the diagram shown at previous meeting on 19th inst.

As in the preceding plan shown, the hens go out in the scratching shed during the day. The floor of the shed is covered, as in the other case, with litter. If desired a curtain comes down in front during the winter season. I prefer to have a board front for reasons explained on first day. I would have a large window in the board front which would slightly slant, so as to catch the sun during its short are in winter.

By Mr. Cochrane :

Q. Have you experimented with any of these sheds ?

A. I have, with shed of a similar kind.

By Mr. Blain:

Q. Can you give us about the cost of a building such as you have described? I suppose it is constructed out of pine lumber?

A. Yes. The house I experimented with was made of 2 inch boards with paper

lining. The cost would be about \$30 to \$35.

Q. About what is the cost of the one you explained first—approximately, you know?

A. I fancy you could put up a house like it for from \$75 to \$100, perhaps a farmer might be able to manage cheaper.

By Mr. Robinson (Elgin):

Q. Do you put tar paper between the boards ?

A. Yes, and when we had not tar paper we used newspapers. My youngest boy put it up. I believe in making boys do as much as possible of this experimental work, so that I may be able to tell the farmers that their boys may do likewise. I believe that future poultry development, along the right lines, can be made a means of keeping the boys and girls on the farm. I have had one of my boys and a girl running an incubator and brooder. Four years ago I had the honour of stating to this committee that I thought if farmers would induce their boys and girls on the farms to keep a certain number of fowls and to rear a certain number of chickens, giving the youngsters the whole or half of the proceeds, it would afford them an opportunity of making money and might be the means of creating a love for that department of farm work which would bind them to the farm for all time. However, that is a sentimental view of the matter and sentiment does not go very far in business.

By Mr. Wright:

Q. You need not confine that line of work to farmers' sons and daughters. There are people in other walks of life who would find how interesting and profitable it could be made.

By Mr. Blain :

Q. Before you leave the cost of the building. You give it about \$100. How many fowls would that accommodate?

A. Of the larger breeds, 30 or 35; of the smaller breeds perhaps a larger number.

We allow six square feet, and no less, to each fowl.

By Mr. Cochrane :

Q. Is that the scratching shed you are talking about now ?

A. Not inside the building. Where you have the scratching shed attachment it is impossible to keep a greater number, because the fowls are in the shed during the day.

By Mr. Robinson (Elgin):

Q. What is meant by that frame, that is, the platform and roosts on first plan?

A. That is the roost (No. 2), the droppings fall on the platform under it. The roost extends lengthways over the platform.

By Mr. Ingram:

Q. What height is it from the platform ?

A. 18 inches.

Q. What do they roost on, a scantling ?

A. Yes.

Q. Do you prefer that to anything else ?

A. Yes.

By Mr. Robinson (Elgin):

Q. Is not a scantling too large ?

A. None better to roost on.

By Mr. Blain:

Q. Do you recommend feeding fowls at intervals?

A. I believe in having stated times for feeding. The fowls should be fed regularly. In winter twice a day, with a light feed of oats at noon. There should be a regular supply of vegetables, oyster shells and grit before the fowls all the time. We have found from experience that the heavy feeding of mash in the morning tends to make the fowls lazy.

By Mr. Ingram:

Q. The building that you have with a scratching shed 10 x 10 and a house 8 x 10, what number of fowls will that accommodate?

A. Twenty-five or thirty.

By the Chairman:

Q. What if a man wanted to keep 200 fowls? It would require a large building?

A. He would have another house attached to this one and then a shed, and so on.

Continuous poultry houses and sheds.

By Mr. Ingram :

Q. Another roosting room and then a shed?

A. Yes, he could make them side by side, but alternately.

By Mr. Robinson (Elgin):

Q. Is it preferable to make them of the same pattern ?

A. Yes.

By Mr. Wright:

Q. The gentleman, Mr. Joly, I spoke of has three of these houses and sheds one

A. Exactly. That is the way he should have them. You can have them up to an indefinite number. I only show on this diagram one house and shed because I thought it better suited to ordinary farm conditions. At first meeting I said, 'that it will not be through the few farmers with a large number of hens that we will get our egg and poultry supplies, but from the large numbers of farmers with comparatively few hens.'

By Mr. Cochrane:

Q. Have you ever tried feeding mangels ?

A. Yes, and they are very beneficial.

By Mr. Ingram :

Q. You were speaking of a post 18 inches from the floor. Is there not danger of draught when it is so low?

A. I think not if the room is closed in.

- Q. Would not draughts injuriously affect the fowls, if exposed to them, while roosting ?
 - A. Yes, likely. We try to guard against that.
 - Q. How high is the platform from the floor ?

A. Eighteen inches.

Q. Then the roost is 18 inches above that?

A. Yes.

Q. That is what I wanted to know.

A. The roost is actually 36 inches from the floor.

Q. The platform 18 inches from the floor and the roost 18 inches from the platform?

A. Yes.

By Mr. Clancy:

Q. Have you succeeded with your best class of layers, after long experience, in

having them, during a certain period, lay every day?

A. No, not quite but from our best layers we can get four eggs a week during winter. Will you make your question that way so as to apply to the winter season?

Q. I would rather both seasons, the favourable season and the less favourable

season?

A. Allow me to answer as I have done, that we have got four eggs a week from some of our best layers during the winter.

Q. For what months ?

- A. For December, January, February and March, I might say till the moulting period in July and August. Our object is to have our hens lay well in the winter season when eggs are selling at high prices. From hens which have laid then we have been getting eggs to sell at 30, 40 and 45 cents a dozen. In early spring some of the hens may become broody and you are not likely to get any more eggs from them. They have, however, done well. There are a certain number of hens which do not lay during the winter, and they will probably begin to lay in spring, but prices are down to 20 or 15 cents a dozen.
 - Q. What is the average from your best layers?

A. Probably from 120 to 140 per annum.

Q. That is from every fowl?

A. No, I would not like to say that. There are certain fowls that are better layers than others. We can have good laying fowls by careful selection. That

4 EDWARD VII., A. 1904

point was clearly brought out at the last meeting of Committee. Poultry breeders have now fowls which lay 200 eggs per year, and they got them by carefully selecting their best layers and breeding from them only.

By Mr. Blain:

- Q. At what age do your best layers commence to lay, and at what age do they commence to decline?
- A. A fowl from a good egg-laying strain should commence to lay between five and six months of age, and lay well to two years of age. If the fowl has laid well during that period, particularly during the season of high prices, she has done her duty.

By Mr. Ross (Ontario):

Q. Will she moult during that season ?

A. Yes, I have something to say about that. It is a very important point. A fowl has to moult once a year. With good management hens will be made to moult during the summer season when eggs are of the least value. The moulting season is a season of non-production, and it is only business to have that season of non-production at the time when eggs are worth the least.

Q. Is moulting a disease?

A. You might almost call it so, for the fowl is sick.

Q. What is it ?

A. It is the casting of the old feathers and the growth of new ones. The fowl is certainly very much out of condition during that period.

By Mr. Taylor:

- Q. Do you do anything at the experimental farm in the way of feeding and fattening chickens for the market?
- A. Yes, we have done some work in that way by placing chickens in crates and loose in pens.

By Mr. Wilson:

Q. You do not go into the chicken stuffing ?

A. No.

By Mr. Taylor:

Q. Have you found what you have done, result profitably?

A. The cost of production is given in last year's report, we tried the fattening by crate some years ago. Last year Mr. Shutt, in connection with myself, conducted experiments. It was shown that it cost $4\frac{1}{2}$ to 5 cents per pound flesh development. The chickens sold at 10 and 11 cents per pound, and could have been sold probably at a higher figure was it thought necessary to do so.

Q. Are you experimenting in that line as yet?

A. Yes, we probably will this season, but we have not commenced yet.

Q. And you found it profitable in every case. Do you find results profitable

in every lot you put in the crate?

A. In some cases more so than others. Remember our work was purely experimental. Some chickens fatten more readily than others. I have tried to impress that upon the committee. I have said it and permit me to say it again, that with fowls of the proper types, their chickens, if the latter are kept properly fed from the time of hatching to the saleable age of three and a half or four months, will be in most acceptable shape for the fattening crate or market, further that the wholesale purchasers will gladly take them from the farmers and pay the highest price. The better the chickens the better results will there be from the crate, and the better pleased will the

wholesale purchasers be to get them. It is imperative that the farmers should start right; that they should have the right varieties to give the right chickens, and that the chickens should be treated properly from the time of hatching until the saleable age mentioned.

Q. What I want to get at is this—provided you buy 100 chickens, and then buy the feed for them, and fatten these chickens; adding the cost of feeding the chickens and the freight to market, saying nothing about the labour which is furnished at the experimental farm, will there be a profit if you sell the chickens at the market price?

A. Allow me to reply that I have nothing to do with the fattening stations.

Q. You were trying fattening at the experimental farm ?

A. That is crate fattening. From an experimental and not commercial standpoint.

By Mr. Robinson (Elgin):

Q. You don't use the cramming machine?

A. No. Allow me to reply to that, that I have nothing to do with these illustration stations at which the experiments have been taking place. We have been carrying on experiments at the farm that give us the result with no uncertain sound. The cost of production—these experiments were conducted not only by myself, but I was associated with Mr. F. T. Shutt, one of the most eminent chemists in this country. I am a subordinate officer, it is neither my duty nor my desire, and it would be out of place for me to question the policy of a superior officer.

By Mr. Ingram:

Q. Did you recommend forced feeding ?

A. No. The committee will understand my position well. I have made that perfectly clear. From my standpoint I say, and I say it boldly—I have said it before, and have said it with confidence—that it is imperative that the farmer should have first the proper varieties of fowl. I have mentioned them, the Barred Rocks, the Plymouth Rocks, the Dorkings, the Buff Orpingtons. I say if the farmer takes his chickens from these varieties and makes no mistakes and attends to them for the first six weeks of their existence—it is during that time that the future fowl is made or marred—give them attention when they come up to the three, three and a half and four months' old, they will be in proper condition for the wholesale purchaser without cramming or without crate or any other way. Now, then, I believe in simplifying the methods for the farmer. I don't believe in going to the farmers and telling them to pull down their hen houses. I say, do with what you have and the business will pay. I don't presume to question the action of any department of agriculture.

Q. You didn't recommend that system?

By Mr. Taylor:

Q. Have you experimented enough in feeding fowls to know the results, taking the cost of the chickens, labour, feed, and saying nothing about the cost of sending them to market, what has been the result?

A. No, that it not in my department. I have nothing to do with the commercial matter. Mine is the purely experimental work, and I have found out from that just what I have told you, and that is all that I can possibly say in the matter, beyond this, that the experiments conducted by Mr. Shutt associated with myself, resulted in this way: 'In the first place it is to be noted that the cost of production did not exceed in any case 4'7 cents per pound of live weight. This figure was only reached in one pen which for some reason was not equalled in any of the others.' In other pens the cost was 3'7.

Q. You go around the country advising the farmers to go into fowl raising and selling the eggs and chickens to make money out of them. I want to know if you have

ever found it to be profitable at the experimental farm when you bought the chickens,

bought the feed and sold them, whether there was any profit shown?

A. I don't go round the country advising the farmers to do any such thing. I think I have explained to the Committee, or tried to do it, that my work is of an elementary nature. I wish them to begin at first principles. If you ask me the question direct and say, 'Is the crate or the crammer necessary in the production of chickens,' I say no.

By Mr. Wilson:

Q. You show what it costs to produce a pound of flesh?

A. These chickens were reared by ourselves, mind you, I do not say any other party, at 4.7, 4½ and 5 cents a pound. They were afterwards sold at 11 cents.

Q. What would a chicken be worth when you started to fatten it. It is worth a certain amount no matter who raised it.

A. We raised all our own chickens.

Q. You can put a value on it.

A. 25 or 35 cents each.

By Mr. Clancy:

Q. What would they weigh when worth 35 cents? Will you value them at that? A. If you bought them from the farmers they would probably weigh from 3 to 4 pounds to be worth that. Much depends upon the quality and time of year.

Q. That is a pretty high price.

A. That is what you have to pay for a good chicken.

By Mr. McEwan:

- Q. Did you buy chickens at all or raise them all ?
- A. Raised the majority of them.

By Mr. Robinson (Elgin):

- Q. Do you debit and credit account of what you sell ?
- A. We did in this case.
- Q. How did it come out?
- A. It came out on the right side.

The Charman.—You will understand that this commercial side of the question is really beyond Mr. Gilbert's experiments and duty. His work is largely giving information to the farmers to improve their stock.

The Witness.—To bring about a certain condition in the poultry keeping of this

country.

By Mr. Blain:

Q. Do you believe it is possible for the farmers to take small chickens and feed them and sell them at the best market prices and make a good profit?

A. Yes.

The CHAIRMAN.—I would like to make a statement, just for a moment, of a fact that came under my notice on my way yesterday, on the train, of a gentleman in Mr. Cochrane's riding who makes a business of raising poultry and professes to make 400 per cent on his money. Now, I could scarcely believe the statement, but my informant was a merchant from one of the towns of Mr. Cochrane's riding and he vouches for the truth of it. The outline of his plan, and I would like the witness to inquire into it, the outline is this: In the spring of the year he buys his eggs from the farmers indiscriminately, all sorts of breeds, and he hatches the eggs with incubators

and takes good care of his chickens. He selects the pullets and keeps them during their period of laying to the best advantage and at the end of winter he kills them, slaughters the entire stock, and keeps none during a second winter and buys eggs again in the spring and hatches. But in the winter season when the pullets lay best he has arrangements in Montreal by which he sells every dozen of eggs at 50 cents a dozen. He has a business arrangement made and he has a guarantee market and he claims to make 400 per cent on the money he has invested. It would be well for the witness to inquire. I cannot give the gentleman's name. He must be well known.

Mr. CLANCY.—I understood you to say that he kept none through the winter.

The Chairman.—In the laying season. As soon as the laying season is over he slaughters them all.

Mr. Clancy.—We understand that to cover most of the winter.

The CHARMAN.—I don't know how far that would go into the spring, but he keeps them during their best laying season.

By Mr. Clancy:

- Q. I want to know if any work similar to that at the fattening station is being carried on or has been carried on at the experimental farm?
 - A. Not from the commercial standpoint.

Q. Is it from any standpoint ?

A. Yes, from the experimental standpoint.

Q. Can you give us the result from the experimental standpoint ?

A. I will do that—the results of the experiment I have just read. They are only from the purely experimental standpoint, however. There is no attempt to make it upon a commercial basis.

Q. Excuse me. We understand here if information is of any value, if experimental processes produce certain results, there is a commercial side connected with it?

A. Yes.

Q. Therefore, I presume that the place we look for as the seat of information is the experimental farm and that everything of that kind is being kept in view, namely, that if you make experiments you know what the commercial results have been. From

that standpoint I accept your explanation.

A. The experimental fattening of chickens in crates conducted by Professor Shutt, with the assistance of our department, resulted in this, that the cost of production for a pound of live weight was shown to be 4.7 cents and in some cases 5 cents a pound, and the lowest was 3.7 cents per pound in the case of light Brahmas and Plymouth Rock chickens. Experiments were conducted at the same time with what we call the loose penning system.—You are asking my results of our experimental work, are you not?—And we found that the gains that were made by the chickens in the loose pens was just as great if not more so than the chickens fattened in crates. Now, that was one case. Here, I hold in my hand a report from the Maine, United States experiment station. Professor Gard is the author of this very valuable bulletin, and it corroborates our loose pen results.

By Mr. Clancy:

Q. What station is that ?

A. The Maine station, corroborating what I said about the loose penning, that is, that fowl kept in the loose pen do as well as those in the crate and they have been trying crate fattening for three years.

Q. You will pardon me, that no doubt will be instructive and interesting, but what we are endeavouring to get at now is what your experience has been. You have told us that if you purchased a chicken of 3 lbs. it will cost about 35 cents. Have you had any experience either by producing chickens that will be sold at the weight of 2½ lbs. worth

35 cents, and going into your fattening experiments afterwards show what the commercial results will be either by purchasing or raising them?

A. No, not in that line, but we have purchased fowls, a few in number, because we prefer to raise our own breeds, and when I come to purchase fowls for fattening I want to get a peculiar kind of fowl—that is my business, to teach farmers how to get the most acceptable types either for sale or to put into crates. I always get one of three breeds, the Orpingtons, the Rocks or the Wyandottes, because they make the best subjects, and as I tell you, if they are treated properly from the time of hatching, they will be ready for sale at an early age.

Q. And so you have not carried out any experiments similar to those carried on

under Professor Robertson ?

A. Yes, but not for commercial purposes.

Q. Is it not possible that at the experimental farm there should be work carried on similar to that which is being carried on at the experimental stations outside.

A. Not from a commercial standpoint.

Q. Nor from the same view, I presume, as regards the cost of the stations.

A. No.

Q. That is outside your department entirely.

A. That is outside my department entirely, and with that department which has charge of that work I have no connection; I have no desire to interfere with it. I hope you will not mistake my position, for I am only a subordinate officer.

Q. Let me ask this. Have you inquired into loss, because there seems to be a recurrence of them. You probably will be looked upon as the greatest expert in Canada from your position. Have you looked into the cost—

By Mr. Richardson:

Q. your suggestion to farmers is not to go into expensive experiments, but to do the best they can with the means they have.

A. Yes, having the right breeds of fowl as a basis.

- Q. Many eggs are brought to the market by the farmers in a soiled and very dirty condition. Have you any suggestions to make for keeping the stock in a creditable condition?
- A. Yes, chickens from the time of hatching until they grow up should certainly be kept in clean quarters and in a cleanly condition, so should the laying stock. Especially should cleanliness be observed in regard to feeding, because the food flavours the egg to a great extent.

Q. Is it detrimental to the quality of the egg to have to wash them ?

A. It is detrimental to the quality of the eggs to feed the fowls with anything that is decaying, vegetable or animal stuff, or to let them get at dirty water about the farm. It is most important that this question should be thoroughly understood. It is an important point that you have raised.

By Mr. Haszard:

Q. That is not quite the question—is it detrimental to the eggs to wash them ?

A. It would be if you were going to hatch them. The eggs should be put on the market in a clean condition. I would not have the eggs laid in a nest that would make them dirty.

By Mr. Richardson:

Q. I have seen eggs marketed in a very dirty condition.

A. Yes, we have the same experience in certain cases in this city. Very unpalatable looking eggs.

By Mr. Blain:

Q. Give us some explanation in regard to fresh eggs. Thus, if a farmer has 25 hens laying in July and August, how long can he keep and sell them as fresh eggs on the market?

A. I would not call an egg after it was 48 hours old a new laid one. Eggs should

be marketed as soon as possible.

By Mr. Richardson:

Q. There is one thing I did not bring out. I asked if it is detrimental to the quality of an egg in any sense to wash it before marketing it.

A. If it is to be used for hatching purposes.

Q. Then for keeping purposes, will an egg that has been washed keep as long as a clean laid egg?

A. I would prefer not to have it washed.

- Q. Then it is essentially necessary that they should be laid in a clean nest and kept clean?
- A. Yes. Laid it in a clean nest and kept clean. There is no need of an egg being dirtied by being laid in a dirty nest.

Q. They won't sell as well?

A. No. While on this subject let me say that the egg should not only be clean in appearance, but it should have the flavour intact. With me it is harder to get new laid eggs to sell or pack in the summer than it is in the winter, because we actually get more eggs in winter than in midsummer. The condition of an egg depends a good deal on where it is kept after being laid. If the new laid egg is placed alongside a contaminating substance or substances, or in a ill-smelling cellar, the flavour will be affected. It is absolutely necessary to have a new laid egg not only kept in a clean place and marketed as soon as possible after it is laid, but the hens which lay the eggs should be cleanly fed.

By Mr. Blain:

Q. If that be true, as I have no doubt it is, the largest portion of the farmers' eggs are sold when they are not fresh, and with impaired flavour?

A. In too many cases they are, and for the reasons mentioned it is rather a hard matter to get a strictly new laid egg with flavour intact in midsummer.

By Mr. Loy:

Q. There is one question. What is the best means for a farmer to preserve his eggs for winter use when he is not likely to have any eggs laid during the winter?

A. I would rather not answer that question, because I strongly urge the farmers to have new laid eggs in the winter.

Q. It is a very important question?

A. Doubtless it is. As preserving liquids, I would suggest lime-water or water glass. Results of experiments, as to best egg preservative, conducted by Prof. Shutt, have been published in our reports.

Q. Will packing them in salt keep them well ?

A. I do not like salt. If it is damp, it will cake and cake on the shell. If it keeps dry it does very well, provided the egg is strictly fresh when it is put into it. It is ever to be remembered that the flavour of the egg must be intact when put into any kind of preserve.

Q. Supposing they are put in every day as they are collected ?

A. That is all right, but it is not always done.

Q. There is a question Mr. Laurier would like to ask, and that is, can the moulting season be changed, and how ?

A. Yes. We know that it can be changed, for we bring on the moult during the later summer months and have done so for some years past. I have numerous letters showing that the practice is becoming more common among farmers. That is one cause, as a Toronto paper of last fall remarked, that eggs in summer are becoming scarcer and increasing in value. Certainly when farmers get their hens to moult in summer, prices are likely to go up. A factor in early moulting is to have fowls no older than two years.

Q. Do you give in your report how to bring about the summer moult ?

A. Yes. The moulting season occurs once a year. Some poultry breeders claim to have reduced the moulting period to two months and two weeks. So far we have not been able to have it under three months. We put our hens after the first week in July on half rations. The object in doing so is to stop egg production. We keep fowls on half rations for two weeks, when the full rations are resumed. The response instead of eggs is the shedding of the old feathers and the appearance of new ones. Too many farmers have their hens moulting during winter, when, with proper management the fowls should be laying eggs.

By Mr. Wright:

Q. You said that a hen after two years' laying should not be kept any longer; how can you tell the age of a hen?

A. Sometimes it is not easy. There are certain appearances known to experienced men indicating the age of a hen. In some cases a ring is put on one of the feet of the hen the first year, and another at the end of the second year, and a third should not be put on.

Q. Sometimes a punch is used.

A. Yes. There are punches made for the purpose.

Bu Mr. Blain:

Q. If new laid eggs are placed in cold storage immediately after they are laid and kept there for a month, will they retain their flavour?

A. Yes, a drawback to the proper preserving of eggs is that a good many are put into the preserving liquid in a stale or bad condition.

Q. How long will they retain their flavour if they are put in immediately?

A. Six, eight, ten or twelve months. We have had experiments with eggs that were ten or twelve months—eggs that were strictly fresh when put into the preserving liquid—and they were remarkably good when they came out. In some cases better than in others.

By Mr. Loy:

Q. If you put them in cold storage, is there a certain temperature to be kept?

A. With that I have had no experience.

- Q. For instance, most farmers have ice houses, would the temperature there be right?
 - A. No, I should say not.
 - Q. Would it be too cold ?

A. I think so.

By Mr. Wright:

Q. And too damp ?

A. And too damp. I would rather see more of fresh laid eggs put on the market than preserved ones. There would be no difficulty in their getting new laid eggs in winter, if the farmers would only apply themselves to the production of them at that season.

Q. I think your evidence with regard to moulting is most important?

A. All the points brought out before this committee this and the other morning are highly important to know and act upon.

By Mr. McEwen:

Q. You take the farmers as a rule, and they have no place to shut their hens up in, in order to bring on the moulting season. They would get all the feed they want outside roaming around.

A. That is most favourable to moulting, sir. A free range is desirable whenever it can be obtained, we give our fixls as much free range as possible, particularly during the moulting season.

Q. With reference to regulating the moulting season, could farmers bring it about without a place in which to pen them up?

A. Yes. It is not necessary to shut up fowls to bring on the moult. We let our hens out to run in order to bring on moulting. Free range is one of the factors in producing early moulting.

In relation to this and poultry development generally, I beg to say that when poultry management is better understood by the farmers of the country, they will be fully conversant with the method of bringing on the moult during the summer. They will be well up in the latest and best methods of management so as to have best results. You may remember, some years ago, when the farmers of the country grew nothing but wheat, which was sold at \$1.20 to \$1.25 per bushel. In these days of wheat raising little attention was given to the cow which went into cold winter quarters unproductive, and remained so until the following spring. There came a time when the wheat market went away from our farmers, and the cause—the opening up of Manitoba and our Northwest, as well as the production of wheat in Russia, India and other countriesis doubtless well known to most of the gentlemen present. Did our farmers sit down and pine away? No, they took up the long neglected cow and housed her fairly well and fed her intelligently. In return she gave milk in winter from which butter was made and cheese from the summer milk flow. And her products, in the shape of cheese and butter, last year brought in millions of dollars to this country. As with the cow, so will it be with the hen, when the farmer gives her the same intelligent treatment.

By Mr. Clancy:

Q. Have you been to any of the experimental fattening stations? A. No.

HOW TO HAVE EGGS IN WINTER AND SUPERIOR POULTRY IN SUMMER.

Now, gentlemen, I beg to treat of this subject.

As to the management of the fowls, the aim should be to keep them in exercise, as I have explained to you, by throwing their grain food into the litter, which should always be on the floors of the pens, which are shown in the diagrams exhibited.

By Mr. Harwood:

Q. What temperature do you keep them in the winter?

A. The birds in the cold houses I spoke about were in the same temperature as it was outside. Other birds were kept in temperatures ranging from 40 to 50 degrees of warmth. We find it best to have our fowls bred to stand the winter cold rather than to have them in a warm house.

The litter on the floor of the pens is generally composed of cut straw, chaff, or dry leaves, and should always be found on the floor of the open shed or pens of the house to a depth of 4 to 6 inches.

No hens should be kept for laying purposes over two years of age, for the reasons that I have explained. Hens over that age have been found to moult late in the season when they should be laying eggs at the time when prices are high. Winter laying should begin in November, by which time, with proper care and feeding the hens will be over their moult and into winter quarters in prime condition. The moulting period, which is really one of non-production may be shortened by giving the birds a run in the field where they can find clover, grass and insect life. The feeding of meat or cut bone at this period, in judicious quantity will be beneficial. Previous to and during the moulting period, all mail birds should be removed from the hens. Experience has shown that April and May hatched pullets will give the best results. Chickens hatched later than May do not seem to thrive as well. Careful observation for many years has led to this conclusion. A quick growing pullet is wanted to lay when the older hens are moulting, and new laid eggs are becoming scarce. The yearling hens and those between that age and the second year will lay the largest eggs. Reference is not made here to the artificial hatching and rearing of 'early broilers,' which is becoming so much in vogue. On a hen showing the first sign of sickness it should at once be removed from the others, and if it does not yield to simple remedies, it should be killed. It does not pay the farmer to doctor sick fowls, but it will pay him, by proper care and management, to prevent them from getting sickness of any kind. Certainly a factor in the production of eggs during the winter is exercise, which in combination with varied rations has been found a preventative of the discouraging and aggravating vices of egg eating and feather picking.

These two vices have been found to result from any or all of the following causes:

Not sufficient exercise.

A lack of some essential in the rations fed, very often the lack of meat.

Sameness of rations from day to day.

Too many birds in a pen.

Soft shelled eggs, the result of hens being over fat.

Lack of grit or lime in some shape to make strong shells.

Too few nests or nests not secluded enough.

Too close and too long confinement.

Over-crowding.

It has always been found easier to prevent than to cure egg-eating or featherpicking. Allowing the hens a run to shed, stable or barn during the winter has been found an effective remedy.

Other essentials in the proper management of poultry during the winter are :— Grit.—This may be in the shape of sharp gravel, broken oyster shells or one of the several preparations on the market. Grit is necessary to enable the fowls to grind up their food in their gizzards. It is really the hen's teeth.

LIME in some shape to furnish egg shell-making material is absolutely necessary. Lime is supplied in the convenient forms of oyster shells broken up, old mortar and broken or cut bone.

RATIONS FOR PRODUCTION OF EGGS IN WINTER.

There are two methods of poultry feeding, the dry and the wet or soft. The former may be described as the feeding of hard and dry grains only and the latter by grains dampened with water, hot or cold, or grains ground up and made into a mash. Both methods are effective when made as varied as possible by feeding different kinds of grain at different times in combination with meat or cut bones. In some cases it is not easy to procure meat or bones, and when this difficulty exists it may be overcome by the use of preparations of meat and bone, and which cost from $2\frac{1}{2}$ cents per lb. to a higher figure. An analysis by the chemical division of the Experimental Farm of a meat preparation manufactured in London, Canada, resulted most satisfactorily. The cost of this preparation was $2\frac{1}{2}$ cents per lb., or \$2.50 per cwt. It was

used in our poultry department during the warm summer months, when fresh meat or bone would not keep, and was found convenient and efficacious. It was given principally to the moulting hens during the months of July, August and part of September. With your permission I give the following summary of advice given the farmers by our department in recent years, and which holds good at this time. The aim of the farmer should be to utilize as much of the waste of the farm and house as possible in the production of eggs. While giving egg-making constituents the farmer must not forget to furnish material for shell-making as well. He should remember that while running at large the hen supplies herself with all the essentials necessary to make egg and egg shell, and that she also furnishes herself with grit wherewith to grind her food. Cut rawbone is one of the cheapest and most effective rations. bone cannot be had, the table scraps of dining-room and kitchen may be made into a warm mash, with shorts or middlings. All waste vegetables may be turned to good account. The three great factors in the winter production of eggs are bone or meat, green food in some shape, such as clover or roots, and exercise.

The following rations are convenient, cheap and effective:-

MORNING RATION.

Mash composed of whatever ground grains are most abundant on the farm, mixed with boiled vegetables, such as potato peelings, unmarketable turnips, carrots, mangolds, etc. Boil and mix into a 'crumbly' condition. Feed only enough of this to satisfy and not enough to gorge. If meat or bones can be procured, feed either three mornings of the week in the proportion of one pound to every sixteen hens. White or red clover hay is generally in plenty on a farm, and cut into quarter-inch lengths and steamed, may be mixed into the mash with great benefit. A few pinches of salt and a modicum of black pepper occasionally may be put into the morning mash while mixing it. Red pepper is too stimulating and is apt to create inflammation of the oviduct. Feed no sloppy food and leave none about to sour. The best way to feed the mash or cut bone is in a two-inch and a half narrow trough, nailed to the side of the house, about 8 or 10 inches from the ground. The fowls will so be prevented from standing on the food and making it dirty. If cut bone is fed for morning ration, a few handfuls of oats or wheat may immediately afterwards be scattered in the litter on the floor to start the hens exercising in their search for it.

NOON RATION.

Two or three handfuls of grain may be thrown into the floor litter to keep the hens in exercise. Mangolds, beets, turnips or other roots, should be in supply at all times, as well as grit and pure drinking water.

AFTERNOON RATION.

The afternoon ration should be a liberal one of sound grain, and it should be fed early enough to permit of the layers searching busily for it. The object in giving a generous ration at this time is to send the layer to roost with a crop full, so as to take her over the long night fast. Wheat, buckwheat and barley all make good feed. When barley is fed it should be mixed with wheat or other grain, or given alternately with other grain, when fed alone it is too fattening. Indian corn may be fed in cold weather to the Mediterranean class, with benefit, but sparingly, if at all, to the Asiatic and American breeds. For two winters past in our poultry department the mash has been fed for afternoon or last ration and with good effect. It had been found that when fed first for morning ration that there was danger of giving it in too great 2-24

quantity, and so making the birds disinclined for exercise. When the mash was fed for afternoon ration whole grain was fed for morning ration in proportion of about one handful to each fowl. Perhaps where fowls are kept in a cold house it may be admissible to give a little warm mash at the morning ration. When such is done, it should be immediately followed by throwing a few handfuls of some whole grain in the litter on the floor of pen or shed, in order to start the fowls searching for it, and so induce exercise. By feeding and managing, as outlined, and with hardy vigorous birds there should be no difficulty in obtaining eggs in winter, the season of high prices.

As showing the factors in the production of winter eggs, the following sum-

mary of instructions will be found useful :-

It is necessary that fowl should not be over two years of age.

By Mr. Taylor :

Q. What do you do with them after two years of age?

A. There is no trouble in geting rid of old hens of two years of age and under. Old birds are in demand in hospitals where they want mature poultry in order to make strong broth. Some of our two year old birds are sold and are bought for breeding purposes. When properly cooked, a two year old Plymouth Rock, Wyandotte, Orpington or Dorking hen is good eating.

By the Chairman:

Q. They are all right for the table ?

A. Yes. As I have said, a very toothsome dish may be made out of a two and even a three-year-old hen of the varieties named, if the cooking of them is properly understood. It is the practice to steam or let the bird gently simmer in boiling water for two hours. The birds are first stuffed. The steaming or boiling over, the bird is browned in the oven for half an hour. Of course the hens picked out to cook should be in proper condition, and not in a moulting condition. Previous to, or, just after moulting is a good time, and at that period the hen is easily fattened. It should be fattened on mashed food, wheat, barley or buckwheat. Corn makes gross fat of objectionable colour. Flesh of a fine grain is wanted rather than fat. This applies to chickens as well as old hens.

MANAGEMENT OF FOWLS IN MOULTING.

Mention has been made of the importance of having the fowls over their moult (the shedding of the old feathers) during the summer months. To have early and steady winter layers it is necessary to have the fowls go into their winter quarters over their moult and in robust health. As much enquiry is made from time to time as to how to produce an early moult the following method of management will be found useful. It has been successfully practised in our poultry department for some years past. The sale of eggs for hatching purposes being over, during the first week in July the male birds were removed from the breeding pens to another building containing small compartments with outside runs. The breeding stock as well as all other hens were then allowed to run promiscuously in the fields in rear of the poultry buildings, where there was grass, clover and shade, three important essentials. At this time the rations were reduced to half quantity. The effect of this was immediately to very much reduce and ultimately to almost entirely stop egg production, which was the desideratum. The half rations were continued for two weeks, when full quantity was resumed as follows:—

Mash composed of coarsely ground oats two parts; shorts one part; gluten meal one part with beef scraps in proportion of one pound to 15 fowls. The mash, which

in summer was mixed with cold water, was fed three times per week. At times a small quantity of linseed meal was added. The beef scraps were used in lieu of cut green bones, because it was not convenient to procure the latter. If mash was fed in the morning wheat, or oats or both mixed were given in the afternoon, or vice versa. On such days as mash was not given grain took its place. An excellent summer grain ration is composed of buckwheat and oats mixed. Pure water should always be in abundant supply. In response to this treatment results have always been satisfactory, and by the end of September or the beginning of October the hens have looked remarkably well. The advice of Dr. Sanborn, a well known poultry authority in reference to the moulting period, is valuable. He says: 'A moulting hen is easily fattened. Hence at this period feed lightly of those foods which produce fat. Corn, corn meal, middlings, potatoes, must be used sparingly. Increase the amount of green bone, bran and skim milk, a run in a field of clover will be a help. Keep all males by themselves during the moulting period. Shelter the hens from storms or cold rains. The ideal place for a run is an apple orchard where in addition to the grass may be found insects in the fallen fruits, &c. Birds should go into the moult not fat, free from lice and with no mites in the house.'

PRODUCTION OF SUPERIOR QUALITY OF POULTRY FLESH.

The next subject I want to take up is that of the production of a superior quality of poultry. As your committee is aware there is a much greater demand at home and for shipment of the superior quality of poultry than there is supply, and such quality of poultry can happily be produced throughout the Dominion with comparative ease, and in great quantity, provided, the farmers keep breeds of the correct market types. These I have already enumerated as Plymouth Rocks, Wyandottes, Orpingtons and Dorkings. Many years of experience with chickens of the breeds named from time of hatching to the saleable age of three, four and five months of age, have shown them to be hardy and rapid growers. As instances of flesh development made by chickens at the experimental farm I beg to submit the following:—

INCUBATOR-HATCHED AND BROODER-RAISED.

By Mr. Richardson:

Q. What age did you say ?

A. Three months; which is remarkably good going. Because, the type of chicken was correct, in the first instance and the chickens were properly cared for from time of hatching.

By Mr. Wilson:

Q. What weight at three months?

A. 3 lbs. $5\frac{1}{2}$ ozs., sir, in the one case and 3 lbs 5 ozs. in the other. But here is something better still.

Barred Plymouth Rock cockerel at 3 months..... 3 lbs. 10 ozs. And another one...... 4 " 2 "

Remember these were only three months of age. They were not pampered, but received careful attention.

4 EDWARD VII., A. 1904

White Wyandotte cockerel at 3 months				
And another one of the same breed	3		2	
Faverolle, cockerel 3 months	3	"	7	"
"	3	"	2	"
Silver Grey Dorking cockerel 3 months	3	"	15	"
"	3	. "	3	"
Buff Orpington cockerel the same age	3	"	121	66
And another one				
Rhode Island Red	3	"	4	"

Chickens obtained from a farmer near Carleton place for experimental fattening weighed as follows:—

Barred Plymouth cockerels at 2 months 6 days, 2 lbs, 5 ozs.; 2 lbs, 4 ozs.; 2 lbs. 5 ozs.; and 2 lbs. 2 ozs.

By Mr. Wilson:

Q. What did you pay for these ? A. We paid 8 cents per pound.

By Mr. Taylor:

Q. What did it cost to feed them, and what did you sell them for ?

A. These chickens were fattened at a cost of 4.7 cents per lb. live weight, in some cases 5 cents. We sold them on the farm at ten cents per lb. We only desired to try the cost of production per lb. of live weight.

By Mr. Clancy:

Q. When you speak of the cost of live weight, does that include the weight before you commence the fattening process, or does it include only the added weight?

A. The birds were bought from the farmers at the live weight price of 8 cents per pound. The added weight, after fattening commenced, cost about 5 cents per pound. When they were purchased their weight was 2 lbs. 5 ozs. each.

Q. And after you had concluded the process what did they weigh ?

A. 4 lbs. 12 ozs.

By Mr. Loy:

Q. That is added weight ?

A. Added to the 2 lbs. 5 ozs. when put in the crate.

By Mr. Wilson:

- Q. Is that live weight at the end, the same as live weight when you began ?
- A. Yes, the live weight at end was 4 lbs. 12 ozs.

Q. Did you sell them alive ?

A. No, they were dissected to find out the weight of offal, bone and other waste as shown in report of 1902-1903.

By Mr. Clancy:

Q. Do you think that the ordinary farmer, if he allows his chickens to run as he usually does, if he will observe the conditions as to type and treatment, could produce a fowl as good as one crate fattened?

A. Allow me to answer your question in this way. Our experience for many years past, in the rearing of chickens, on the experimental farm goes to show that the farmer

EXPERIMENTS WITH CEREALS

House of Commons, Committee Room No. 34, April 19, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock, Mr. Douglas, chairman, presiding.

Dr. Chas. E. Saunders, Experimentalist, Central Experimental Farm, was present at the request of the Committee, and submitted evidence, as follows:—

Mr. Chairman and Gentlemen, this is the first occasion that I have had the honour of appearing before you, and I come as the representative of a new division of the work, the division of Cereal Breeding and Experimentation. Speaking of this as a new division does not imply that such work has not been done before, but merely that it was not organized as a separate division until this past year. From the time when the Experimental Farms were established this work has been under the immediate charge of the Director, but of late years he has found it impossible to give to it the amount of attention which he thought it deserved, and finally it was decided by the Minister of Agriculture to appoint some one to have special charge of the work, so that it might be extended and amplified. The scope of the division includes, as the title suggests, first of all cereal breeding, that is the production of new varieties of wheats, oats and other cereals, by crossing and subsequent selection, also the production, as far as may be possible, of hybrid grains such as crosses between wheat and rye. The second part of the work of the division includes the comparative tests of varieties. The varieties are sown annually, side by side, in plots of one-fortieth of an acre. This is rather small, perhaps, but the very large number of varieties to be grown makes it impossible for us to use larger plots. The new varieties produced on the Farm are all sown in these plots, together with such sorts as can be obtained in commerce. All are compared together to see how they stand in reference to quality, productiveness, earliness, and so forth.

THE CROSSING OF CEREALS.

The method of crossing cereals is similar to that employed in the case of other flowering plants, and I need not describe it in detail. One simply removes the pollenbearing organs from one flower before the pollen has been shed, and then brings to that flower some pollen from a blossom of the other variety which is to be used in making the cross. In such a case, it is customary to say that the flower to which the foreign pollen is brought is being used as the female; while that which supplies the pollen is being used as the male. As you are aware, however, each flower usually contains in itself both the male and female organs.

The work of hybridising is not without its difficulties, but if done very carefully by one who has good eyesight and sufficient patience, the results are usually satisfactory in moderately cool weather. If, however, the weather is extremely hot, the

more or less mutilated blossoms are very apt to shrivel up without maturing any kernels.

The objects in view in crossing cereals are usually to increase the yield, earliness and quality. Early ripening varieties are especially desirable for the northern sections of Canada, early oats and early wheat being particularly in demand. This year a number of requests have come in for early kinds of cereals, sometimes from comparatively long settled districts, and in other cases from more recent settlements. I may mention in passing that we sent up last autumn to about 20 different farmers in various sections of the Peace River country samples of several early maturing varieties of grain. I believe that some of the varieties of wheat sent will mature earlier than the Ladoga; which is, I am told, the only variety grown at present in the northern Peace River country. It is interesting to notice that this wheat which was introduced by the Experimental Farms some years ago, and attracted a good deal of attention at the time, is not by any means a valueless variety. I believe that at the mill of the Hudson's Bay Company at Fort Vermilion, the wheat ground is entirely Ladoga. Here is a sample of this wheat grown in the neighbourhood of Fort Vermilion in 1902 which I thought would be interesting for the members of the Committee to see. It was given to me by Mr. James Macoun, who obtained it last summer (before the 1903 crop was ripe). In parts of Manitoba and the North-west Territories there is a decided tendency on the part of some of the farmers to sow earlier varieties of wheat, regardless of every other consideration than earliness. I mention this to emphasize the necessity for the Experimental Farms providing first-class early maturing varieties, because early varieties will be sown to a certain extent whether they are good or inferior.

By Mr. Broder:

Q. Is that generally done in the localities where frost is more prevalent ?

A. I believe so.

Another object in crossing is to improve the quality of the grain. In wheat we look for those characteristics which produce strong flour. We are not encouraged by millers to try to improve upon Red Fife, as it is generally supposed that this standard variety cannot be surpassed. We are, however, making some efforts in that direction. Whether these prove successful or not, it is evident that in producing varieties earlier than Red Fife, we must maintain as high a standard of quality as possible.

In oats, we are looking for suitability for the making of rolled oats (as well as for yield and earliness), and that involves a plump, long kernel, with a thin hull which is easily removed. In barley we have to consider the suitability of the grain for malt-

ing or for feeding purposes, as the case may be.

Last season I did not attempt to take up work embracing a very large field, but confined my attention principally to wheat, wishing to obtain a good start with it. A little work, however, was done in oats, barley and peas, and a few mixed crosses, such as between rye and wheat, were also attempted. There were about 70 crosses accomplished, yielding about 550 kernels. Most of these were between wheat and wheat. They will serve as starting points for a very large number of new varieties, many of which will no doubt be of great interest.

VARIATIONS IN CROSS-BRED CEREALS.

From each flower that is successfully operated upon only one seed, of course, is obtained. This seed is sown the following year and gives one plant, the product of which is carefully saved by itself. The following season this group of seeds produces a number of plants, many of which may be strikingly different from the single plant of the previous year. I have some specimens here this morning which illustrate very

well the variations which occur in the second and later generations from a single cross-fertilized kernel.

By Mr. Wright:

- Q. Just allow me to thoroughly understand. You say the first year you sow one seed ?
 - A. Yes, sir.
 - Q. Then the next year you sow the product of that seed ?
 - A. Yes, sir.
 - Q. And it is that second crop which shows such great variation ?
- A. Yes. I shall illustrate that. Here is a sample of mixed black, white and brown cats which have all come from one original seed in the course of perhaps five or six years. The original seed was a cross between a black and a white oat, and the progeny have been allowed to grow together without selection.

By Mr. Ingram:

- Q. What do you mean when you say 'without selection'?
- A. I mean that all the seeds produced each year have been kept together and sown in the following year.

By Mr. Robinson (Elgin):

- Q. Have you a name for this oat ?
- A. It has been divided into two varieties. It was called Kendal originally, but two types have been separated out, and these are now known as Kendal White and Kendal Black.
 - Q. How many pounds to the bushel does this weigh ?
- A. Thirty-nine pounds. It is not, however, a remarkably promising out for crop, but I brought it as a good example of variation. In wheat the same thing will occur, although not in quite so striking a manner. Here is a rather promising wheat which we hope to introduce in the course of three or four years, and which we are now growing under the name of Bishop. It is a cross between a variety with red kernels and a variety with yellow kernels, or as they are commonly called 'white.' This variety shows both types of kernels, and we have separated it into two perfectly distinct sorts. But the kernels with red skin and those with yellow skin have all come from the same original seed. Variation in wheat is more strikingly illustrated in some cases when specimens of the heads are shown, instead of the threshed kernels. Some years ago J crossed Red Fife with Goose wheat, and obtained as a result after three or four years all the kinds of heads here displayed. (Specimens shown.) You will see that there are about twelve distinct types. Another interesting cross which I made a few years ago was between Colorado wheat and the common variety of Emmer, which is generally called 'Speltz.' This is not a Spelt, however, for Spelt has a much longer head. This cross has given rise to a large number of different varieties, some of which one would call wheat, while others would probably be classed as Emmer, and possibly a few might be designated by the term Spelt.

By Mr. Stewart:

- Q. Will these different types become fixed after a few sowings?
- A. They were not fixed in the third year but I hope they will be fixed in the fourth. That is to say, I hope no further variations will occur during this coming season.

The most interesting example of all those which I have to bring before you in this connection shows the results of crossing Red Fife with Polish wheat. Pollen from

Polish wheat was applied to the blossoms of Red Fife, and one very poor seed was obtained. The plant produced the next season from this seed gave only one head: a head intermediate in form between the two parents. The next season the seeds from this head were sown and produced about twenty distinct varieties of wheat. The following year—that is last year—the variations still continued, and there were produced altogether about 35 distinct varieties of wheat. I do not know when these changes will coase; but they will probably not continue much longer. These varieties, then, have all arisen from one original kernel. You will notice that they vary in length from 3 inches to $7\frac{3}{4}$ inches; and that both bearded and beardless sorts are present. We propose to grow small quantities of some of the most striking varieties as curiosities, even if they should appear to be without commercial value. As I have said, there were altogether about 35 varieties produced from one original kernal in three years.*

By Mr. Erb:

Q. Do you mean that one head of wheat may contain two kinds of kernels?

A. The kernels of hybrid wheats may appear identical, and yet may produce distinct varieties. I have never found two distinct types of kernels in one head, though of course some may be starchy and others hard.

By Mr. Ingram:

Q. This bottle labelled 'Bishop wheat' seems to contain two varieties? A. Yes, sir; but they have both arisen from one original seed.

By Mr. Stewart:

Q. Were these two kinds of wheat grown on the same plant?
A. Not on the same plant, but on plants of exactly the same ancestry.

By Mr. Henderson:

Q. Would not the fact that this grain is of two different colours militate against its commercial value when it is graded?

A. I presume it would; but we shall not allow it to be sent out until after it has been careful'y purified.

By Mr. Wright:

Q. Its habits are fixed ?

A. We believe so, and we have separated out the two principal types during the past winter. We shall find out next season whether it is fixed or not.

THE PROPER METHOD OF SELECTION.

I wish to dwell upon this question of variation in hybrid varieties of grain because of its great importance, and to emphasize the necessity of rigid selection by single plants for a number of years, before any variety can be considered as fixed. This is a very different matter from the selection of a number of heads from different plants in a plot of some variety which is quite fixed in its character. The latter form of selection is no doubt of considerable value when properly carried out; but it may be questioned whether it leads to such permanent improvement of the varieties as some of its advocates believe. There is also an element of danger in this latter method of selec-

^{*} See the accompanying plates.

tion which has not yet, so far as I am aware, been pointed out. If a plot of grain contains a few plants of some other variety having specially large heads not easily distinguishable from the predominating sort, these large heads may be selected by mistake; and this process carried out for a few years might lead to the entire falsification of the variety. I have known cases of this kind which were not discovered until after the error had attained very considerable proportions. Any one who has a plot of Red Fife wheat, for instance, containing by accident a very small proportion of White Russian, would do well to hesitate before attempting to 'improve' the Red Fife by the selection of the largest heads. For milling purposes the White Russian is distinctly inferior.

PURIFICATION OF VARIETIES.

Last year, the director mentioned to the Committee that steps were being taken to purify very carefully all the cross-bred varieties of grain which are being introduced by the Experimental Farm. This work was taken up this winter, and the most important varieties have been selected now to one fixed, pure type. The varieties referred to are: 'Preston,' 'Stanley,' 'Percy,' 'Huron,' 'Laurel' and 'Early Riga.' These varieties look very much alike, though they vary somewhat in size and in the hardness of the kernels. All have red kernels, and we believe that they are now fixed in character, so that kernels with yellow skin (which are often called 'white') will not reappear.

By Mr. Wright:

Q. Is there a predominance of superior quality in the red kernels above the white? A. As a rule we have been led to believe that there is; though not in all cases. In one instance, Mr. F. T. Shutt, the chemist of the experimental farm, analysed the red and the yellow kernels, and reported in favour of the red; and in other cases less accurate examinations have led to the belief that the red kernels were superior. In the case of the variety 'Bishop,' however, we have decided to retain the yellow kernels, as they seem to be superior in quality to the red.

The variety called Early Riga which has been mentioned before to the Committee has been separated into three principal types, which will be compared together, and new strains of it are also being started from selected heads. We hope to have the best of these selected types available for general distribution in the course of about three or four years, but at present we are not able to send the variety out. In speaking of this variety, I should like to mention the fact that on taking the average of the returns from the experimental farms at Ottawa, Brandon and Indian Head for a series of years, we find that it ripens fully two weeks earlier than Red Fife. The yield, however, is about six bushels per acre less than Red Fife. In making these calculations, the returns from the experimental farms for the maritime provinces and British Columbia have not been considered, since Early Riga wheat is not recommended for cultivation in such climates as are represented by those farms.

It would be unfortunate if my remarks should give the impression that undesirable or false kernels are found only in cross-bred varieties of recent origin. Very few of the standard sorts of grain as found in commerce seem to be strictly true to name; although in some cases the kernels of other varieties present may not lessen the value of the wheat for milling purposes.

I have here a sample of Manitoba White Fife, from one of the best seedsmen, which, by careful hand picking, I have separated into two distinct types of kernels, yellow and red. The red kernels, which are present to the extent of about 25 or 30 per cent, are of course not White Fife. They are probably a mixture of Red Fife and White Russian. Mixtures of Red Fife and White Russian seem to be extremely

common, and we have some cases under examination at the Farm in which the exact constitution or composition of the variety is extremely difficult to determine. There is no way of separating White Russian from Red Fife, so far as I know, except by some form of analysis of the kernels from each head or plant, a process which is evidently rather too laborious for general use. There appears to be good reason to believe that Red Fife and White Russian in different proportions constitute some of the leading varieties (using that term to include mixtures) now grown in Canada. We are endeavouring to eliminate the false kernels as far as possible from all our varieties of grain, but in some cases the difficulties are very great. Our White Fife was most carefully hand picked during the winter and we are sowing it this spring quite free from red kernels.

NATURAL CROSSES.

By Mr. Wright:

Q. Supposing that a farmer sowed Red Fife and White Fife mixed together in the field, would there be any likelihood or possibility of one variety cross-fertilizing the other.

A. It is quite possible that it might occur, but probably only in the case of a very few kernels. There is at least one instance on record, which seems to be perfectly trustworthy, of an accidental cross which was discovered in wheat; but if Red Fife and White Fife were sown together, any crosses which might occur would probably

never be discovered, because the two varieties are so much alike.

I started an experiment last spring to determine whether it frequently happens in nature that different varieties cross when sown together. I sowed a mixture of white and black oats and a mixture of bearded and beardless wheat. When the grain was ripe some of the lowest heads, on which pollen would be most likely to fall, were selected. The heads saved were all from the black oat and from the beardless variety of wheat. The seed from these must now be grown for two years in order to determine whether any of it has been crossed or not. If they are crosses they will certainly give evidence of it in their progeny.

Q. In the variations?

A. Yes. Bearded heads would appear among the wheat from beardless heads, and white oats would appear where only pure black oats had been sown.

CHANGES IN FIFE WHEATS.

By Mr. Stewart:

Q. White Fife gives us light white kernels when grown on what we call scrub land, wooded land; but take that wheat out on the open prairie and it will come red, and the

second year a tuyer could not tell it from Red Fife.

A. When I speak of red or yellow kernels I am referring entirely to the colour of the skin. The red kernels may be hard and translucent or they may be opaque and starchy. In the latter case they are often called 'white,' even though the skin is red. Pure White Fife is characterized by a yellowish skin whether the kernel is hard or soft. Either Red Fife or White Fife will give soft, starchy kernels when grown on scrub land, but I do not think that the colour of the skin is ever altered at the same time.

Q. Yes, the skin becomes yellow.

A. I have not seen any cases of that kind. Last season I sowed a large number of soft starchy kernels, and in almost every case the plants gave me about 95 to 100 per cent of pure hard kernels. In those cases where I sowed hard kernels only hard kernels were produced. Our wheat at Ottawa was exceptionally free from soft kernels last season, though the crop was of rather poor quality. The previous season, which was

much more favourable, gave us an excellent crop of rather soft wheat. It is clear, therefore, that the season has something to do with it. Many experiments were also carried on last season in reference to possible changes in the colour of the skin of wheat; but in every case the grain produced had skin of the same colour as that which was sown.

I shall now leave this part of the subject, if there are no further questions.

GRAFTING ON INJURED FRUIT TREES.

By an hon. Member:

Q. Might I ask a question not pertaining to grains, or do you wish to confine yourself to grains only?

A. My work is almost exclusively confined to grain, but I shall be glad to answer

your question if I can.

Q. There has been great trouble with rabbits and mice destroying the fruit trees last winter, and I should like to get information as to whether it is really a fact that you can cut down fruit trees nearly level with the ground, graft them, and get fruit from them instead of rooting them up.

A. Unless the trees were quite small I do not think you would find the method

profitable.

By Mr. Erb:

Q. In answer to that question I might say that when I was a boy I found in the orchard an apple tree three inches in diameter girdled to the ground. I cut it off level with the ground and put on four scions all of which grew. The following year I cut off two of them, and the following year again another one, and inside of five years we had a nice large tree.

Mr. Broder.—That would not occur in every case.

THE MILLING VALUE OF DIFFERENT VARIETIES OF WHEAT.

Turning to the question of the milling value of wheat, I may say that we have had tests performed for us in the United States by experts for some time past, but the number of varieties we have on hand is now so very great that the Minister of Agriculture has decided that we should have a small mill of our own to enable us to grind our own wheat.

SEVERAL HON. MEMBERS.—Hear, hear, that is right.

A. In that way we shall be able to make the mechanical analysis of the flour ourselves, and the chemist of the Farms will have good flour to analyse, instead of merely ground wheat, which he has been obliged to use in the past. In the case of any very important variety, we can still have additional tests of baking quality, etc., made elsewhere if it seems desirable.

We propose to test all the important new varieties of wheat which we may produce at the farm, and to take up also the question of the value of the different sorts of winter and spring wheat commonly grown in Canada. It is perhaps not generally known that some of the varieties of wheat grown in eastern Canada are of poor quality. I cannot go into the subject very fully at present, but should like to call your attention to a few interesting facts. We have submitted (under numbers) to the expert of the Pillsbury-Washburn Company of Minneapolis some samples of Ontario wheat, along with some

of the new sorts originated at the experimental farms. The mechanical analysis and baking tests of the flour made from these wheats show that every one of the cross-bred sorts to which I have referred this morning (except Bishop, which was not submitted for test) is superior in both quality and quantity of gluten to No. 1 Red Winter, No. 1 White Winter and No. 2 Spring. These latter were official Ontario samples of the crop of 1903. The well known varieties, Colorado, White Russian and Rio Grande also rank, on the whole, distinctly below the new cross-bred sorts.

The following table presents in condensed form the most important points in the

analyses and tests referred to:-

Variety.	Colour of Dough.	Action of Dough in washing.	Gluten, per cent.	Quality of Gluten.
Early Riga Huron Percy Stanley. Preston. Laurel Rio Grande. No. 1, White Winter. White Russian No. 2, Spring. Colorado. No. 1, Red Winter.	Yellow. Creamy Creamy white. White. Creamy white. Dull white. Grayish " white.	Poor Good. Fair. Ductile.	14·2 13·3 13·3 12·9 11·9 11·1 13·3 7·3 11·0 10·6 16·0 9·3	101 100 100 100 100 100 99 99 98 98 97 97

Explanation of table: The figures given in the last column may be translated into words somewhat as follows: 101 = excellent, 100 = good, 99 = fair, 98 = poor, 97 = very poor.

Of course, it is not to be concluded from these analyses that most of the wheat grown in Ontario is of poor quality. Some of the varieties of winter wheat are very good; and even the famous western prairies do not always produce grain equal in quality to Red Fife as grown in some sections of Ontario. It is clear, however, that the cultivation of inferior varieties of wheat in eastern Canada needs to be discouraged, and that efforts should be continued to induce farmers to grow only the best sorts.

FLOUR FROM MACARONI WHEAT.

Before leaving this question of the milling value of different varieties of wheat, I should like to show to you a sample of flour made from macaroni wheat. The flour was made by the Sheffield-King Milling Co., at Faribault, Minn. I am not sure what variety of macaroni wheat was used, but it is closely related to the ordinary Goose wheat. You will notice that the flour is of a rich yellow colour. The question is often asked whether good bread can be made from macaroni wheat. I have had bread made several times from this flour, and it has always been considered as of excellent quality by every one who has tasted it. I have a sample of the bread with me, and you will notice that it is of good texture, and quite sufficiently light. Its yellowish tinge does not render it unattractive to most people. Macaroni wheat is unpopular, however, as a rule, and it would not be wise to advocate its general cultivation where the standard varieties of bread wheats can be profitably grown. Macaroni wheat will stand considerable drought and light soil; and perhaps in some districts of Canada where the rainfall is deficient, wheats of this class may prove profitable.

need not use crammer or crate in order to produce birds at 3, 31 and 4 months of age that will be suitable to the large purchasing houses of Toronto. But, as I have stated here and elsewhere many times, that the farmer must, in order to have these suitable birds, have breeding stock of the correct market type and he must attend to his chickens properly from time of hatching to the ages mentioned. I treat of this phase of the question more fully in a later portion of my evidence. As I have said at the beginning of my remarks, if the farmer has these suitable birds, at the ages mentioned, the large purchasing companies will be only too glad to send for them. If the farmer has time and so situated that he can export his birds, or, sell them to special customers at a special price in a city, it will pay him to specially crate fatten his poultry. But the great bulk of our farmers will be wholesale producers, and it would not be fair to expect them to produce a finished or retail article to sell at wholesale value. The finished article is likely to be the work of a few exceptionally well situated farmers, or, the work of second parties. Now, that the attention of the farmers has been directed to the money that there is in the production of a superior quality of poultry, I am happy to say that they are giving this branch more attention, and the result is becoming more satisfactory from year to year.

ESSENTIALS TO PRODUCTION OF SUPERIOR QUALITY.

It is ever to be remembered that in order to have the strong chickens which will make such satisfactory flesh development, as quoted, that they must come from :-

(a.) Robust parent stock.

(b.) That they must be well housed, well cared for and regularly fed from time of hatching until reaching the saleable age of three, four or four and a half months of age. I have said the following before to your committee, perhaps you will allow me to repeat it on the present occasion: 'That a chicken requires great care during the first five or six weeks of its existence, when there is a great drain on its system for rapidly growing bone, sinew and muscle as well as feathers.' It is an axiom in England and other poultry raising countries of the world, that a chicken allowed to become 'stunted' from being 'stinted' of food or neglected during the early weeks of its existence, will never recover from such neglect, and will not make a satisfactory market fowl, breeder or show bird. This is a fundamental fact in poultry raising that I have enforced on the farmers for many years past, and it is certainly one of vital importance in the production of the superior quality of poultry.

The practice sometimes indulged in of 'allowing chickens to pick up their own living' cannot be too strongly condemned. It can only result in a chicken reaching the saleable age a mass of bones and feathers, instead of the plump and well favoured specimen so much in demand. These may be apparently trifling points, but the thorough understanding of them is requisite. Whether the chicken is intended for sale to one of the large purchasing concerns in Montreal, Toronto and other points at three or four months of age, or intended for the fattening crate, it must be carefully

fel and attended to in the early weeks of its life, or it will not be suitable.

By Mr. Blain:

Q. Allow me to ask if you have any turkeys on the Farm ?

A. No, we have not.

Q. Or geese?

A. No.

Q. Why do you not have them ?

A. Turkeys are essentially foragers, and we have not room.

Q. There is nothing the farmer produces that will make more money.

A. I am aware of that fact.

4 EDWARD VII., A. 1904

By Mr. Wilson:

Q. How much land have you? A. I have two acres.

CARE OF CHICKENS TO MAKE THEM SUITABLE EARLY MARKET TYPES.

The proper care and feeding of the chicks, so as to have desirable results, was fully given in the evidence of last year. Perhaps, as it is a matter of importance and one much inquired about, your committee will allow its repetition on this occasion, as follows:—

After hatching out the chickens should be allowed to remain in the nest for twenty-four hours, during which time they require no food. On being removed, with the mother hen, from the nest, they should be placed in a coop, weather permitting, outside on the grass. If inside, it is imperative that the chicks should run on dry earth or sand, or they will 'go off their legs.' Their first food should be dry bread crumbs. stale bread soaked in milk and squeezed dry, or granulated oatmeal. Feed a little at a time of either, or all alternately. Continue this treatment for eight or ten days when crushed corn in small quantities may be fed. Give whole wheat after 12 or 14 days. After the chickens have got firmly on their legs, a cheap mash may be made of table or kitchen scraps, etc., and fed in a 'crumbly condition.' Sloppy or sour food will bring on bowel disorder. All food should be fed in such quantity that it will be eaten up clean. Leave no food about to turn sour. Milk, sweet or skimmed, is one of the best foods and is very much relished. It need not follow that the rations be expensive or composed of all constituents named. At first feed a little and often to the young chicks. Afterwards feed once every four hours, until so old that they can run in the fields. But at all times feed regularly.

When the chicks have arrived at marketable age, the cockerels to be killed should be fattened, if not in acceptable condition. To do so quickly, put the bird or birds by themselves where they will be perfectly quiet. Feed and water regularly and keep their pen or pens scrupulously clean. Meat, mutton fat, potatoes, barley or corn fed whole, or in mash, are potent factors in fattening. A few bits of charcoal, occasionally, aid digestion.

Should it be desired to place the chickens in crates for further fleshing, the follewing rations will be found effective. It has been found successful in experimental crate fattening in our department:

Two parts finely ground oatmeal. One part finely ground barley meal.

One part finely ground corn meal, or preferably, if easily obtained, buckwheat meal.

After the 15th day add beef suct in proportion of one ounce to every four birds. Mix the whole with skim milk. When the suct is used, it may be melted by cutting it into pieces and putting into hot milk. But the mixture in such a case should be allowed to cool before feeding it to the chickens.

I have so far outlined methods of managing which have been in operation in our poultry department for several years past with most satisfactory results. Having done the work and witnessed resulting good effects, we can with confidence recommend the adoption of like management and treatment of their poultry to the farmers of the country. I now ask your attention to one or two interesting features of the work of last year. For the past few years investigation has been made with the view of discovering, if possible, the cause or causes of so many weak germs found in eggs laid at the latter part of winter, and early spring by hens which were confined to limited quarters in the farm poultry houses. The houses were artificially heated to a moderate temperature, varying from 30 in cold weather to 50 degrees on mild days. The fowly

had been gently stimulated to lay, but with no condiment, and had laid fairly well. But these eggs when hatched out in late March or April by incubator or hen, produced few chickens. It did seem as if it was almost impossible to get an egg with a strong germ from fowls situated as described. So strong was opinion, in certain quarters, in regard to this that the advice was given to keep one set of fowls to do the winter laying and another to remain quiescent during that season, and only to begin egg production in spring time, with the object of having eggs laid with the strong germs so necessary to make the robust and quick growing chicken. But the experience of many winters and springs in our department showed that this desirable result did not always fellow. And again, if the farmers kept two lots of fowl, with the object as already stated, the non-productive birds would nearly, if not altogether, eat the money made by the layers. The experience of several winters past has shown that it is quite possible to have plenty of eggs in winter and the much desired strong germs in springtime, if the laying stock are permitted plenty of fresh air and exercise. Experience leads to the conclusion that the poultry house of the future will be that with the shed attachment, a diagram and description of which have been made in the earlier part of my evidence. As compared with results from hens which were in a cold house during winter, but had plenty of fresh air and access to a shed, the showing was altogether in favour of the latter as proved by 17 chicks from 52 eggs laid by the fowls in warmed houses, and 48 strong chickens from 55 eggs laid by the birds kept in the cold houses.

There is much to be done in the development of the poultry industry in Canada. It is assuming large proportions, and with a market of \$33,000,000 to \$35,000,000 for eggs in Britain and an equally in fact, we have an almost inexhaustible market for a superior quality of poultry.

By Mr. Wilson:

Q. Great possibilities.

A. Yes.

Let me thank you, gentlemen, for the very great and kindly interest you have taken in the presentation of the work for the past year, and I am gratified and pleased that the information elicited in regard to poultry keeping will reach the farmers in the acceptable shape of my evidence before your Committee.

Having read over the foregoing transcript of my evidence, I find it correct.

A. G. GILBERT,

Poultry Manager, Central Experimental Farm.

PROFITS FROM BEE CULTURE

House of Commons, Committee Room 34, Wednesday, June 1, 1904.

Select Standing Committee on Agriculture and Colonization met here this morning at 10;0'clock, Mr. Douglas, Chairman, presiding.

The CHARMAN.—Mr. John Fixter, Apiarist at the central experimental farm, is here this morning to give evidence.

Mr. Fixter.—Mr. Chairman and Gentlemen, this is the second time I have had the privilege of coming before you to give an account of some of the work carried on in the apiary at the experimental farm. Also to give you some idea of the instructions I have given while attending meetings in Ontario and Quebec. During January, February and March, I attended 27 meetings compused of farmers, fruit growers and their families, a great deal of interest was taken in the subjects discussed at the meetings by all present.

USE OF MEANS TO STIMULATE THE BEE INDUSTRY.

To encourage the farmer and fruit grower to go into the bee industry, we must first show them there is money to be made in it, and in more ways than producing honey. We must encourage them to grow clovers and flowering plants, that will produce large crops of honey and be useful for fodder and a soil restorer. Among the various fodder plants which have been grown on the experimental plots at the central experimental farm, one which has lately received much attention, is Sainfoin Onobrychis sativa. This beautiful plant, which may be known at once by its pinnate leaves and large cones of rose pink flowers on slender stems, is allied to the clovers and, as a rule, is spoken of as a clover in the same way as Alfalfa or Lucern is. It was noticed on the experimental farm plots that the flowers of this plant were extremely attractive to bees, and it is also a producer of good fodder, suitable for all stock. It is not as heavy a cropper as Alfalfa, but like that plant is a persistent perennial, which roots deeply and in localities which suit it, produces heavy crops of hay. In its cultivation and manner of growth it resembles Alfalfa, but it is slightly finer and grows thicker in the bottom, having, a most decided stooling habit which makes it better for pasture. It is especially liked by sheep and cattle. The soil best suited to the growth of this plant seems to be a deep, rather dry loam, containing a fair proportion of lime with good natural drainage. It will do well upon almost any soil that is well drained, provided it gets a good start. Heavy clay and light sandy soil both produce excellent crops of Sainfoin, but on the latter it naturally requires generous manuring. It should never be sown on land likely to be covered with water at any season of the year. The amount of seed sown under the best conditions is 20 to 30 pounds per acre. Great care should be taken to secure new and plump seed and to see that the germinating power is all right. So far, we have not got a sample of Sainfoin that will germinate sufficient to only sow 20 pounds to the acre. Last year we had great difficulty in getting Sainfoin seed to ger-

4 EDWARD VII., A. 1904

minate over 10 per cent. It was the same with Alfalfa or Lucern when first introduced—a great deal of trouble was experienced in getting that plant to grow. Any person who decides to grow Sainfoin should send for a sample and test its germinating power, also test the bulk when it arrives.

By Mr. Robinson (Elgin):

Q. Have you a sample with you ?

A. I have not, sir, I am sorry to say.

By Mr. Gould :

Q. What is it worth ?

A. About 15 cents a pound.

By Mr. Robinson :

Q. Is it a species of clover ?

A. It is, sir, the same as the Alfalfa or Lucern.

By Mr. Heyd:

Q. You say the amount of seed should be 30 lbs. to the acre?

A. Thirty lbs. if all germinates, if not you will have to sow much more.

Q. Do you assume that to be pure ?

- A. Yes. When we buy our seed we test it, and I would advise every other person to do the same.
 - Q. Do you mean 30 lbs. of pure seed or 30 lbs. of which 90 per cent is pure ?

A. Of pure seed.

Q. For use commercially one must buy 80 lbs. ?

A. I would not buy seed if it would not germinate more than 75 per cent.

By Mr. Maclaren (Huntingdon):

Q. But you say you have never been able to get it to germinate.

A. We sent to France for seed and got it to germinate eighty-five per cent. That is the seed we have sown this year. When Lucern was first advocated there was considerable old seed on hand, and it would not germinate now that it is extensively grown new and fresh seed is available it will be the same with Sainfoin.

By Mr. Stephens:

Q. If you sow the seed in this country will it not ripen ?

A. The sainfoin or alfalfa.

Q. Yes.

A. We have not ripened Sainfoin nor Alfalfa in this northern part, the seed may ripen well in western Ontario; Alfalfa or, Lucern is grown very successfully as a fodder and a fertilizer in this district.

Q. And Sainfoin will not ripen ?

A. Not with us, but will grow excellent crops of fodder.

Q. Nor Lucern either ?

A. We cannot ripen it sufficiently to secure the seed.

By Mr. Robinson (Elgin) :

Q. It is pretty much like a clover plant?

A. Yes.

Q. It has a longer head ?

A. The Sainfoin head is about two inches long, and the beauty of it is it will start to bloom at the bottom and by the time it finishes blooming, or gets to the top the bees will have 20 or 30 days to work upon it and that makes it more valuable as a honey plant. At the present time—May 28—it is in bloom on the farm, there is no white clover in bloom at this date. It is a most valuable plant for bees at this season of the year, as the blossoms on the trees are gone and no white clover bloom. At this particular time, between the fruit and clover bloom, it is essential to have the queen to keep up brood rearing to have the colony strong for the honey flow.

By Mr. Blain :-

Q. Is there any part of Ontario where they have grown it to ripen?
A. I cannot say.

By the Chairman:

Q. I suppose in the Niagara district it would ripen?
A. I have no doubt it would ripen in the Niagara district.

By Mr. Heyd:

Q. How would the farmer go to work to get 30 lbs. of pure seed?

A. The way we do to get pure seed is to obtain samples from different seedsmen, examine carefully and test as to the germinating power. If he succeeds in getting the seed to germinate then order his seed. He would probably have to test it again

after the order arrives to make sure that it was pure and would germinate.

The necessary articles are two soup or dinner plates and some pieces of rather thick clean cloth. The seed for testing is first to be thoroughly mixed and one hundred seeds counted out, taking them just as they come, regardless of size or plumpness, the idea being to get as nearly as possibly an average sample. A piece of cloth is now dipped in water until thoroughly wet, then squeezed partly dry, after which the counted seeds are to be sprinkled over one-half of the cloth, and the other half folded over upon the soeds. This is placed in the larger plate and covered with the smaller plate to prevent drying out. If thin cloth is used it should be folded across two or three times in opposite directions to secure sufficient thickness. The seeds may be counted every day to find out how many will germinate.

Q. The farmer has not got time to do, that ?

A. It is a very simple matter. Seed can also be tested in the soil as follows: Suppose they send for different samples, examine each one separately for weed seed, and to test its germinating power, get a small box filled with soil, put it in a warm place in the house. Take 100 seeds and plant them in rows that they may be counted in a few days time, you will be able to tell what percentage will grow and sow acordingly. When it is grown more extensively we will be able to obtain fresh seed from England or France, wherever it is grown and then there will be no difficulty in getting it to germinate. It was the same with Alfalfa or Lucern, when first introduced there was difficulty in getting the seed to germinate.

By Mr. Kendall:

Q. Where is it being imported from ?

A. Very largely from England and France.

By Mr. Robinson (Elgin):

Q. It is of a crimson colour ?

A. A pink colour.

2-251

4 EDWARD VII., A. 1904

By Mr. Kendall:

- Q. Do you know if satisfactory results have been obtained in Eastern Quebec or in the maritime provinces?
- A. I do not think it is grown anywhere in the maritime provinces or Eastern Quebec.
 - Q. Not to any extent, but have any experiments been made to your knowledge ?

A. No, there has not.

Q. No experiments at Nappan Farm ?

A. Not that I know of.

By Mr. Stevens :

Q. Would it not be well to send a sample to Western Ontario, Essex or Kent, to see if it could be introduced?

A. I advised the Director to do that last year. To send just a pound to each interested in experimental work. I thought this clover was a valuable plant for bee keepers and farmers and would do a great deal of good to the country by introducing it.

By Mr. Robinson (Elgin):

Q. Did you send any to Port Stanley ?

A. I did not send any there.

By Mr. Gould:

Q. Will it not run in time or have you to resow the seed ?

A. We have had it seven years and have had good crops.

By Mr. Wilson:

Q. Is it as good at the end of the seven years as at the end of the second year.

A. No, sir, it is getting thin. It is best to plough under the third year.

By Mr. Robinson (Elgin):

Q. Do you manure it ?

A. We do not.

HULLED SEED PREFERABLE TO UNHULLED.

At the present time I do not know of any hulled seed being offered for sale. With the unhulled seed you have to sow so much more and is harder to sow with the hull on it. If possible purchase hulled seed.

By Mr. Stevens :

Q. Would not the tendency be that it would keep better with the hull on ?

A. That is the idea, but I would say, let us buy it with the hull off. If you purchase seed with the hull on you have to sow twice the weight of seed per acre as the hull is very large.

By Mr. Robinson (Elgin):

Q. It would have been nice if you had brought some of the plants and the seed with you.

A. I brought some of the plants last year and I did not get a chance to exhibit them, but if I have the privilege of again appearing before the committee, I would

bring both the plants and the seed. I could have brought them to-day in bloom if I had known that an opportunity would have been given to exhibit them.

By Mr. Johnson:

Q. It is a natural way for a seed to grow in the hull?

A. Yes, the seed grows in the hull.

Q. The seed that is in the hull is usually the seed that should be sown in the fall of the year and the hull is to protect it from the frost. I think that Alfalfa or any seed that is sown with the hull on will grow, but if you hull it, it rots in the ground.

A. The red clover seed does not rot or any other clover that we know of.

Q. The seed that has the hull on it is protected for the winter, and it will grow.

A. Would it not be better to sow your clover very early in the springtime; then you will not require that hull. Several samples with the hull on have been secured, and their germinating power tested and found to be very low, requiring instead of 30 pounds 40 to 50 pounds per acre, and even more had to be used to insure a good catch. Poor germinating of Sainfoin, Alfalfa, or Lucern seed is what has given farmers so much trouble in securing a good catch.

CULTIVATING THE SOIL.

The next important point, Gentlemen, is that a good seed bed is necessary not only for the sainfoin, but for all kinds of clover. One method that we have at the farm for cultivating our land is going to be of great benefit to every farmer. It has only been tried at the experimental farm a few years, and we find it a great success. The best method for preparing the seed bed and also at the same time clearing the land of weeds such as quack grass and thistles is to cultivate with a lock spring rigid cultivator. If the field has been in (meadow or grain) do not plough at first, but simply cultivate and harrow. First cultivate, and as shallow as possible, and then pass the heavy iron harrow at a good sharp walk across the first cultivating. This operation will break up the sod or stubble very fine and leave it on the surface to dry out. The second cultivating should be in the opposite direction to the first and likewise the harrowing. By this operation two-thirds of the sod will be loosened from its roots. It usually requires about four cultivations and four harrowings to make a perfect job. All this work must be done on fine sunny days and the sooner after harvest the better. The cultivating and harrowing must be gauged by the growth. If possible every green leaf must be cut off and kept out of sight and all vegetation brought to the surface to be dried out by the sun. This dead but valuable material may, during the autumn, be ploughed under to decay and add to the fertility of the soil. By the next spring this land should be in perfect condition for sowing. The best time to sow is as soon in the spring as the ground can be got ready without being wet and sticky. The seed will then germinate quickly. As sainfoin is a quick grower and deep rooting plant, the roots keep going down into the moist earth so that dry weather will not have much effect upon it. If sown with a nurse crop, oats, wheat or barley may be used, but the latter is preferable as it can be harvested earliest, thus giving the clover a better chance to stool and form a stronger root growth. Not more than half the ordinary amount of grain should be sown per acre with this clover, and better results are usually obtained by sowing it alone. It may be sown broadcast, then harrowed and rolled so as to render the surface smooth or it may be sown with the ordinary grain drill with grass seed attachment. The seed should be dropped in front of the drill and the land should afterwards be rolled. The small seeds will thus be covered and, the surface being smooth the young plants will come up quickly and regularly. For this crop prepare your land well by the plan above mentioned or the seeding may follow a hoed crop. But whatever the preparation of the land it must be clean, and as seeds are small it is essential to have it in good tilth.

4 EDWARD VII., A. 1904

This plant has been grown on the experimental plots at the Central Experimental Farm for several years. The oldest plot now living has been standing for seven years, a second plot two years, and a third plot was sown in the spring of 1903. The plot which has been growing for seven years is now thin and will soon be ploughed down. It would probably be the most economical plan to plough down this clover after three years and resow. As is well known, clovers of all kinds are the most valuable plants which can be grown and ploughed down as fertilizers and the benefit of ploughing under this clover would more than pay for resowing. The botanists records of the experimental plots show that Sainfoin sown May 24 came in bloom on August 12 of the same year, cut for hay on August 25th and gave a yield per acre of 1 ton 1,700 pounds of cured hay. The second growth of the first year should be allowed to stand over for the winter as a protection to the roots. In the second year the plants came into bloom June 1st and lasted up to the 24th of that month when the plot was cut for hay. These dates might have been extended had the plants been grown merely for honey, but as they were at that time in the best possible condition for hay they were cut for that purpose. If the crop had been left to stand longer the hay would have been too woody. The yield of the first cutting was 2 tons 200 pounds of cured hay per acre, a rather small crop, due to the excessive drought which lasted until June 12. The second bloom was on July 27th, and lasted until August 17th, when it was again cut for hay, giving 2 tons 1,400 pounds per acre of cured hay, or a total yield for the year of 4 tons 1,600 pounds. A third crop which will provide some pasture is allowed to remain on the ground for winter, or in very favourable seasons might be cut before winter, although this is not advisable. Many farmers have made inquiry about getting this clover out of the soil when once sown. It is easily killed as common red clover. The land will be found a little harder to plough on account of the Sainfoin roots being larger, but it is in no way troublesome to get rid of. The greatest difficulty is to get the plants to grow. It does not resemble the Bokhara or Sweet Clover.

From Prof. Frank Benton, in charge of the Apicultural Department, Washing-

ton, D.C.

'Sainfoin is most an excellent honey producer. The honey is thick, fine flavoured, and as clear as crystal. It is very eagerly sought after by the bees, and the yield is large. The plant is exceedingly good as a forage crop, being well adapted for cultivation on gravelly soils containing lime; or it may be grown, if well limed, on soils which lack this eliment. In Western Germany, France, and northern Italy it is much used in foddering milch cows. The plant is perennial, and a good stand will last several years, the same as red clover. If you refer to page 17 of Farmers' Bulletin No. 59, of this Department, and page 61 of Bulletin No. 1, new series, of the Division of Entomology, you will see that I have made mention there of Sainfoin.'

Yours very truly, FRANK BENTON.

By Mr. Gould :

Q. Just a moment—you spoke about a cultivator which you use, is that a special

type of cultivator ?

A. Yes, it is a cultivator made by the Frost & Wood Co. and by the Sylvester Co. The agent when he came to the farm to sell a cultivator he had not the kind wanted, and I told him that their cultivator could not do our work. The agent made inquiry and I explained what we wanted, that we wanted a cultivator that would cut everything before it; with the ordinary spring tooth when you come against a large thistle or couch grass, it will run around it, and not take it out. But this rigid footed cultivator is made on the principle of the seed drill frame, yet it has spring enough in it so that when it comes against a stone it will not break but spring over. When we are cultivating sod or stubble the first time over with this rigid footed

cultivator we put on 2-inch points, nine of them, and that cuts 18 inches in width and at first operation about 2 inches in depth each cultivating goes deeper.

By Mr. Heyd:

Q. Do you use two horses ?

A. Two large horses will do the work of three small ones.

Q. What is the width cultivated ?

A. About 4½ feet.

Q. That is very narrow ?

A. To cut up 18 inches of sod it takes a fairly good draw. We cultivated with this cultivator from the start; we found it very much better than ploughing first then cultivating afterwards, as is usually done.

Q. Take a stubble field, in our country we plough it as soon as the crop is off,

and run it over again in the fall ?

A. If you cultivate first then plough in the autumn, you will have better results.

Q. You could not use these implements on a stony farm, I should say?

A. There is spring enough in it, the same as the springs on the seed drill, to

throw back the points so that they will not break.

Now, I have given you some idea of the value of Sainfoin as a fodder and honey producer. I would be pleased to give you some information regarding clovers as soil restorers and fertilizers. I have a chart here which I have had prepared for the purpose of explaining. This chart was copied from an actual photograph taken by Prof. Shutt from plots grown on the Experimental Farm. I regret that it is not Sainfoin that has enriched the soil on which these plants have been grown, but as clover is all valuable plants for fertilizing purposes I thought it would be instructive to bring them before you. You will notice that on the chart here are two loads, they are taken from exactly the same size plots, and the same kinds of grain, and were sown at the same time.

The land on which the larger load was grown was seeded the previous year with 10 pounds of clover seed per acre along with grain, the grain was cut and clover allowed to grow until October of the same year; it was then ploughed, the adjoining no clover plot being ploughed at the same time. ing appearance of the growing grain on these plots, it was soon very noticeable, and, as the season advanced, especially before the heads appeared, the difference in height and vigour of growth in favour of the plots where the clover had been grown was very remarkable. So clearly was this manifest, that the difference could be distinctly seen at considerable distance, and the outline of the plot on which no clover had been sown could be readily traced by the shorter and less vigorous growth. The plots were cut and threshed separately, and weighings made of the grain and straw from each plot, the wagon containing the grain off the plot that had clover ploughed under gave a yield of 9 bushels per acre more than on the wagon containing the grain from the plot that had no clover ploughed under. On this same land corn was planted the following year, on the plot where clover had been ploughed under gave 2 tons 1,700 pounds per acre more corn than on the plot where no clover had been ploughed under showing one crop of grain does not take all out of the soil that the rloughing under of but one crop of clover furnishes, no other fertilizer being used.

By Mr. Gould:

Q. Ordinary red clover ?

A. Ordinary red clover. We find the roots of sainfoin will give as good results as alfalfa or lucern clover. It has the nodules and nitrogen gathering elements similar to lucern.

By Mr. Ross (Ontario) :

Q. What about the two plants you have there ?

A. The one on the right side represents the growth from the spring to the autumn of the same season, and that on the left side represents one year's growth of plants in the same field.

The object of showing these plants is to describe their growth and the great number of nodules; also the strong root growth, that is made from the time of sowing up to one year, and where the value of clover is as a fertilizer. I have from Professor Shutt's report of the analyses of clover as compared with barnyard manure as a fertilizer. Ten tons of barnyard manure of good average quality will, therefore, enrich the soil, approximately, by the following amounts: Nitrogen, 110 pounds; phosphoric accid, 50 pounds; potash, 90 pounds. The chemical investigations made in connection with clovers have shown that a vigorous crop of clover will contain, at a moderate estimate, in its foliage and roots: Nitrogen, from 100 to 150 lbs. per acre; phosphoric acid, 30 to 45 lbs. per acre; potash, 85 to 115 lbs. per acre. Respecting nitrogen, it is evident that by the use of clover we can with a single crop furnish the soil with as a large a quantity as would be supplied by a dressing of ten tons of manure per acre. The greater part of the nitrogen is gathered by the clover from the air, a source not otherwise available, and is therefore a distinct addition to the soil. The amounts of phosphoric acid, potash and lime in the clover have, it is true, been obtained from the soil, but have been largely drawn from depths beyond the reach of the roots of ordinary crops. The decay of the clover, moreover, liberates these important fertilizing elements in soluble and available forms, so that they can be readily utilized by the crops which follow. When growing grain it is advisable to plough under the clover in the autumn, although you may lose considerable value in the clover plant, you will be able to get your grain in much earlier and in better condition. The extra growth of grain may make up for the loss of the clover growth. It will also lessen heavy work in the spring time. It is best, however, for corn roots and potatoes to allow the clover to stand and grow until spring time, just give sufficient time for working the land thoroughly before planting.

By Mr. Wright:

Q. In reference to that Sainfoin, has it just the same number of nodules as clover?

A. No, Sainfoin has the same form of root as Alfalfa or Lucern, it has a thick deep tap root, with small branching rootlets running out it goes much deeper than Red clover.

Now, gentlemen, in so far as its usefulness to the farmer is concerned, I think I have explained the value of clover very fully. When we get the farmer to grow such clovers as will produce large crops of honey fodder and be so useful as a soil restorer, then the idea of having a failure in the honey crop will be a thing of the past.

By Mr. Ingram:

Q. Will you explain to us about the clover seed, how do you get it.

THE CHAIRMAN.—That has been explained.

A. In describing the clover plant and its growth to farmers and while attending meetings I usually take up the subject very fully and give them full instructions how to prepare the land, how to obtain and test the seed, the best way to sow, and if crops are desired, which to sow with, how to harvest the clover, and the best method for curing, and how to grow their own seed and thresh and clean it.

As to the interest fruit growers are taking in the honey bee, there has been a very marked change in the last few years. They realize the very great benefit the bees are

in their orchards.

I have brought with me a few bees. That you may see their value as pollen distributors you can readily see the heavy loads of pollen that each of those bees have on their legs, carrying it from stamen to pistil, this work being done in some cases by the wind in others by insects, but the chief of which is the honey bee. A few days ago I had the privilege of meeting Mr. McNeill, one of the fruit inspectors of Ontario, and I asked him what he thought as to the value of bees in the orchard. 'Why,' he says, 'the most successful men in the fruit-growing business have bees in their orchard,' and would keep them if for no other purpose than fertilizing the bloom so that the trees and plants may bear fruit that could not possibly do so if it were not for insects, and especially the honey bee.

By Mr. Robinson (Elgin):

Q. Is that the honey bee?

A. Yes. He said that in going through the country, many times he would ask farmers whom he would meet if they knew of any person who had large crops of apples in their district, and very often they would say they only knew a certain man, and when he went to make inquiries and looked around the orchards nearly every time he would find the honey bee there, he would find ten or fifteen hives, sometimes many more. He claimed a great deal of credit was due to the bees for having uniform crops of fruit. The horticulturist at the experimental farm acknowledges that the honey bees has a great deal to do with the uniform crops of fruit that have been secured every year.

By Mr. Ross (Ontario):

Q. What is that the bee has on its legs ? (Exhibiting bee).

A. That is pollen.

Q. What does it do with that?

A. They fertilize the blossoms by going from tree to tree, and also feed the larvae. They do not get their full load from one blossom; they light on one tree here and another in some other place; that is where their value comes in as pollen distributors.

By Mr. Wilson:

Q. How do they know how to go to the right tree ?

A. They go to all the trees in the orchard in search of honey and pollen.

By Mr., Ross (Ontario) :

Q. What is that pollen composed of ?

A. The fecundating dust of plants.

Q. It is food for young bees ?

A. Yes.

Q. It must be honey?

A. No, it is not honey.

THE CHAIRMAN.—It is a kind of a dust.

By Mr. Kendall:

Q. Before you go to another subject, will you tell us if there is any recent information as to clover sickness in land?

A. No, I do not think there is. I do not think you could possibly make land clover sick; I would say land would get sicker if no clover is sown. We have been growing clover on the experimental farm about 18 years, and we find no difficulty

whatever in that way. I feel safe in saying that the more you sow clover the better it will grow. That is the result of our experiments. We are advised to take the soil even from the field where clover has been grown and scatter it where clover could not be grown, and clover will grow there; the soil will be inoculated with the nitrogen scattered.

Q. Does that not appear to be a contradiction of the statement of Laws and Gilbert, who preached the doctrine of clover sickness in land ?—if they do not preach

i; their predecessors did, Prof. Belcourt and a number of others ?

A. I cannot tell anything about that, but judging from experience I have had in watching the fields here I would safely say, there could be no such thing as clover sickness; the oftener you sow it the more nitrogen will be gathered in the soil, therefore the better clover will grow. When we first started to grow clover we did not have as good a catch as at the present time, because the soil had not been inoculated with the nodules or nitrogen as they appear on the plants there (pointing to chart on the wall). The climate and soil of England may be much different from ours, but in Canada sow clover with every crop of grain you grow excepting peas, until you get your soil so rich you do not require it.

Q. If that is your experience it is a very important thing to take note of, because in Britain they preach the doctrine of clover sickness in land for a great many years on land that has had clover planted on it two or three times and after eight or ten years it exhausts the soil from producing clover, and by putting in the necessary elements of fertility you do not restore the land so that you can sow clover.

The CHAIRMAN.—That is exhaustion.

By Mr. Kendall:

Q. If you restore the land with manure it will not grow clover again for years?

A. Has it ever been known in this country where land was well manured, or even a light dressing of wood ashes, that it would not grow clover. I do not know where the land is that will not grow some kind of clover without either.

Q. I have never heard of it ?

A. I have heard men speak of clover sickness in the soil, but the trouble was with them, they did not sow enough. That is the main trouble in not getting it to grow. They do not sow enough seed to the acre.

Q. Can you tell us if they have made many experiments in the United States Bureau of Agriculture, or in connection with that bureau, in the vaccination of land with clover roots or the bacteria?

A. I have read several reports of such experiments; Professor Shutt has carried on that work and proved it very successfully.

By Mr. Heyd:

Q. That is what you mean by saying, 'take soil on which clover is grown and fertilize the land with it?'

A. Yes. I have never done it, but have heard tell of its being done, and would advise trying it; I have no doubt of it being a success. When clover was sown at first on the fields at the Experimental Farm, we got a small spindly growth. Every year it grows greater and to-day, June 1st, we are ploughing down 18 inches of clover for our corn crop.

Bu Mr. McEwen:

Q. At the present time ?

A. Yes.

By Mr. Gould:

Q. Eighteen inches of this year's growth ?

A. Yes, just about.

Q. Would you not think that is a rather rapid growth ?

A. Yes.

Q. Ordinary red clover.

A. Yes.

Q. I would like to go down and see it ?

A. We would be pleased to have you and every member of the committee pay us a visit.

By Mr. Ross (Ontario):

- Q. There is nothing like red clover ?
- A. It is a grand crop.

By Mr. Gould :

- Q. Do we understand Alfalfa being that height now ?—It is certainly a great crop.
- A. Common red clover is 18 inches high, Lucern and Sanfoin is 20 inches high at the present time, June 1st.

By Mr. Erb:

- Q: Don't you give any credit to the manure? Why, since the farm has been bought there has been put on it over 10,000 loads of manure. I looked up the Auditor General's Report for the last few years and found there has been oven 10,000 loads of manure bought for the farm.?
- A. It may have been cart loads, loads that were not very large. The farm has been running 18 years and the lawns, flower beds and the horticultural department has to be supplied from outside of the farm.

Q. Some cost \$1 a load and some 40 cents?

A. This land that I speak about, I took the bush off it, the plots are staked out and I know that no manure has ever been put on it.

If the clover question is sufficiently discussed, I will take up the management of the apiary.

By Mr. Kendall:

Q. Pardon me, one more question. Has this been put into general practice,—rather, is it feasible to put this new plan of vaccinating land into general practice?

A. I think so. I never practised it myself and cannot speak definitely on it. The Chairman.—I think you had better allow the Professor to go on with his

special subject.

A. We will have to go on experimenting with clovers, until we get a variety suitable for Manitoba and the North-west. We should cross some of the smaller clover with Bokhara clover. I do not think you would have any trouble geting Bokhara to grow on the prairie soil. Some people have an idea that it is a weed. It is not a weed; it is a clover and it is easy to get out of the soil. I know of farms in this country if they grew Bokhara clover for a few years and would turn it under, they could afterwards grow very profitable crops.

By Mr. Ross (Ontario):

- Q. Is that what is known as trefoil ?
- A. No, known as Bokhara, or sweet clover.

By the Chairman:

Q. It has a long narrow leaf ?

A. No, it has a broader leaf than Lucern, and grows from 4 inches to 4 feet and 5 feet high.

4 EDWARD VII., A. 1904

By Mr. Kendall :

Q. There are some below the Russell House five feet high ?

A. It is a grand crop for bees, and in many parts of the country it has been found to make excellent pasture when fed before the stalks get too woody. Animals get accustomed to the taste and do well on it.

By Mr. Robinson:

Q. Nothing will eat it ?

A. Cattle, sheep and pigs will eat it if put on the field when the plants are quite young; if left to get woody animals will refuse it.

Q. They will starve to it ?

A. No, they will get accustomed to the flavour and eat it the same as other clovers; the closer it is pastured the better it will grow.

THE SEE INDUSTRY AS AN OCCUPATION.

A great deal has to do with the management and locality. As to locality, we hope to overcome that difficulty when we get such plants that will give a large yield of fodder and honey combined. We all know that with the bee industry the great difficulty has been in not making a success of it that a man would buy two or three colonies, and then he thinks they can get along without any management and gather honey for him; this will not do. You have to take care of the bees the same as you have of any kind of stock. I have these cuts on the chart that I might explain the working of the different appliances, and you will understand them better. The first thing a person ought to purchase when they go into the industry is a bee veil to protect the face. The next is a good 'smoker.' With a bee veil and the smoker no person need be afraid of working a hive of bees. In the smoker we put what is known as burlap, or any kind of punk wood that will make a good smoke and no flame. Any person can put on a bee veil and by using a smoker and sending a few puris of smoke into the hive, he can work in safety. Some use gloves to keep from getting stung, but after a short time when he gets accustomed to the work and sees they are not such vicious little things as supposed to be, he will discard both the bee veil and gloves, and will not see any necessity for using them.

Q. How do you explain the fact that a man when he commences work with bees

puts on a protector, and after a while he takes it off ?

A. He will see there is not as much danger of getting stung as he thought there was and that they are not such vicious little things as people make them out to be.

By Mr. Richardson :

Q. Are the bees conscious of this, do they seem to know him ?

A. I cannot tell that, I do not use a veil or gloves, and work around them without any fear of getting stung.

By Mr. Ross, Ontario :

Q. What do you do with the smoker ?

A. Quiet the bees. The hive wou wish to examine take the smoker and place the nozzle to the entrance of the hive, give three or four puffs of smoke; they will then fill themselves with honey and will not be in humor for stinging should they show any signs of stinging when you remove the cover a little extra smoke will quiet them; you can then go on and do your work without any interference.

KIND OF BEES TO PURCHASE.

Purchase as near your home as possible save shipping long distances, whether it is blacks or Italians. If afterwards you want to get into a different strain all you have to do is to purchase a queen of the sort you want and introduce her into the colony you wish to change. There are different kinds of bees and there are also some colonies much better than others of the same kind and it is the same with them as it is with cows, some cows will give a large flow of milk and be very profitable to the owner while others will not pay for the food they consume. In the bees there are good and poor honey gatherers, the man who is working in the apiary will know the colonies that gather a large amount of honey and that which gathers a smaller amount. When you find a colony of bees that is giving you a small amount of honey replace the queen, and try to build up your colony the same as you build up your stock or any other branch on the farm.

By Mr. Ross, Ontario:

Q. Will the bees in the hives take to the new queen all right?
A. They will.

By Mr. Wright:

Q. I do not know about that; there is some trouble sometimes. I have lost a good

many queens, they choose to attack and kill the queen sometimes.

A. That may be the case, but it can be avoided. The way I introduce my queen is this: I hunt up the queen that I wish to replace in the evening and remove her from the colony I then leave the colony without a queen until the next evening. By that time the bees will know there is something wrong and that their queen is gone. When the new queen is entered by the time the bees have eaten their way through the candy they will take to her readily.

INTRODUCING A QUEEN.

The queen that is to be introduced is usually received in the Benton mailing and introducing cage. This consists of an oblong block of wood with three holes nearly bored through, one of the end holes being filled with good candy, and the other two being left for the occupancy of the bees and queen. On the back of the cover are printed the directions for introducing, and at each end of the cage is a small hole bored through the end of the grain of the wood, but which in the mails is stopped by a cork. One hole is for the liberation of the queen, by the bees eating out the candy in the course of twelve to twenty-four hours, thus releasing her automatically, when the cage is received, the cork covering the candy is to be removed, as well as the cover over the wire cloth. The cage is then placed on top of the frames, being careful to place the wire clots over the space between two frames in the manner explained above. I have never lost a queen by introducing that way

KIND OF HIVE TO PURCHASE.

We found the Langstroth hive is as good as you can get. I tried several other makes of hive and find the Langstroth hive one that can be safely recommended and for a person only starting in the industry it is much better to buy a ten frame than an eight frame hive. The object of advising a ten frame hive for the beginner is that there will be more honey in the hive for the winter. Many people take too much honey from the bees and do not allow them enough for the winter, so that with a ten

4 EDWARD VII., A. 1904

frame hive they will usually have enough to put them through. I would, however, not take any honey out of the brood chamber if there is found to be too much left in it in spring time; uncap part of a frame each evening between fruit and clover bloom to keep up brood rearing and make room for more brood. We have here hives set up for extracted honey. We arrange our hives for extracted honey in this way, remove the wooden off the brood chamber, then place on a queen excluder, then the extracting frames. No hive should be run for extracted honey without a queen excluder.

By Mr. Wright:

Q. What do you mean by granulated honey, you do not make granulated honey at first ?

A. No, extracted honey.

VALUE OF A QUEEN EXCLUDER.

A queen excluder should be used on every hive, that is, run for extracted honey, to keep the queen in her place. If you do not use it the queen is sure to go up into the top part or extracting frames, and no person should extract honey from frames where the young larve has been raised. Too many people who keep bees use only one section, that is the brood chamber, and they extract honey from where the brood is and has been raised. This practice should be condemned. Always put on a second story, and do not do without the queen excluder between where the larve is raised and where you expect to get your choice honey. There are many parts of the country where they have not yet got the movable frame hives; this is a great mistake, as they are made so cheap and can be got so easily and can be managed to make a great deal more honey. Those who have the old box hive have to sulphur the bees in order to get the honey out of the hive. That is all wrong. Get the movable frame hives and work the industry in a business way the same as any other branch of farm work.

SELF SPACING FRAMES.

Inside these hives there are frames; I have one here to explain in order that you may understand it better. We have in this hive eight of these frames, and in each of them put full sheets of foundation. We carried on a very useful experiment last year with the different kinds of foundations; also with wiring frames. We have a thick foundation weighing about 7 sheets to the pound, and foundation that would weigh about 10 or 12 sheets to the pound. We found that we could by vertical wiring frames, as you see this frame is wired, use light foundation and effect a very great saving in wax. The way we put the foundations in, we had a board exactly the size of the frame, we first attach our wire in the frame in that position, then place a sheet of foundation on the board and place the wired frames directly over the foundation; next we have a small wire imbedder that runs up and down the wires, imbedding them in the wax, and it makes a perfect job, so that you can take the frame and ship it anywhere, with the honey or young larvæ in it, and no danger whatever of breaking. That is a great advantage, as we have no broken combs when wiring vertically.

Q. Do you have any trouble with the heat causing it to sag in an exceptionally hot day?

A. None whatever; the vertical wiring will hold it perfectly in its place; we always shade our hives with a second cover, the top cover being six inches wider every way than the under cover.

VERTICAL AS COMPARED WITH HORIZONTAL WIRING.

The experiments carried on last year was with vertical wiring. I used seven, five, four, three, two and one; I also tried horizontal wiring. The vertical wiring proved to be a great advantage over the horizontal wiring. With this plan we can use a very much lighter and softer foundation, as every cell is in perfect shape right up to the top bar, and filled with brood; with the horizontal wiring many combs get sagged, and in some instances broken; the sagged combs will be filled with honey about two inches from the top bar, on account of these sagged cells not being suitable for worker brood, so that I would advise this wiring system to be carried on in every frame in the hive.

By Mr. Ross (Ontario) :

Q. Of what is this foundation composed ?

A. Pure wax.

Q. A commercial article ?

A. Yes. There is a great deal required now by the cheese makers in waxing their cheese. It is also used for many other purposes, and if we can save a quarter of the material by using this thin foundation, I think we have done good work for the bee keeper.

SECTION HONEY.

The way we get our section honey is this. We use the smaller supers and sections as you see here (indicating on the chart) with full sheets of foundation the bees go to work much quicker in the supers when full sheets are used. To the beginner I would say, go in for section honey instead of extracted honey, get accustomed to making a good article, have every cell capped in the sections before removing; far better to have the sections slightly travelled stained than to remove them too soon, and when you do remove them store your honey in a warm room. One of the great difficulties found in selling honey is, not having the right article, we want good quality. If you go to the Ottawa market here, you will see material put up for sale called honey that I call rubbish, that has been taken out of old hives with pollen and sometimes brood. They expect people to purchase this material for honey, they do so once and never afterwards want honey, a law prohibiting the sale of such material would be a good thing for the general public. At the present time there is an agitation in the United States among bee keepers to sell chunk honey. This will be a detriment to their market and I would be very sorry to see any person selling or advocating chunk honey in this country. What is meant by chunk honey, they cut the combs out of the frames, and put it into pails and fill it up with liquid honey. We don't know whether it will be liquid honey or not. It may be syrup of some sort. Therefore, I would say that the beginner should go in for section honey and create a taste for a good article, and afterwards when he goes more extensively into the business, he can try extracted honey. I would ask every person who extracts or even uses honey, to read Mr. Dan White's article on quality or quantity, published in 'Gleanings,' June 1, page 539. A few notes from Mr. White's article. The past two seasons. 'All the surplus honey came in 9 and 10 days. Now if quantity had been any aim, I should certainly set the extractor in motion, but as quality is my motto, first, last, and all the time, this honey was left in the hive as usual until August or September; but as these months gave so few warm days suitable for extracting honey, the most of the work was done in October.'

Q. Do the bees work both sides of that foundation ?

A. Both sides. Here is a section drawn out and filled up perfectly. The bottles are extracted honey. I brought them to show the different ways honey is sold, Mr. Gilbert said yesterday he did not know of any better way to keep the boys and girls on the farm than to give them something to call their own. What nicer industry could

they engage in than the bee industry, it is a pleasant and profitable occupation. Purchase two or three hives to give the boy or girl a start and let them supply enough honey for the home use and allow them to sell the balance and keep the proceeds. I know of many at the present time since I started bee keeping at the farm and who have gone into it and making a perfect success of the industry. One young man I know of is making at least \$500 a year out of his bees and working the farm besides. It is a paying industry when you go at it intelligently and give the same amount of attention as you do other branches of the farm. Do not imagine, as is too often the case, that all you have to do is to purchase the bees and they will do the rest. Provide for them and work with them and you will reap a rich reward.

By Mr. Ingram:

Q. Do you know of any grocers selling this honey in the chunk shape now?

A. Not in Canada, I am pleased to say, but sorry to say it is sold on tin pans and

taken out of brood chambers, it would be well if there was a law to prohibit its sale. The best way for the poor man to purchase honey is in the extracted form, see that it has good body, flavour and colour.

Mr. HEYD.—The poor man wants it in the section ?

By Mr. Wright:

Q. I sell 100 pounds in the section for every one in the liquid form ?

A. The quality of the comb honey is usually better than that of the extracted honey. Usually bee keepers are in too great a hurry extracting and put unripe material on the market. All extracting combs should be well sealed before attempting to extract, far better for the bee keeper to purchase extra extracting frames and allow the honey to ripen on the hive, then there will be no danger of fermenting.

Q. Isn't the comb harmful?

A. I don't think so. We try to use as thin a foundation as possible. You can scarcely notice the thin wax we use in the section. That is one of the reasons I don't like the idea of any person going in for chunk honey. You have such a nasty mess of honey, wax, &c. How nice the section honey looks. It is tempting. Cut it in small squares when it is put on the table no person will refuse to eat it. Chunk honey containing wax, &c., is put in pails and dipped out with a spoon. You cannot tell what you are eating. We were speaking of honey for the poor man. If he buys extracted honey at 10 cents a pound, I am sure that a pound of honey would go as well on bread and go as far is used in the same manner as would a pound of butter.

By Mr. Heyd:

Q. We sell at 10 cents in the liquid form, and 16 cents in the comb honey ?

A. There is, as a rule, more money to be made out of the extracted than comb honey. When running for extracted honey the same combs can be used many times, thus saving the bees a great deal of time in the busy season, but do not extract until the honey is thoroughly capped and ripened; far better to have extra frames.

By Mr. Robinson (Elgin) :

Q. Do you allow any of the bees to make their own foundation ?

A. No. We put in full sheets of foundation every time, both in the brood chamber and in the sections above. The object of that is we get straighter combs, we do away with too much drone combs that is not desirable, and we can take out the

frames to examine them at any time. That is the object of showing this cut on the chart. Here is a frame showing where the bees built the comb naturally. You see how uneven it is and how many drone cells there are. If a person allows them to build their combs naturally you cannot take them out without breaking them. Put in full sheets of foundation every time; the bees will then draw out the comb perfectly.

Q. When I was a boy we had bees and we allowed them to make their own founda-

tion ?

A. We find it much better to supply the foundation. It has been found that it takes 10 pounds of honey to make one pound of wax, so that it would be a saving of time and money to supply the wax.

By Mr. Blain :

Q. Would you give us the cost of those articles, starting with the protectors, the smoker, &c.

A. The veil costs 30 cents.

By Mr. Heyd:

Q. You could make that out of fly net?

A. Yes, then you want to purchase a little piece of silk for the front, so that you can see through it better. The smoker usually costs \$1.25, and it will last many years. The hives will cost about \$1.50 to \$2, according to the number of pieces. Brood foundation will cost 50 to 55 cents a pound. Section foundation from 55 to 65 cents per pound.

By Mr. Ingram :

Q. What amount of honey do you leave for the winter ?

A. We should leave 25 to 30 pounds in each hive.

By Mr. Ross (Ontario):

Q. What do these little sections cost? This hollow section, not including the foundation?

A. The sections alone cost about \$4 to \$5 a thousand. You can purchase them cheaper in large quantities.

By Mr. McEwen:

Q. Where do you buy these hives ?

A. You can buy them in many places. In Ottawa they are sold by the Capital plaining mill on Bank street, also McDougal & Cuzner, Rideau street; in Brantford, the Gould, Shapley & Muir Co. are large manufacturers, and in Chatham, Wm. Chrysler. There are many others who sell a full line of beekeepers' supplies.

THE CHAIRMAN.—I would like to be excused, as I have some important business

to attend to. I would ask Mr. Robinson to take the chair.

Mr. Robinson (Elgin) took the chair.

Witness.—Gentlemen, I do not spend my whole time at this industry. I look after the outside work of the Farm and simply put in an hour or two in the evenings. I think the time has come when we should spend more time at it. I feel safe in saying that if I devoted my whole time at it I could make it a very paying branch, not only to the bee keeper, but to the farmer, the fruit grower and the general public in their purchasing and use of honey. I have statistics here showing the amount of honey produced in Canada and the United States. I would like to see this industry keep pace with the dairy, poultry, fruit and several other branches, if it is possible to

2-26

do so. If we had instructors as they have I cannot see why we could not have a very large export trade. We know the country is flowing with milk and honey; the milk is being taken care of, but the honey is going off in the air.

By Mr. Ross (Ontario):

Q. About what size is the trade? How much honey is produced in Canada in value What is about the size of the trade? I ask in order to see whether it is worth while cultivating?

A. This report is taken from our last census. In the whole Dominion we have

\$356,816 worth of honey and wax.

Q. That is the products of the industry ?

A. Yes.

By Mr. Wright:

Q. For the year ?

A. For the year. The totals for the different provinces are as follows: Quebec, \$112,315; Ontario, \$228,517; New Brunswick, \$5,432; Manitoba, \$2,473; Northwest Territories, \$681; Nova Scotia, 2,187; British Columbia, \$4,940; Prince Edward Island, \$271. The United States at the last census gave the total value of honey and wax at \$6,664,904.

By Mr. Maclaren (Huntingdon):

Q. That is in about the same proportion with respect to population ?

A. I think we have a great deal of room for expanding the industry. We have the honey; all we require is bees and management.

By Mr. Ingram:

Q. Do you know of any movement among the bee men in Canada to go to Manila in order to raise bees in the winter time?

A. I do not.

Q. Do you know of any bee men leaving Canada for that purpose ?

A. No, sir, I have never heard tell of them. I know that the A. I. Root Company, of Medina, Ohio, is pushing the industry along in Cuba, but I have not heard of any person in Canada. Why can we not carry it on in Canada successfully without going to Cuba?

Q. I understand the claim is that the climate is better there, that the climate is against us and that the bees do better in that country in the winter?

A. I do not understand why it should be so. Is the quality of our fruit, our

butter and cheese not equal, if not better than theirs.

Q. What I am saying is that we have better honey than they have in the United States, but it is alleged that the industry in unprofitable here by reason of having to take 25 or 30 pounds of honey in order to feed the bees in the winter time, when in the warmer climate they can work all winter?

A. I hope you will not understand that it will take 25 or 30 pounds of honey to carry a colony over the winter when wintered in a good cellar? A colony of bees will not consume over 10 or 12 pounds, sometimes not that, but in order to be safe you must have 25 or 30 pounds of honey to carry them over successfully over to the fruit bloom and some seasons to the clover bloom.

By Mr. Wright:

Q. If you take them to a warmer climate they will not make any more honey than they require after the first winter. They will soon learn that they do not have to store it up for the winter?

A. That may be so, but we have the best climate in the world for producing quality, and quality is what we are after, not altogether quantity. The bee industry of this country is yet in its infancy, there is plenty of room for expanding the trade in Canada and an unlimited market for our products without going to Cuba.

THE UNCAPPING KNIFE.

Q. Is it thick on the back ?

A. No, it is sharp on both sides. When uncapping we have another can that we use for the cappings to drip into, we stand our large extracting frames on the side of the top of the can and shave the cappings off both sides of the comb, and any honey that may be cut, drops into the can, the honey is allowed to drip out and the wax afterwards extracted. When we get four frames uncapped, they are placed in the honey extractor, we turn the crank, and the centrifugal force drives the honey to the outside of the extractor. When we see that we have all the honey out of one side of the combs we give the crank a sharp jerk and it reverses the four frames so that the inside will be on the outside, and repeat the operation. When we have all the honey out, we put other frames in and put these back into the extracting supers. When we have sufficient honey in our extractor we open the tap and allow the honey to run down into the barrel below and over the top of this barrel you will notice we have a screen to catch any cappings that may be in it. Then we take it from there by another tap and fill up the pails or bottles, whichever is required to suit the market, if it is a city market, we usually want small bottles or 5 pound pails, if it is for the country market or the foreign trade, we usually want larger pails holding 50 to 60 pounds. For the home trade people are getting into the habit of buying 5 or 10 pound pails at each lot. I would say always use the pail with a cover that will come off altogether, do not use a small screw cap. By using the full covered pail, it will save you liquifying your honey should it granulate. The trouble in liquifying honey is that too many people put it into boiling water and leave it there too long, that causes it to lose its flavour.

By Mr. Ross (Ontario) :

Q. Is that the tendency of pure honey, to granulate ?

A. Yes.

By Mr. Wright:

Q. That is one test of pure honey I think ?

A. I would like to see people use the honey in the granulated form, although some like it better in the liquid form. A good plan to test honey. Take a spoon, dip it into the honey and if it sticks good and tight to the spoon, and the spoon will stay more than full, it is usually good honey. If it runs off the spoon like water I would not purchase it at any price, it is too thin and unripe. We always allow our honey to remain in the hive until it is thoroughly capped, and ripened. That is one thing that is very much against the honey trade in this country, the people before it is half ripe take it off, and the material is not fit to use. It is the same as a man taking green apples off the tree before they are ripe. Allow the honey to get well capped and ripe and there will be no trouble in getting sale for our goods.

By Mr. Ingram:

Q. What is honey usually adulterated with ?

A. Glucose syrup.

By Mr. Erb:

Q. If the honey were heated before being put up for the table, would that prevent or retard granulation?

 $2 - 26\frac{1}{2}$

A. I have never tried that.

Q. I have heard bee keepers say it would?

A. I have never tried it. Mr. Martin's plan is as soon as you fill the can with honey turn the can upside down, so that the honey will fill all the cracks around the top of the pail and prevent the air getting into it. He says that will keep the honey in the liquid form perfectly. I intend to try his plan this season. If we can get the honey to stay in a liquid form, I think it would be a great advantage, especially if bee keepers will allow their honey to ripen.

By Mr. Ross (Ontario):

Q. What is the cost of that can?

A. Penny lever honey can sold by Gould, Shapley & Muir, 5 lb. cans per 100 without bails, \$6; with bails, \$7; 10 pound cans, \$10.

Q. What is its size?

A. Five and ten pounds.

Q. Where is it made?

A. Any tinsmith can make them.

Q. What is that bottle you have there ?

A. That is an ordinary honey bottle. Gem jars will do just as well, but I think they are too expensive.

By Mr. Heyd:

A. No, they are not. They are useful for other purposes after you have got them ?

A. The queen or drone trap is another very useful arrangement in the apiary for those who have too many drones in their hives. The drone trap is placed at the entrance of the hive, the drones being larger than the working bees they cannot get out of these openings in the trap. He then finds his way to the upper part and cannot get back, is caught and destroyed.

The queen or drone trap is also useful to the man who has only two or three hives and does not want to spend time in watching swarms. He places it over the entrance and the queen finds her way up in the second division and cannot get back. When the keeper returns and finds his queen in the trap and the cluster around it, the bees may be shaken into an empty hive and release the queen and she will go with them. Should the queen be in the trap and the bees returned to the parent hive the frames may be taken out and most of the bees shaken into an empty hive provided, and at the same time release the queen, you will then have your swarm successfully hived.

By Mr. Wright:

Q. When they begin to rob, what do you do then?

A. We close the entrance to within one bee space, or cover the entrance with long wet grass, should it be a very bad case remove the hive that is being robbed to a dark cellar until evening then return it to its stand and close the entrance as above.

Q. Entirely?

A. All except one bee space. We scarcely have any attempt to rob, that is one of the troubles we have escaped. It is easy to get them started and hard to stop; take every means to avoid it.

By Mr. Wilson:

Q. How do you prevent it ?

A. Don't daub the hives in any way. Work at your bees in the evenings when there is no honey flow on, or you may work successfully during the day when the

honey flow is on. In certain seasons of the year robbing is very troublesome when there is no honey flow, such as between the opening of the fruit and clover bloom. You may also have trouble when you are taking off the honey in the autumn.

SWARMING.

Some people have great trouble in getting the swarms out of high trees. We have here a manums swarming device with extended poles. With this we can take a swarm out of the highest tree without any climbing. We put it up into the tree directly under the swarm, give the limb a sharp jolt and the swarm will drop into it, we turn it around closing the lid and the swarm will be in the catcher, carry it to the hive which has been prepared and on the stand where you intend to leave them, then open the lid and the bees will run into it. If you don't care to purchase a swarm catcher, you can make one yourself. Get a little iron rod and turn it around the top of a grain bag, fasten the bag to it then put the turned down ends of the iron into the end of the pole, you may also have extended poles for high trees for this arrangement. When you get your swarm in the bag it will lap around the pole and the bees will be successfully caught.

AFTER SWARMING.

One of the ways to prevent after swarming. When the prime swarm issues, place it on the old stand with the old colony close beside it. A week later remove the old colony to a new stand. In most cases that will put an end to all swarming. If it does not work satisfactorily with you, cut out all but one queen cell. I would not, however, recommend the beginner to cut out queen cells as he is liable to do more harm than good.

TO PREVENT SWARMS GOING AWAY.

A good plan is to cut the wing of the queen. When the swarm comes out and goes into the trees, they find their queen is not with them they return to their hive, and the bee keeper should be on hand to catch the queen, as sometimes she is lost. Cutting the wings is all right for a man who makes a business of it, or has his work near by so that he can catch the queen and remove the old hive and put a new one into its place, and when he sees the swarm coming back and entering the hive release the queen and his colony will be successfully hived.

WAX EXTRACTOR.

We have here on the chart a wax extractor. This is a new arrangement that has not been in use very many years. We found by extracting the wax by the sun extractor, there was too much loss. The sun was not strong enough to take all the wax out of the old comb by this new process. We get all the wax out of the old combs.

By Mr. Ross (Ontario) :

- Q. Then you get bee's wax?
- A. Yes.
- Q. Is there much demand for the wax?
- A. We cannot supply the demand.
- Q. Then you want more bees ?
- A. We want more bees and manipulators, and we want the people to carry on the results that we have tried in saving and using less of it. This can be accomplished by wiring all frames with seven or eight vertical wires.

Q. Are those foundations made of beeswax ?

A. Yes.

By Mr. Blain:

Q. What is the cost of this wax extractor?

A. \$14 to \$15.

By Mr. Ingram:

Q. Speaking of the difference between the thick and the thin foundations, by using the thin you use less wax?

A. Yes.

Q. Are you saving anything in expenditure—doesn't your wire cost you as much—and the work and labour?

A. No, sir, the wire can be purchased very cheaply. Ten cents worth of wire will wire 100 frames; in 100 frames we save at least four pounds of foundation at 50 cents per pound.

By Mr. Heyd:

Q. The cost amounts to nothing except the wax itself?

A. The wax itself is the greatest cost in filling frames.

By Mr. Wright:

Q. The wire strengthens the comb?

A. Yes.

By Mr. Ross (Ontario):

Q. What is the value of this wax ?

Ar Twenty-five to 35 cents a pound in the rough; 50 to 65 cents when made into foundation.

Q. Does it pay to produce it at that?

A. It is a by-product.

By Mr. Wright:

Q. It is a by-product ?

A. The rough wax is secured from cappings. It is also made from very old combs after being extracted by the sun or by the steam process.

By Mr. Ingram:

Q. Will you give us the cost of the thin sheet and the cost of the thicker sheet ?

A. For broad foundations 50 to 55 cents and 60 to 65 cents for section foundations.

By Mr. Ross :

Q. There is a difference in the colour of these? Is it due to the one being thinner?

A. The light coloured foundation is made from the cappings of extracting combs; the other is made from the old dark combs out of the brood chamber that have been melted up and made over into foundation.

By Mr. Blain :

Q. Last winter was a very severe winter on bees. Will you give us an explanation?

A. One of the great difficulties is that people did not provide enough honey in the hives to carry their bees over winter and too many winter their bees outside and in

houses above ground and other ways that are not suitable. We have tried extensive experiments in wintering bees, and we found they should always be wintered below the ground so as to be able to keep an even temperature; we have been very successful in wintering in cellars, root houses or in a pit dug in a dry hillside. See Experimental Farm Report 1896, page 266, for full details on wintering. The people who have wintered their bees outside you will notice all over the country have had very great losses. The reason is owing to the severe winter with continued cold weather the bees could not break their cluster to get to the honey, although they had abundance in the hive; the consequence was they starved to death. I compare wintering bees in the cellar as against outside to the man who winters his cattle around a straw stack as against the man who winters his cattle in the barn. I would say it was just as important for people in western Ontario to winter their bees inside as it was in this district. Any country where the temperature goes 10 below zero bees would winter to a better advantage below ground than above; the difference in stores consumed would very soon pay for a good bee cellar. See that you have good ventilation wherever you winter, as ventilation is a very essential point to successful wintering.

By Mr. Ingram :

- Q. Supposing you had 50 hives of bees, would you consider it better to kill some of them instead of keeping every one of them over winter?
 - A. No, I would keep very one of them.
- Q. Some beekeepers who have not much supplies prefer to kill off some of their hives instead of keeping them over the winter.
- A. I am very sorry to hear that, because every hive of bees is worth \$5, and what is the use of throwing that amount of money away.

By Mr. Heyd:

Q. What kind of fad would raising bees be for pleasure ?

A. It would be a money making fad combined with a great deal of pleasure. I know of many men who would keep bees for the pleasure it affords them supposing they never made any money by it.

Q. I have had experience. A friend of mine who is keeping bees for pleasure the first year had 150 pounds of honey, he supplied all his friends with honey and used all he wanted himself and had some to sell. He was down here visiting parliament for a few days and after showing him around I asked him: What would you like to see now? And he replied: Nothing; I will go back to my bees.

A. You are quite right, sir. Any person who gets interested in bees can take a great deal of pleasure out of them and what makes it more pleasant is the financial part of the business.

By Mr. Clancy :

- Q. I want to ask for information, you know better than I do, but the question has been discussed about the facilities for making honey. The class of trees, basswood and others that was so very plentiful at one time, and also the white clover that was plentiful on the land uncultivated for the time being, these having largely disappeared, and in view of what you have said about it being a money making enterprise, what is the general outlook left, according to present conditions for a large quantity of good honey being produced in this country as well as being a money making industry. You no doubt have considered that question, and perhaps is was discussed before I came in?
- A. It was discussed before you came in. We are working on Sanfoin clover, at present to work in between some of these plants. We do not say that Sanfoin clover is really the best, but it is the best we know of at the present time. We hope to go on

experimenting and importing plants, trees and shrubs and get something better than any of the plants and trees on hand, in order to keep up the honey flow.

Q. Who is to do that ?

A. Whoever is in charge of the Experimental Farm Apiary should be allowed their full time to devote to this important branch of work. Who is it that advised the farmer to go into dairying, raising corn, roots and other fodders, the latter being one of the secrets of success in dairying? Growing plants for the honey bee is badly needed, also, instructions as to management. We have dairy instructors all over the country; does not the bee keeping industry warrant their share ?

By Mr. Heyd:

- Q. The lady who now spends her time in tatting will devote her time probably to the raising of bees in the future and make money?
- A. There are many ladies at the present time working at bees and find it a very profitable business.

By Mr. Clancy:

- Q. I am asking rather for information than in criticism. If a man has a dairy herd, he provides his own pasture and gets the benefit of it, but if I sow Sanfoin clover, and I wish to feed my bees, I have to feed the bees of every other man in the country who is within reach of it, and who does not grow any, therefore it discourages me ?
- A. We want to advise farmers to grow such clover as will produce more and better fodder than he is now growing, keeping the honey bearing plants in view, then there will be enough for all.
- Q. Yes, but if it is not to their interest to grow it for other purposes they are not likely to do that, neither has every man bees?
- A. That is what I showed here this morning, that it was to the farmers and fruit growers interest to grow clover for other purposes, and it is to the interest of the farmer to keep bees to fertilize his clover that he may succeed in getting a good crop of seed, and to the gruit growers interest that he may have the pollen distributed to the blossoms that are not fertile that he may have perfect fruit and a full crop of it. I attended 27 meetings of farmers, fruit growers and beekeepers this year and at each of those meetings I gave full information as to the value of growing clovers for fodder, seed and its usefulness as a soil restoring plant.

Q. I suppose other subjects were discussed there besides bee keeping?

A. Yes, many others. I advised people to go into bee keeping, because I know from experience the value from a pecuniary standpoint : I am a farmer, more than a beekeeper, but I have had experience enough with bees to be able to work the industry successfully. Farming, gardening and beekeeping must work together. I would not at the present time advise any one to work it as a special branch.

By Mr. Robinson (Elgin):

Q. You consider it an excellent branch connected with farming, fruit growing or poultry?
A. I do.

Q. And recommend every farmer to get a few colonies of bees ?

A. I do. But I do not say every farmer will make a success of it. There is, however, usually one in the family who will make a success of it. and that one should be given special charge. Supply the home with all they require and be allowed to keep the balance or the proceeds. This is one of the plans to keep the boy or girl at home, give them something interesting to work at in leisure hours that will be profitable. You may say that if every farmer goes into the industry we will have too much honey. There is no danger whatever of that, because there is not one house

in ten the people in which scarcely know the taste of honey and why should they not. Let us go into the industry and produce lots of honey so that it can be used on every table in the country.

By Mr. Maclaren (Huntingdon):

Q. How does honey compare with other foods, economically and hygienically and along that line ?

A. I think it will compare very favourably, honey is cheaper than butter and preserved fruit if used with the same care.

Q. The trouble is that people want butter and honey both?

A. That is where the trouble has been, people have looked upon honey as a luxury, only for the rich, whereas it is a good cheap food for all.

Q. What about buckwheat honey ?

A. It is much darker and has a much stronger flavour than clover honey, but is liked by many people; clover honey is always in the greatest demand.

Q. Buckwheat honey sells cheaply as compared with the rest? Is it wholesome?

A. Yes.

Q. How is it, it is so dark ?

A. It is because of the nectar that is gathered from the buckwheat being darker.

We were speaking about wintering bees. As I said people try to winter in outhouses and above the ground, and sometimes in garrets they could not winter in a worse place as the temperature in such places is so changeable, whereas wintering below the ground has given the best results. The increase in the amount of honey consumed between the outside and inside wintering will more than pay any one who has 100 colonies of bees for building a proper place to put them in. I would say put them either in a good cellar, a root house or in a pit, the cellar is preferable.

When we started bee keeping on the farm our cellar was not as good as it ought to be. There was no system of ventilation and the hives got damp and mouldy, and were greatly troubled with mice and rats; after a year or two we put in a cement floor and extra ventilation which we find gives good satisfaction.

Q. How many do you usually winter?

A. About 50 colonies. I had no losses this year in the cellar, but in the experiments outside I lost six hives.

By Mr. Blain :

Q. Do they require attention in the winter?

A. Not from the average person, but of course I go down into the cellar frequently, more for the purpose of obtaining data and for experimental work. I have some very useful experiments in feeding bees.

Q. That is winter feeding ?

A. Yes.

By Mr. Wright:

Q. Do you not put a piece of perforated zinc in their hives to keep the mice out?

A. No, it is done too often by the beginner when he puts his first colony into winter quarters, he thinks he must put something at the entrance, thinking it will keep

them in. Once the bees find themselves locked up they will try harder to get out; far better to have the entrance open three inches by the width of the hive; this will give extra ventilation, and they will not attempt to leave their hive.

Q. No, to keep out mice.

A. No, sir, it is all wrong, we should try to keep out the mice in other ways. If you put the wire screen there the bees will crowd against the entrance and will very soon be smothered.

. By Mr. Ross (Ontario):

Q. You cannot get the air into them then ?

A. They cannot get sufficient air if wire screens are put at the entrance, unless it is a very large mesh. Every person who has a colony of bees should put a block between the bottom board and the brood chamber in order to give extra ventilation, and when you look along the shelves in the winter time, you can see the cluster hanging there, but blocking up the entrance entirely usually causes the bees to smother during the winter.

By Mr. Wright:

- Q. I have wintered them that way, but I always had the screens there to keep the mice out.
 - A. Your wire must have been large enough to allow the bees to go through?
 - Q. Yes, but small enough to keep out the mice.
 - A. Then you did not remove the wooden covers ?

SHOWING CUSHION FOR DAMP AND COOL CELLARS.

We advise removing the wooden cover and place chaff cushions directly on top of the frames, it absorbs moisture and keeps in the heat. If you are troubled with mice the cushions will not the found an advantage, as they seem to be a sort of harbour for them. I would say have your cellar fairly dry and thoroughly ventilated, do not go to the extreme in either cases, too dry is not good nor yet too wet. I would not advise a heavy draught through the cellar, as sudden changes of any kind should be avoided as it disturbs the bees.

By Mr. Wilson:

Q. If you have a furnace in the cellar wouldn't that make it too hot ?

A. When you have a furnace you should board off a portion to keep the heat from the bees and keep the temperature of the cellar from 42° to 48° for the bees, have your ventilator arranged so that you can regulate the temperature to suit.

Q. Just like a vegetable cellar?

A. That would be a little too hot for vegetables. Too many of our homes have not sufficient ventilation. If you go through the country you will find cellars filled with roots or potatoes and the only ventilation that is afforded is when the cook goes down for dinner potatoes and then the house is filled with the odour, from the roots and vegetables. Here is a very cheap and simple method. We have a coal stove in the room above the cellar, I took the first length of pipe to the tinsmith and got him to put a three-inch collar or T on it and had him make a three-inch pipe with a damper in it that would go through the floor of the room and extend to within 9 inches of the cellar floor. This little ventilator works perfectly. The heat from the coal stove appears to draw the cool air from the cellar. If you have a furnace, arrangements are usually made to take up the draught or foul air. If you have no furnace or coal stove and cannot provide the pipe attachment, put an ordinary six-inch stove pipe

provided with a damper direct from the chimney to the cellar and you will also have a successful ventilator.

FEEDING BEES IN WINTER QUARTERS.

Many letters have been received from people who have only a few colonies of bees stating that when carrying their bees into winter quarters, they had discovered there did not seem to be sufficient store of honey in the hives to carry the bees through the winter. To gain information as to the best method of overcoming this difficulty, the following experiment was tried with six strong colonies of bees:—

Four frames of sealed honey were taken from each of the six hives, leaving the cluster on the four remaining frames. The four frames were left in the centre of the hive with a division board at each side and some light packing placed between the division boards and the sides of the hive. The wooden covers were removed and replaced by large propolis quilts made of heavy canvas. Over the top of this propolis quilt, extra packing was added to keep in the heat, absorb the moisture and prevent draughts or upward ventilation. The bottom boards were left on as they came from the beer yard, leaving the entrance wide open. The experiment was made as follows:—

1. Two colonies received maple sugar of the best quality.

2. Two colonies received partly filled section of honey.

3. Two colonies received thick honey and sugar made into cakes.

Each colony when put on this test weighed 31 pounds and each was given 5 pounds of its respective food to start with. The experiment lasted from November 18, 1902, to March 22, 1903. The two colonies fed on maple sugar consumed 11½ pounds each, they were examined every two weeks, and water added to the sugar through holes in the tops of the cakes, keeping it soft and moist. The two colonies fed on partly filled sections of honey, consumed during the same time 14¾ pounds each. There was for several reasons considerable waste in this test; consequently if partly filled sections could be sold even at a reduced price it would be advisable to sell them instead of feeding back. The two colonies that were given prepared honey and sugar, consumed 10¾ pounds each. The candied honey was moistened from time to time which made it easier for the bees to suck it up.

Honey and sugar cakes are made as follows: - Take good thick clover honey and heat (not boil until it becomes very thin; then stir it in fine granulated sugar. When the honey has dissolved the sugar, pour it into another vessel, and when it has cooled sufficiently, thoroughly knead it with the hands. The kneading makes it more pliable and soft, so that it can take up more sugar. The kneading operation, with the adding of fine sugar, should be continued until the dough is so stiff as to be quite hard to work. It should then be allowed to stand for a day or two and, if at the end of that time it is soft as to run or to be sticky, a little more sugar should be kneaded in, so that it may be cut in cakes of a convenient size. These cakes are to be placed on top of the frames in such a way that the bees can get at them easily. The colonies in all the three tests came through in excellent condition. Any one of the three methods may be safely followed, but I would strongly recommend examining and weighing all colonies the first week in September. At that time every colony should have a good laying queen, and should weigh over 50 pounds. In season when there is no autumn flow of honey all colonies in Langstroth hives weighing less than 50 pounds in September should be fed up to that weight at least. The best method for getting colonies up to the required weight is, when the extracting takes place, to save several full well sealed combs, then remove some of the light ones out of the hive and replace them with the heavier full frames. If no honey is available feed sugar syrup. This plan is rather a tedious one and great care must be taken not to daub the hives or appliances, as robbing at this season of the year is very easily started and very hard to stop.

If the colonies that are short of stores are weak or few in number of bees, they should not be fed with syrup. In order to provide for them, feed the strongest colonies

you have, for instance, by putting in their hives extra frames and feeding the syrup in a Miller feeder. A good strong colony will take down 10 to 15 pounds in a warm night. Continue the feeding until you have sufficient extra frames well sealed to make up the required weight. The extra full frames are then removed and given to weak colonies that are short of stores; by this method there will be very much less danger of robbing, as the strong colonies are well able to look after themselves. Sugar syrup may be made as follows:—

Use the best grade of granulated sugar, two parts to one of water by weight. The water should first be brought to a boil. Then the pan or vessel set back on the stove so that the boiling will not continue, but the water kept sufficiently hot to dissolve all the sugar. The sugar should be poured in slowly and thoroughly stirred until all is dissolved. The syrup should then be fed in lukewarm condition.

INSULATING HIVES FOR OUTSIDE WINTERING.

Two colonies of equal strength, with good laying queens in Langstroth hives, were taken for this experiment. The hives were insulated against the winter cold by air cushions in the following manner: Slats 1 inch thick are nailed at intervals all around the hive; on these is tacked one layer of thick brown building paper and then a layer of oiled paper, which increases the durability and keeps out vermin. In order to provide extra protection to the hive, a box six inches wider and six inches longer was placed over it with an opening cut at the entrance 1 inch by 2 inches, all other openings being closed. The wooden cover of each hive was removed and replaced with a chaff cushion 3 inches thick, the latter placed on the propolis quilt and lapping over the sides of the hive; two layers of paper were then placed on the top of the cushion and a second cushion added, with the top of the outside box over it. The bees were put into winter quarters on November 18. No sound could be heard from these colonies all winter up to March 10, when a slight hum was perceptible. On March 20 the first bees made their appearance; there were many dead bees at the entrance of the hive. On March 21 the outside cases were removed, leaving the paper and one chaff cushion on during the cold spring. Upon examination one colony was found to be in fairly good condition, the other very poor, with many dead bees on the bottom board. A few days afterwards the latter was found to be deserted. The frames in both cases were all dry and clean and had abundance of honey to carry them through November to the clover bloom. Weight when put into winter quarters, 53½ pounds each; in spring, 374 pounds each. Owing to the cool, backward spring the surviving colony did not build up until May 1, when warmer weather set in; the bees at once began gathering pollen and built up very rapidly. The colony was in excellent condition for a honey flow, but during May and the early part of June the weather was very dry and warm, keeping all bloom backward; the bees therefore made very little surplus honey.

DAMPNESS IN WINTERING.

Experiment to test whether dampness or moisture would be injurious to bees in their winter quarters. Three colonies were selected for this experiment all of about equal strength, and all in Langstroth hives, weighing on an average 55½ pounds each. The wooden covers were removed from the hives and replaced with propolis quilts, the bottom of each hive was loosened from the brood chamber and a block two inches square was placed at each corner between the bottom board and the brood chamber, insuring free ventilation from the bottom of each hive. Four pails of water were then put on a table in such a way that the three hives were set resting on the edge of the pails, allowing the full surface of water to be exposed. The cellar was kept at a very even temperature of 42 to 48 degrees, and was well ventilated during the whole winter.

The bees could be seen hanging below the frames in a quiet cluster, and there were very few dead bees on the bottom board, and no sign of dysentry. On March 22, the day being fine, the colonies were removed to the bee yard, where all began flying at once. Average weight of the three colonies when set on their summer stands, 43½ pounds each. From March 22 to May 1 the weather, although bright was cool and windy, and very little flying took place. After May 1, the weather became considerably warmer, and the bees began building up rapidly. They were in excellent condition by May 24. Ventilation is one of the secrets of successful wintering.

By the Chairman:

- Q. You have told us the value of bees and that we must prepare food for the bees. You want everybody to keep bees. Give us what you think would be the proper thing to sow. You have told us about Sainfoin and other things; what should be planted to provide for the bees during the year?
 - A. That is, for the summer ?
 - Q. Yes.
- A. I would say that Sainfoin is the best clover we have found up to the present time.
 - Q. Sainfoin don't last all the year; we want something else besides Sainfoin.
- A. Then I would take Sainfoin, White, Dutch Alsike, Bokhara or Sweet clover and Buckwheat. There are many others that would work in between.

By Mr. Ross (Ontario):

Q. They bloom at different periods.

A. Yes, sir.

By Mr. Heyd:

Q. I want to ask a commercial question. You know Brantford is a kind of centre of the bee industry owing to the large manufacturing establishments there engaged in the trade. There is an effort being made there to induce the government to spend money for a fresh honey exhibit in the old country if it can be made commercially a success. Do you think that might be made a success to export to England.

A. I would not advise it at the present time. Too many shipments of inferior honey have been made and have done more harm than good, should we have a competent inspector to see that nothing but a first class article goes over, it may then be an advantage to have such an exhibit. I have made exhibits of honey from the Experimental Farm in England, Scotland, Ireland, France, Japan and all the leading exhibitions that have been held in the United States within the last ten years. Our last exhibit has gone to St. Louis.

Bu Mr. Wilson:

Q. How did it come out in Japan ?

A. We do not get any awards for government produce.

By Mr. Ross (Ontario):

Q. Do you get special mention ?

A. Yes, special mention every time.

By Mr. Clancy:

Q. Are they classed so as to show what standing they had along side those that get prizes?

A. The experimental farm honey exhibit is usually shown with the Dominion grain exhibit, more for an advertisement of the country than to compete for prizes.

By Mr. Heyd:

- Q. The object as I gather is to give more an ornamental exhibit and round up the appearance of the exhibit. It is what Professor Robertson told me it was done for rather than from a commercial standpoint. He did not believe we could educate the English people to make it a commercial success.
- A. We must first supply our own market; when we see the necessity of a foreign market it is there waiting for us, any person who has the right quality to ship, and can supply it regularly, can get the names of reliable men in England that can sell all they can supply. Our object in putting up these exhibits is to let the people of the different countries know that we have got the goods here and can produce an article of the finest quality, and when we want to find a market we will then remind them of the exhibits that we have made.
 - Q. Is it true that we have had large exhibits there and got no receipts for them?

A. I think the blue book shows receipts.

Q. I mean paying receipts ?

A. I cannot tell the price the honey was sold at after being exhibited, the commissioner of exhibitions has full charge after the honey is received.

By Mr. Ross (Ontario):

- Q. Is that almost a perfect section (exhibiting section of honey produced by witness) ?
 - A. Yes.
 - Q. That is an ordinary section of honey? A. Yes.
- Q. What does it cost in ordinary work, what is the actual cost, taking everything into consideration, that section of honey, covering and all.
 - A. I could hardly give you that off hand.
 - Q. It sells at from ten to fifteen cents.
 - A. The section costs about \$4 to \$5 a thousand.
 - Q. I want the cost of the honey, too ?
 - A. About four cents would pay all expenses.

By Mr. Wilson:

- Q. That would be a good thing to take into consideration and make a careful estimate of the cost.
 - A. I could do that for you.

My Mr. Clancy:

- Q. It has been said that no prizes are given to any government exhibit. I suppose the disposition was to encourage private enterprise as much as possible. I understand they were classed. Were they classed so that you could compare them with the exhibits of other countries?
- A. I cannot tell. I have not attended the exhibitions myself. The honey was sent in charge of the Commissioner for Canada.

By Mr. Heyd:

Q. At the Pan American we got second prize. The Americans got first and we got second, and there were two exhibits.

A. The experimental farm honey was kept in the Canadian building, and was not shown against any other.

By Mr. Ingram :

- Q. In discussing this business with the Beekeepers' Association, did they complain of honey being adulterated by some in competition with their honey on the market.
 - A. They did.

Q. What did they suggest ?

- A. They suggested the government be asked to enforce the law in the inspection of honey, a motion was made at the Ontario Beekeepers' Association meeting two years ago appointing Professor Shutt to have an interview with the Inland Revenue Department here and ask them to send inspectors to certain places where it was known that this adulterated material was being sold, and from the report the honey was really adulterated.
 - Q. Will you now tell us who are the parties accused of adulterating the honey ?
- A. I find taken from the Inland Revenue Report, No. 90, out of 99 samples, the report gives doubtful 5, adulterated 2, adulterated with glucose syrup 6, adulterated with cane sugar 5. The names are as follows: Dearborn & Co., Montreal, adulterated by addition glucose syrup. The Montreal Canning and Preserving Company, adulterated by addition glucose syrup; the Upton Company, Hamilton, Ont., adulterated by addition of glucose syrup and cane sugar. Deadmaris, Brussels, Ont., Campbell Bros., and Wilson, Winnipeg, Upton & Co., Hamilton, sold in Winnipeg by J. G. Hargrave, Bright & Johnston, Winnipeg, A. Malcolmson, Chilliwack, A. G. Davies, Strathcona, and A. W. Ward, Calgary, all marked adulterated.
 - Q. What class of people?
 - A. Some were storekeepers.
 - Q. As their own production ?
 - A. That I cannot tell.

By Mr. Maclaren (Huntingdon):

Q. Do they get it pure and adulterate it ?

Q. Yes, they buy pure honey and adulterate it mostly with glucose.

By Mr. Ingram:

Q. That is the class of honey you are recommending ?

A. No, I recommended section honey for the beginner, and as he gains experience go in for extractors. There are many markets that demand section honey, others extracted, whatever your market calls for go in for that kind.

By Mr. Maclaren (Huntingdon):

- Q. What kind of honey was that which was adulterated ?
- A. Liquid honey.

By Mr. Ingram:

Q. That is where the chief adulteration takes place.

- A. Yes. The best way to find out if it is adulterated is by chemical analysis.
- Q. If I understand you, the section honey is not so subject to adulteration ?
- A. No, it is not so easy to adulterate it. The only way to adulterate section honey is to feed the bees.

By Mr. Ross (Ontario):

Q. Honey itself has been sold with other things.

A. Yes. Glucose syrup and cane sugar has been found mixed with honey.

Q. Therefore, they would be able to heat it and then cool it again, and the adulteration would not be detected.

A. It can be detected by chemical analysis. The sellers of adulterated honey have a means of getting round the law. The package is labelled 'Honey, and the word Contents,' in very small letters, the word contents should not be allowed on the label, as it is not usually observed by the purchaser, and he is therefore purchasing something he does not expect to be getting.

By Mr. Wilson:

Q. What do you mean by that ?

A. That there is other material there than honey.

By Mr. Ross (Ontario):

Q. Are there merchants selling it that way ?

A. Yes, sir.

By Mr. Heyd:

Q. I fancy that they mean the bottle included?

A. No, sir, the mixture that is in the bottle.

By Mr. Ross (Ontario):

Q. They should label it pure honey and jar.

A. If labelled 'pure honey' that would be sufficient; an excellent label would be the producer's name and Pure Honey. My experience is if you find it is marked 'honey and contents' you can make up your mind that there is something more than honey there.

By Mr. Wilson:

Q. Did you draw the minister's attention to that ?

A. No, sir.

By Mr. Ingram :

Q. Is not that against the Adulteration of Food Act ?

A. Certainly it is; if we could have that adulterated material done away with it would be a great benefit to bee-keepers.

By Mr. Wilson:

Q. You ought to suggest that to the minister, I think.

By Mr. Blain:

Q. Do you make any suggestion in regard to that in your printed report ?

A. I have not done so.

By Mr. Ingram:

Q. Do the Beekeepers' Association, in their meetings, have any discussion on this question; have they not brought this up at some time or other, that the department should take some interest in placing this honey on the English market?

A. They have.

Q. What were their recommendations ?

A. That a competent man be appointed to inspect honey going from this country, to see that none but a first-class article was sent.

Q. And on its arrival there, what did they recommend ?

A. The decision was they would get from the commissioner's branch in Ottawa names of reliable dealers in England who would handle their honey, have it shipped to them and put up in such packages as the market demands.

Q. And that the department would ?

A. Communicate with the dealers. The dealers at the present time are in communication with the department; Mr. W. W. Moore, who is chief of the market division, has letters now from several people in England asking for Canadian honey. One of the difficulties we have found in reference to this question is that we have not been able to supply honey every year. Take as an instance this year we had a very large crop, but next year we may have a poor crop; that is one of my reasons for saying we ought to have more instructors and more investigations for this branch to find out the different kinds of plants that bees will feed on regularly in order to keep up a constant supply for these markets.

Q. Supposing these people kept a first-class sample of honey at some central place in the old country where all the people in London who desired to inquire for themselves might test it, then if they preferred this honey they could ascertain where it

could be procured. Would not that be a good plan?

A. It would, sir, for those who wished to send their honey over there, but our own country is not supplied at the present time.

Q. I want to differ from that, my friend, because I know we have honey producers

who want to send it to England?

A. There are men shipping honey regularly to England at the present time, Mr. McEvoy of Woodburn, Mr. Dickson of Lancaster, J. B. Hall, Woodstock and several others, send their honey there and make a profitable business out of it. But they are men who know honey when they see it, and know how to produce a good article. The secret of success in sending honey to England is getting honey of the right quality, honey that will stand the test when it gets there, too many people in this country have an idea that anything will do to ship, that is a great mistake; one shipment of poor material is sufficient from any man.

By an hon. Member:

Q. There is a class of men who are not extensively in the business, but who fur-

nish a quality of as good honey as any, I am speaking in that sense ?

A. Yes, sir, there are many, but such men usually find sale for all they can produce at home and at a better price than can be secured in England at the present time. If they choose to send it to England there is a market for them.

By Mr. Richardson :

Q. You made a statement just now with reference to the adulteration of honey by storekeepers. Have you any evidence of that being correct—that it was done by the storekeeper ?

A. I have already given names and addresses taken from the Inland Revenue

Department report. I do not know whether they are storekeepers or not.

By Mr. Ross (Ontario):

Q. Could it not be done in the separation more easily than anywhere else ?

A. Sugar syrup could be added.

By Mr. Richardson:

Q. Do you not know that honey is offered to storekeepers by the beekeepers which is largely adulterated?

A. It is adulterated by some person and sold by the storekeepers, the storekeeper

is as liable to adulterate honey as any one else.

Q. Men who go into the business and get enough honey from their bees, enlarge

their production in that way?

A. The beekeeper could adulterate honey as well as any person, but it is not usually done by beekeepers.

DAMPNESS IN CELLARS.

Experiments to test whether dampness or moisture would be injurious to the bees in their winter quarters. Three colonies were selected for this experiment, all of about equal strength, and all in Langstroth hives, weighing on average 551 lbs. each. The wooden covers were removed from the hives and replaced with propolis quilts; the bottom of each hive was loosened from the brood chamber, and a block two inches square was placed at each corner between the bottom board and the brood chamber insuring free ventilation from the bottom of each hive. Four pails of water were then put on a table in such a way that the three hives were set resting on the edge of the pails, allowing the full surface of the water to be exposed. The cellar was kept at a very even temperature of 42 to 48 degrees, and was well ventilated during the whole winter. The bees could be seen hanging below the frames in a quiet cluster and there were very few dead bees on the bottom board, and no signs of dysentery. On March 22nd, the day being fine, the colonies were removed to the bee yard, where all began flying at once. Average weight of the three colonies when set on their summer stands, 431 pounds each. From March 22 to May 1 the weather, although bright was cold and windy and very little flying took place. After May 1 the weather became considerably warmer, and the bees began building up rapidly; they were in excellent condition by May 24.

Having read over the above transcript of my evidence, I find it correct.

JOHN FIXTER,

Apiarist, Central Experimental Farm.

FORESTRY AND FRUIT RAISING

House of Commons, Committee Room 34, Wednesday, April 13, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., the Chairman, Mr. Douglas, presiding.

The CHAIRMAN.—Gentlemen, we have before us this morning Mr. A. P. Stevenson from Nelson, Manitoba, who will speak to us on forestry and fruit growing in Manitoba. I have not the personal acquaintance of Mr. Stevenson, but I know he is a well-known authority in Manitoba and has made a great success of fruit growing.

Mr. Stevenson.—With reference to the subject which the Chairman has introduced, that is fruit growing and tree planting in the west, I might say that it possibly would be well that I should speak for a little while on the growing of trees before introducing the subject of fruit growing in Manitoba. My own experience with regard to the growing of trees in Manitoba has extended over a considerable length of time. I might say that in Manitoba I have been farming for 30 years, but during all those years, I have always been interested to a greater or less extent in the growing of trees, fruits and flowers in the prairie province. Consequently, I have given that subject a great deal of attention, and I presume it is to give you somewhat of the experience of those years, gleaned after considerable time, that I am here to-day.

FOREST TREE GROWING IN MANITOBA.

With regard to the planting of trees I might say that it is evident to those who have visited the prairie country in the west that the pioneer settlers did not take kindly to it. I have noticed that and the only reason I can assign for it was the fact that our early settlers largely came from the province of Ontario where the best years of their lives had been spent in grubbing out trees, and they were taught to look upon the tree as an enemy. Consequently, it is not to be wondered at that the planting of trees has no charms for them in the west. That is one of the reasons why so little was done by the early settlers in the planting of trees.

Another thing was the fact that it was rather difficult to get suitable varieties of trees. A good many of our people away out on the prairies found it a difficult matter to get suitable varieties, and also, these men did not understand as it were, the first principle of tree planting on the prairies. They did not understand how to prepare to-plant, because in travelling through the country you will find that there are a great many who have made efforts to grow trees, but their efforts were pretty nearly all misdirected, because they did not understand the proper preparation of the soil.

THE BENEFITS OF SHELTER BELTS.

Now, we will treat for a little while on some of the benefits to be derived from the shelter belts in Manitoba. The first of the benefits than can be derived from a 2-28

good shelter belt in the prairie, west, is the growing of fruit. I might say that it is absolutely necessary that in order to succeed in the growing of fruit, either small fruits or any kind of fruits, that we should have shelter of some kind in that country. That is one of the benefits.

Another benefit is the fact that in planting trees it improves the value of the property should we ever come to dispose of it. It is a fact that there is nothing we can do on a farm that will increase the value of it so quickly as the planting of a good shelter belt. We know that from our own experience. Down where I live in Southern Manitoba I have noticed that during the last two or three years a number of men have disposed of their farms. A good many Americans are coming from the other side and they are buying out property there. We find those men thoroughly appreciate a farm with a good wind break, and they will give from \$800 to \$1,000 more for a farm, everything else being equal, that has a good shelter belt growing on it, than for one that has not. These men that are selling out are moving further west.

By Mr. Wilson:

Q. Will you tell us something about the extent of a shelter belt that will bring that much extra on the farm?

A. A shelter belt running to the extent of say four to five acres. That is what we would call a good shelter belt, 4 to 5 acres, and planted principally on the north and on the west of the farm buildings. On the north and upon the west, from four to five acres.

Q. Do you mean just the length of four to five acres each way ?

A. Well, we generally advise the planting, say on the north from 20 to 25 rods long, and on the west the same distance 20 to 25 rods. That will include in an L-shape pretty much all the farm buildings. So I say this matter of planting trees has largely increased the value of property in that way.

Leaving out the aesthetic side of the question altogether, it is utterly impossible on the prairies to have a home that looks like a home, or that feels like a home, without trees, because there is nothing that can adorn the home so quickly or so cheaply as the planting of trees. It makes the home attractive, and of course the trees cost very little to grow from seed.

THE SYSTEM ADOPTED TO AID TREE PLANTING.

Now, with regard to the planting of trees and the system that has been lately introduced by the Dominion government. Three years ago the Dominion government introduced the scheme of tree planting whereby any settler on the prairie portions of the west could get trees, a certain proportion of trees, by preparing his land thoroughly and following out certain conditions which are found embodied in the scheme of co-operative tree planting. I might say with regard to this scheme, this question of co-operative tree planting, that during each summer of the last three years I have been engaged as a forestry agent in Manitoba.

By Mr. Ingram:

Q. By what government were you employed ?

A. By the Dominion government, by the forestry branch, for a while during the summer.

By Mr. Wilson:

Q. How long ?

A. It generally extended from towards the middle of April to about the time the snow flies in the fall.

Q. How were you paid ?

Q. Paid by the month.

Q. How much ?

A. \$100 per month. I furnished my own team, driving through the country in that connection.

DISTRIBUTION OF TREES AND PLANTING REGULATIONS.

I might say being in connection with that matter that I am pretty well acquainted with the workings of this scheme, and all connected with it and by being connected with it I am brought into contact with the farmers and see and examine all the lands pretty much that are planted by trees under this co-operative tree planting scheme, so far as the province of Manitoba is concerned. Now during the year 1901 from the forestry branch were sent out 50,000 trees to Manitoba and the Territories. During the spring of 1902, 45,000 trees were sent out. During the spring of 1903, about 1,000,000 trees were sent out, and this spring it is estimated that there will be fully 2,000,000 trees sent out, that is, to parties whose farms have been examined as to the proper preparation of the soil and as to the proper lay out of those trees, the proper place to plant them, because I might say that one of the things which has generally gone to militate against the planting of trees by the average settler without any advice, is the fact that trees were not planted in the proper place. They realize that after some time when the trees begin to grow and to afford some protection, in nine cases out of ten, they realize they have made a great failure in planting trees too close to their buildings and also too far apart. A great many of these things they realize when too late. When planting under the co-operative scheme by the government, they, of course, get all the necessary advice as to the proper way of planting and the proper place to plant, and no man gets any trees unless he prepares his land properly.

By Mr. Blain:

Q. Are we to understand that the trees are planted chiefly to protect the farm buildings rather than the crop?

A. They are planted with a view to shelter in the first place, and also of having

woodlands that would be of value on the farm.

Q. But I understand you to say that they are planted in an L shape for the pur-

pose of protecting the buildings, not the crop ?

A. Not the crop as a rule, no. The department sends out no trees for what you would call avenue planting or ornamental planting. They have to be planted at the rate of from 2,720 trees to the acre and four feet apart each way.

By Mr. Ingram :

Q. Are there are experiments in tree planting on the Brandon farm ?

A. There have been. I might just mention on the Brandon experimental farm trees have been sent out for years. For years past there has been a number of trees sent out in the country to farmers who applied for them, and all kinds of trees were planted in all kinds of soil. Some of those men that applied for them planted the trees possibly in the sod and wondered why they did not grow. The result would have been wonderful if they did grow, and consequently those trees sent out by the Brandon farm very largely came to nothing from the fact that they were never followed up.

Q. Is there no person on the Brandon farm to instruct the farmers when the

trees are sent out ?

A. The farmers in 99 cases out of 100 do not visit the farm. They merely send applications to the farm.

 $2 - 28\frac{1}{2}$

Q. There is no person, then, connected with the farm who understands tree planting?

A. I would not say that, but they do not employ any one to inspect the land of the applicants.

By Mr. Wilson:

Q. I do not think that is the case, because I think they have got as good protection there as is to be found any where.

A. Certainly, but with regard to the farm and sending out trees to the farmers, the difficulty is that the trees are sent from the farm to farmers all over the country and the parties on the experimental farm do not go to see whether the land is properly prepared for those trees before they are sent.

By Mr. Maclaren (Huntingdon):

- Q. Do you oversee the territory that would naturally be covered by the Brandon farm?
- A. Well the territory that I oversee during the summer is the larger part of Manitoba. I might say that it takes two or three parties to cover all the territory.

Q. I mean if trees were sent out from the Brandon farm would they be planted in the territory which you inspect?

A. They would be planted in Manitoba, I should judge, certainly.

By Mr. Wilson:

Q. Well, Mr. Stevenson, do you have to visit every individual farmer and see that he plants these trees?

A. Every farmer who gets those trees is visited before he gets a tree, to see that the land is properly prepared.

By Mr. Lennox:

Q. Will you tell us what that preparation is ?

A. The land has either got to be summer fallowed, or land that has previously borne a crop of roots.

Q. Could that not be done by getting a declaration from the man that the work had been done without your going there?

A. Possibly it might. But another thing to consider is the proper location and the proper place to plant the trees and the proper trees to plant in the different kinds of soil.

By Mr. Wilson:

Q. But don't you see it is a great waste of time and money to have to visit every individual farmer. Why not get the farmers together in groups and instruct them if they must be instructed? It seems to me it would not take a very great deal to learn where and how to plant trees?

A. Possibly not. But I have been speaking at farmers' institute meetings in Manitoba for the last ten years. My theme has been the planting of trees for shelter belts, and I find that at these farmers' institute meetings there are men who attend them year after year, and when they come up each session I have to go over pretty much the same ground in regard to this question.

Q. You do not make yourself understood to them then?

A. Possibly not. But I find that I talk plainly enough to them in the matter. However, that is the reason we cannot get those men, so many of them, together as you suggest.

By Mr. Maclaren (Huntingdon):

Q. What does it cost in the summer for instruction ?

A. It costs \$100 during the month, that is in the summer, and I furnish a team.

By Mr. Wilson:

Q. I am not complaining about his salary, but you must remember that to cover Manitoba and the Territories it must take a great many men if they have to visit every applicant, because I think you will find there are something like 1,000 applications in, or more. Now, has every one of these places to be visited under this system?

A. I might say that if my experience of thirty years in Manitoba and the prairie country is worth anything it is this, that the scheme is not worth a snap of my finger

unless there is personal supervision. That is what I tell you.

By Mr. Ingram:

Q. You said that in 1901 there were 50,000 trees sent out ?

A. Sent out by the forestry branch.

Q. And you saw all those different farmers who had those trees sent to them ?

A. I saw them all, yes.

Q. If that is your capacity with regard to 50,000, could you do it with 450,000 ?

A. It would all depend upon the distance apart of those parties who made application for the trees.

Q. You were kept pretty busy visiting the 50,000 ?

A. Fairly busy, because the applicants were in different parts of the province far apart.

Q. How would you be with the proposition to visit 2,000,000 ?

A. A large number of these will probably be much on the same route that I went over last year. There are a great many of those farmers who are getting trees this year for the first time living close to those I visited last year.

Q. You would not require to see them now ?

A. Well, I would require to see those who had planted trees to ascertain whether they were carrying out the conditions under which they got the trees.

By Mr. Richardson:

Q. What is the extent of the planting ?

- A. It is sufficient to plant one-half acre, that is the limit at the present time.
- Q. Do you get any statistical returns as to what portion of the trees have lived ?

 A. When I visit all those parties who get the trees I form an estimate as to the number that are grown, the percentage of those that have succeeded.

Q. You visit them afterwards ?

A. I visit them afterwards, certainly.

Q. It takes two visits to each one ?

A. Sometimes two, sometimes three. You understand that a man gets sufficient to plant half an acre each year. That is supposed to be as many as a farmer can look after properly in one year and attend to his other duties on the farm.

Q. How are they planted ?

A. They are planted four feet apart each way.

By Mr. Wilson:

Q. Does the farmer get them every year ?

A. Provided he looks carefully after those he gets. If he has neglected the trees he got the first year then he gets no more. But I might say that there are very few

men who neglect the trees from the simple fact that they know the inspector will be around to see how they are looking after the trees. Another matter which goes to assist in having better satisfaction in cultivating trees and looking after them is the fact that they have got 1,500 say 1,400 trees. They have never in any year previously had so many trees to plant at one time. Possibly in other years they have got a few trees and planted them out. The idea was 'we will attend to those trees when we have nothing else to do on the farm.' But when there is half an acre, or say 1,400 trees to plant it takes some time. Consequently the farmer says it has taken considerable time to plant those trees, and the care and cultivation of them will become in future a factor on the farm. There is a cultivator got for the purpose of attending to them, and those trees are attended to just in the same way as are the fruit crops or root crops.

By Mr. Smith (Wentworth):

Q. On what part of the farm do you generally have the half acre planted?

A. On the north and the west of the buildings.

By Mr. Robinson (Elgin):

Q. What kind of trees do you plant principally?

A. The trees principally sent out are the Manitoba maple, or box elder, elm and ash and cottonwood.

Q. Do you mix them ?

A. We advise mixing them as a rule because some trees do better on that account.

By Mr. Smith (Wentworth):

Q. How long do you expect them to stay four feet apart ?

A. Well, on the prairie the chief aim and object in planting trees and planting them that close is to try and get forestry conditions as nearly and as quickly as possible. We know and any one who has paid any attention to the planting of trees on the prairie knows that the tallest trees grow in the centre of the block, consequently we plant close together, and the trees will grow tall and straight, and in three or four years will entirely shade the ground.

By Mr. Ingram:

Q. They are slim, are they not ?

A. They will grow tall and straight and slim. In a few years your trees will entirely shade the ground. On that account the ground being shaded the grass and the weeds will not grow up under the trees, but the leaves will fall and form a mulch under the trees and retain the moisture for a longer time than would be the case if the trees were planted further apart.

Q. To what height do they grow?

A. Of cottonwood we have some measurements from some of the plantations through the country and in two years they have grown from 9½ to 10 feet. I might say that the cottonwood is a very fast growing tree and one of the finest trees that we have for planting on the prairies of the west. It is a native of Manitoba also.

Q. Does that apply to the maple, elm and ash?

A. And the cottonwood, the four varieties sent out by the Forestry branch.

By Mr. Blain:

Q. How high would those trees be when they were planted ?

A. They are supposed to be one year old, that would be say 14 to 16 inches.

By Mr. Wilson:

Q. There have been men before us heretofore who have said the idea of shelter belts was to protect the crops and preserve the moisture in the ground, so that they

could get a very much better yield, and so on ?

A. Well, of course, the shelter belt would protect the crops to a certain extent also, but I do not know that we could plant along the road. As far as it has been tried yet, you require trees four or five feet in height and say three years old, for the simple reason that if you plant those little seedling trees by themselves 10 feet to 12 feet apart along the roadside, the prevailing winds blowing over the prairie bend them over so that they are almost bent over towards the ground. They are not stiff enough to stand up straight, and wherever it has been tried, in the majority of cases it has been a complete failure.

By Mr. Ingram :

Q. Are there any hedges at all ?

A. Very few hedges. We cannot get very much benefit from the hedges.

Q. Is there not a certain amount of protection from hedges as well as from trees; we are told so here.

A. There will be a certain amount, but if you are planting why not plant with the view also of having timber of some value as well as shelter; combine them both.

By Mr. Cochrane :

Q. The trees that are planted to shelter your barn would not be of much protection to shelter your crop?

A. It would not be a great deal of protection to a crop, but it would be a great deal of protection to the man, to his family and to his stock, and in the winter time, I can assure you, gentlemen, it is something terrible when you get on the prairies in a blizzard without anything to protect you from the north and the west.

Q. Then we are to understand, Mr. Chairman, that the farmers of the North-west do not know enough to plant trees without somebody going around to tell them?

A. You are not to assume that by any manner of means. But we are to assume that this manner of planting trees is like everything else; that the average farmer does not pretend to be a forester. He does not pretend to have studied forestry and the growing of trees.

By Mr. Ingram:

Q. In what part of Canada did you live before going to Manitoba?

A. In the district of Toronto, in Scarboro'.

Q. Because they were in the habit of planting trees in that neighbourhood even before you left?

A. Conditions there are different from those in the west. I might just say I would be pleased to answer any questions at all in my power; that is what I am here for to-day.

By Mr Cochrane:

Q. We were told the other day that the planting of hedges was a great benefit to the crops in the North-west, that where you get a height of five or six feet it would protect a certain area. Now you get the information from a gentleman who tells us it is no good.

A. I did not say the hedge was no good by any means. But I said the shelter belt was so much better than the hedge. That is the planting of trees for shelter in a block

was much better than the hedge.

By Mr. Blain :

Q. Are we to understand that if a man gets 1,300 trees this year, for illustration, and they are planted out, and he makes application for 1,300 trees next year, do you come and instruct him how to plant each and every tree?

A. He will not get trees the following year unless he has looked after and planted the trees that he had got the year previous. You see when the agent goes around during the summer to this party who has got the 1,300 trees in the spring and finds that he has planted them according to instructions, that he has cultivated and has prepared an additional half acre of land, then his name will be entered up for an additional half acre of trees the following year.

Q. Do you go and instruct him how to put in the additional half acre?

A. Not necessarily. He has the benefit of the instructions of how to plant the first half acre.

Q. The man who gets trees once is not instructed the second time ?

A. No, further than that if he wants further suggestions while the agent is there he has a right to get them. He has the experience of the first half acre to guide him.

By Mr. Lennox:

Q. Do you ever employ anybody in the neighbourhood to report to the department instead of making personal inspection ?

A. No, we do not do that.

By Mr. Smith (Wentworth):

- Q. How many trees may one man get? Can he get them from the farm every year indefinitely?
 - A. No, he gets them possibly until he gets two or three acres.

Q. Any particular limit set?

A. No, only the forestry branch may quit sending them at any time they wish.

By Mr. Richardson:

Q. If a man failed the first year, does he not get more ?

A. The agent looks into the matter and sees if it was not through carelessness or laziness, or that some mishap has taken place, then in that case the matter will be considered.

By Mr. Ross (Ontario):

- Q. What is the value of 1,300 trees—that is the planting value—the value when planted?
 - A. It takes one man about two days to plant them.

Q. I mean the value of the trees?

A. When planted? When they leave the nursery about the first thing-

Q. Is no value put upon them ?

A. Of course there is a value which you would pay for trees at that same age from a nursery; only the forestry branch grow their own trees, and grow them much more cheaply in that way than if bought from the nursery.

Q. Would they be worth \$1 per hundred?

A. Not that much; they would not be worth more than \$1 to \$1.50 per thousand.

Q. Grown from seed ?

A. Yes.

Q. In one year ?

A. In one year principally. The ash are usually two years old when taken out. They are of rather slower growth than the maple, consequently the ash are usually two

years old when sent out; probably 14 to 16 inches long, the cottonwood about the same.

Q. When would these trees be fit for wood—in ten years ?

A. These trees would be fit for wood—I will give you my own case. We have groves that we planted out 15 years ago in my own locality, of two, or three or four acres. The owners of these can now get all of what they call the summer fire wood out of these groves at the present time by simply using the limbs and trimmings. Of course they do not get their winter wood. These groves are composed of principally cottonwood, ash, maple and elm, and are three or four acres in extent.

By Mr. Richardson:

Q. What kind of ash?

A. Green Ash.

By Mr. Smith (Wentworth):

Q. When the farmer gets the second or third or fourth lot of trees, where do you recommend him to set them out—to extend the plot he already has?

A. To extend the plot, yes.

By Mr. Wilson:

Q. You are not able to furnish all the trees applied for, are you ?

A. Not strictly speaking what are applied for. All those who have prepared their land, whose names are on the list, get trees. A number do not get trees, because, when the agent visits the farm he finds the preparation of the land unsatisfactory, consequently, that being the case the man does not get the trees until he prepares the land thoroughly.

By Mr. Ingram:

Q. In the matter of elm and maple and ash, do you vary the depth to which you put them in the ground ?

A. Well, it is a rule in planting seedling trees that you put the tree of one year old an inch deeper than it stood previously in the ground. This mark can be readily detected in all trees, as the bark is lighter coloured. You can easily detect the line, so we advise planting in every case one to two inches deeper than they stood in the nursery.

Q. There is nothing you put in with the tree ?

A. Nothing, we simply prepare the land properly and thoroughly. This matter of preparing the land, summer fallowing, we find necessary because our western conditions are entirely different from your conditions here. We have but a limited rainfall in the west, and in order to overtake that, to a certain extent, we have to thoroughly cultivate the land, summer fallow, in order to store up a certain amount of moisture and keep these young trees over the dry period in the spring. So that in handling trees of all kinds the conditions in the west are different from what they are here.

By the Chairman:

- Q. Might I ask a question for my own information? Is this a purely Canadian experiment, or is it based upon the experience in the United States, in the prairie provinces?
- A. We have the experience of course of the forestry work in Minnesota and the Dakotas. We have their experience as to the proper distance at which to plant those trees, where their best success has been, they have had 40 years experience in growing

trees in the prairies of Dakota, and these gentlemen make the statement that trees planted out at the rate I have already stated, 4 feet apart, each way, give the best results. We have also our own experience gleaned from a limited number of years in the province. I do not know whether they have any scheme approaching ours in Minnesota or not, I believe they have, although they do not go to the same extent. I believe they only furnish a plan of shelter belt and give some advice.

By Mr. Blain :

Q. What month in the year are the trees planted ?

A. In the month of May usually. The latter end of April and during the month of May is the proper time to plant trees of all kinds in Manitoba.

By Mr. Ross (Ontario):

Q. Before the trees have their leaves ?

A. Before the trees have leaves.

By Mr. Robinson (Elgin):

Q. Is the subsoil similar throughout your district?

A. It varies very much all over the province. We get gravelly subsoil which is not very favourable for tree growing, but where there is a clay subsoil, and even with a sandy loam surface, or a clay loam surface we have good soil on which to grow trees. It is perfectly rich and does not require any enriching to grow trees. Any drawback is simply a lack of moisture.

By Mr. Lennox:

Q. Did you ever try planting trees in the fall ?

A. Yes, we have planted trees in the fall.

Q. We found that a success in Ontario.

A. I have no doubt; we found it a failure every time. We find fall planting is of no value in Manitoba. The only things you can plant in the fall in Manitoba are bulbs.

By Mr. Ross (Ontario):

Q. Flower bulbs ?

A. Yes, these are the only things we found when planted in the fall to succeed.

Now, gentlemen, if you are through asking questions, I would like to have something to say about fruit growing.

By Mr. Thomson (Grey):

Q. Why is it that trees will not grow in Manitoba if planted in the fall; they will

grow in Ontario ?

A. Well, I will give you a simple illustration. In Manitoba when the mistress hangs out her washing on the line her clothes freeze hard and solid, but she knows that if she leaves them sufficiently long on that line they will freeze dry. The consequence is that when you plant a tree in the fall the limbs freeze entirely dry. It is a mistaken idea that there is no connection between the root and the top of the tree in the winter time. When planted in the fall consequently, the roots of the trees do not take hold so as to pick up the moisture of the soil; the little rootlets do not begin to come in contact with, and furnish any of the substances required for the top of the tree during the winter so that it freezes dry. That is the reason why fall planting is a failure in Manitoba.

GROWING FRUIT TREES IN MANITOBA.

Now, with reference to the growing of fruit trees, I may say that this is one matter to which I have given a considerable amount of attention. I have always been interested in growing fruit in this western land. It has been somewhat of an experiment, and I may say that it takes a tireless amount of energy and experience to make any success of it in Manitoba. However, we have had some success in this line, enough to encourage us at least. I suppose it is not necessary for me to tell this audience that the growing of small fruit is a success in Manitoba, but here again of course the tree growing will come in, for it is a matter of tree growing. You require to have shelter belts in order to afford shelter to succeed with small fruits, with large fruits or with any kind of fruits. Now, the question may arise where is the necessity for shelter belts in growing fruits? Well, gentlemen, the reason is plain. first place, on the prairies the wind blows clear and steady during the spring months, and if you have strawberries in bloom the dust is blowing, and it blows into the blossom and to a certain extent injures the blossom, consequently no fruit will set, even although you have standard varieties growing there. Again, with a larger plum and apple tree, owing to the steady blowing winds no insect and no bees will work upon the blossoms in that way, consequently very little fruit is set and all your labour is vain so far as fruit growing is concerned. So you will see the necessity there is of having some shelter belts. It makes all the difference between success and failure, this matter of a good shelter belt.

VARIETIES OF SMALL FRUITS GROWN IN MANITOBA.

Then, as I was saying, the growing of different varieties of small fruits has been a success where we have had fair shelter, in Manitoba.

By Mr. Blain:

Q. What kind of fruits do you have there ?

A. Currants, every variety, red, white, and black, and also the red raspberry, the yellow raspberry and the black raspberry. I might just say in passing, with regard to the black raspberry, we possibly have succeeded better with the black variety than with any other of the small fruits, from this fact, that it is necessary to lay the canes of the black raspberry down in winter and cover them with earth. In other words they have to have some protection in winter in order to secure a crop. This is done in the fall, and consequently you will have a full crop the following year. I might say this was found to be necessary in Wisconsin in order to succeed with this variety, that they had to handle and manage their raspberry canes somewhat in the same way in Manitoba.

By Mr. Smith (Wentworth):

Q. What would you call a full crop there ?

A. I could not just exactly say, how many quarts would be considered a full crop, but we have grown them considerably for the market; I do not know that we have ever measured them, but we would calculate what is a full crop just by sight.

By Mr. Blain :

Q. What time in the year would the currants ripen ?

A. They usually ripen in July.

Q. And the raspberries, when ?

A. Just shortly afterwards.

Now with regard to the growing of strawberries also, I might say that the same amount of success has not attended the growing of the cultivated strawberry that has attended the growing of some other small fruits. We have grown this fruit possibly for the last eighteen years—that is the strawberries. During these eighteen years we have had four complete failures from drought. In other years we have always had a sufficiency for ourselves and sometimes a considerable amount for sale.

By Mr. Smith (Wentworth):

Q. Off how big a plot ?

A. Usually half an acre is the size of the plot. We do not run a plot any larger than that.

By Mr. Ross (Ontario):

- Q. Where do the strawberries come from that are used in the Manitoba market !
- A. A considerable number of them come from St. Catharines.
- Q. From Ontario ?
- A. Yes.

Q. Do they not come from Oregon ?

- A. A considerable number from Oregon. They also come by way of Minnesota from the south, but a good many come from St. Catharines.
 - Q. Do they arrive in good condition from St. Catharines ?

A. Yes, as far as I have seen.

By Mr. Richardson:

- Q. Do you raise any gooseberries ?
- A. Yes.

Q. Do you grow many ?

A. Yes, the range of varieties is rather small in Manitoba. We have only two or three varieties that are suitable for growing in that western country. The Houghton and the Smith's Improved are the principal ones. We have tried a great many others. These are the two varieties that are successfully grown there.

By Mr. Smith (Wentworth):

Q. What is the reason you cannot grow Downing and Pearl ?

A. A little tender. They kill back very much in the winter and they do not give a paying crop. A gooseberry bush is a very difficult thing to protect.

By Mr. Blain:

- Q. Can you grow raspberries and currants and gooseberries without shelter in Manitoba?
- A. You cannot grow them without shelter. You would have no crop that would pay for any attention to the bushes. You would have a few berries, but no matter what quantity of berries you got if they were not protected the wind whips the fruit off the canes. That is another danger that you have to overcome.

By Mr. Wilson:

Q. The winter is the only drawback ?

A. The winter is the principal drawback.

Q. What are the others?

A. The ground drying out in the spring. The wind will lick the moisture from the ground. But when there is shelter immediately in the vicinity then the snow

is melted in the shelter belt and the moisture gradually works into the ground and keeps the ground moist.

By Mr. Ingram:

Q. Would you say the fruit was a success only where you have a reasonal, e wind-break?

A. Yes. You know that in a town where you have a board fence it acts the same

as a wind-break.

The Witness.—With reference to the growing of grapes, that is pretty much in the experimental stage yet. We have succeeded in fruiting what is known as Moore's Early. The difficulty was, we found that the season was a little too short for all the bunches to mature. The fall is too short, the cold weather cut the vines before the fruit had entirely ripened. That is the only variety we have succeeded in fruiting in Manitoba.

We have a good many others that have not succeeded. Very little has been done with the growing of grapes in Manitoba. I might say that the wild grape grows in abundance there. It of course can only be used for the purpose of making wine or

something of that kind.

I might say with regard to cherries that there is no cherry at the present date that we know of in Ontario that is of sufficient hardiness to grow and give a good crop in Manitoba. Not but what we have brought the cherry trees through the winter. We have cherry trees ten feet high. Richmond cherries down here grow out there, but the difficulty is the winter freezes the fruit buds on the trees. Of course, in a mild winter these are protected. That is the experience with the cherry all over the west. No success has attended the growing of the cherry, practically speaking.

There is what is called the Compass cherry. It is a new fruit. It is a cross or hybrid between what is known as the Sand cherry (Prunus Prunilla) and the Mine: plum brought into the country from Minnesota a few year ago. It is perfectly hardy a very good cherry and makes good preserves. It is a little larger than the ordinary cherry. It fruits at an early age, three years old from the grafting, and is loaded with fruit. This Compass cherry is not altogether hardy all over the west. I suppose you will understand that even in this western country there are portions of it more favourable to the growing of fruit than others. I may say from my experience that the Red River valley is the most favourable locality for growing fruit in the west. You can grow there what will not grow further west. There you find the iron wood or hop hornbeam, the basswood and the wild grape, the Celastrus Scandens and the Sumach, which you never find west of the Red river. You also find there large oak trees which you seldom find west of the Red river valley. So when I have reference to the Compass cherry I may say I know it would not succeed all over Manitoba, but simply in the eastern parts.

THE NATIVE WESTERN PLUM, -CULTIVATION OF.

Then we come to what we call the plum. We have in Manitoba the wild plum known as the *Prunus Nigra*. They grow exclusively along the creeks and streams of Manitoba. You find it to a very limited extent in the west. These plum trees you find growing along the creeks in Manitoba. Some of them are a very good quality and some are very inferior. In some places in Minnesota you find the same plum trees growing along the creek that were there forty years ago. The people have picked out the good varieties of these wild plums, selected them wisely, and from these wild plums they have now the improved native plums. Years of careful cultivation have improved the quality and size of these plums. We can grow them in Manitoba in very large crops. The plum is very fair in quality. We grow them well and can compete with

the blue plum from Ontario, and we get just as much for our plum, the Prunus Americanus, as is got for the Prunus Domestica on the market.

By Mr. Ross (Ontario):

Q. What colour is it, red ?

A. Yes, with blue bloom.

By Mr. Wilson:

Q. Is it as large as our plum ?

A. No.

Q. The flavour is all right ?

A. Yes.

By Mr. Ross (Ontario):

Q. Is it bitter ?

A. No, the cultivation has taken that out.

By Mr. Smith (Wentworth):

Q. How does it compare with the Americanus from Minnesota ?

A. There are a number of these. Take the Aitkin, the Cheney and the Desoto. They have the appearance of the Prunus Americanus. We have them all growing, but I cannot say I see any difference in them.

Q. Equal in hardiness ?

A. They appear to be equal in hardiness. Last year we had about 20 bushels altogether of this plum and there was no difficulty in finding a ready market.

By Mr. Ross (Ontario):

Q. You mean on your farm ?

A. Yes.

Q. Where is that situated ?

A. Near Morden, a place called Nelson, down near the boundary line in southwest Manitoba. With regard to the crab-apple I might say that it is beyond the experimental stage with us, in Manitoba.

By Mr. Smith (Wentworth):

- Q. You calculate that these plums, the 'Cheney' and the 'Rolling Stone' are hardy all over Manitoba?
 - A. No, certainly not, I would not say that.

Q. Just in the Red River valley ?

A. I have seen it tried in the western part of the province, and I could not say altogether successfully, the altitude was so much higher there, I might say that our altitude is something like 900 feet above the sea.

Q. Those referred to in the Red River Valley are behind a shelter belt ?

A. They are all sheltered from the north and west, and if they had not been, I do not think they would have succeeded so well.

By Mr. Ingram:

Q. Is it part of your duty to give instructions regarding the raising of small fruits, such as currants and plums as well as with regard to forest trees?

A. Well, when I am speaking at Farmers' Institute meetings during the winter time, I am usually employed when not on my farm by the local government of Mani-

toba, to speak and address a series of Farmers' Institute meetings (extending sometimes throughout the Territories) in Manitoba and the subject taken up is 'tree planting,' and 'the growing of hardy fruits in Manitoba.'

Q. Have you been so employed during the last two years ?

A. For the last ten years.

Q. In Manitoba ?

A. Yes, and sometimes in the Northwest.

Q. During the winter season ?

A. Yes, and sometimes there is a series of meetings brought on during the summer time by the Department of Agriculture in Manitoba.

By Mr. Wilson:

- Q. Do I understand that you are employed during the summer time by this government on this particular business, and in the winter time you are employed by the local government?
 - A. Yes.

Q. When were you employed by the local government last?

- A. I was employed this last two weeks in addressing institute meetings in Manitoba.
- Q. And when does your engagement commence with this government, what time of the year?
- A. Usually when the spring opens up, so that we can begin shipping out the trees from the Experimental Farm, somewhere about the 20th, possibly of this month.

Q. And it closes about what time ?

A. Some time about the beginning of November.

By Mr. Blain :

Q. Where are these small trees purchased from ?

A. There are a number of nurserymen in Manitoba, there is a nurseryman in Brandon, and one at Virden, and I am in the business in a small way myself, only in a small way, as far as that is concerned. I do not do very much at it. We grow a few ornamental shrubs, such as the rose, and flowers and fruit trees, that is the only extent to which we are in that business. It is enough to say that we farm 900 acres, and you will see that we have not very much time for that; it has been a hobby for me, I like to work among these things, and that is the way I am in it.

SUCCESSFUL CULTIVATION OF THE CRAB-APPLE TREE.

If we have nothing more to say about the plums I desire to call your attention to what has been done in the way of growing the crab-apple. I think I mentioned that in the eastern portion, at least, of the province, the growing of crab-apples had got beyond what is known as the experimental stage. We on our grounds have trees that are 24 years old, Transcendent crab-apple trees, and these, the year before last, gave us five barrels of apples to the tree.

Q. How old were they ?

A. 24 years old. I might say that our crab-apples are far superior to any crab-apple you grow in Ontario.

By Mr. Ross (Ontario):

Q. Hold on, hold on.

A. I am speaking of what you send up to Manitoba anyway. I do not know whether you send culls there or not, but we grow a considerable quantity of crab-apples,

I might say there is a considerable quantity grown backward and forward through the country; I know another gentleman who grows them extensively there, the brother of Superintendent Bedford of the Brandon farm, who lives near Brandon, and nearly every one who have given any attention to the growing of these apples up there do so successfully, provided they have a shelter.

In connection with the forestry work in the summer time, I notice that even in the west, in the vicinity of Brandon and west, all that country south of Brandon, they have succeeded fairly well in growing the crab-apple. I might say with regard to quality that we do not have any scab, and we do not have any worms and we do not have any spots on our apples. I do not know whether you grow them down here without scabs and worms and spots; if you do, you never send any of them up to Manitoba.

By Mr. Smith (Wentworth):

Q. You say these trees were 24 years' old and gave you five barrels one year.

How often do they give you five barrels?

A. About every other year they give us a good crop; last year some of the trees did not bear a half barrel, but every other year they gave a good heavy crop. We have seven or eight varieties of the crab, but the Transcendent is one of the best; it is a large showy apple, and sells quickly.

Q. What price do they bring ?

A. We sell them at \$8 to \$8.50 per barrel.

By Mr. Erb:

Q. About how large do the crab-apples get with you ?

A. Oh, they are possibly about an inch and a half in diameter, from an inch to an inch and a half.

By Mr. Ross (Ontario):

Q. Are they as large in size as an egg ?

A. No. Speaking of that, I have photographs here of some of the apples and other fruits that were exhibited.

GROWING STANDARD APPLES IN MANITOBA.

There is a photograph of the exhibit of fruit, here is one of the orchard of 'yours truly' and here is one of the exhibit made last year at the Horticultural Society's show.

By Mr. Smith (Wentworth):

Q. Is the General Grant hardy and the Whitney ?

A. We have them growing also, the Whitney is a hybrid.

Q. Do they grow well there ?

A. Very well indeed. There is an apple tree that had over five barrels on it, one of those I had reference to; there is the photograph of a flower garden, and here is one of some improved trees, this is a standard apple tree eight years old, $4\frac{1}{2}$ feet high, and it bore 52 apples two years ago, fine standard apples.

Now with reference to the growing of the standard apple, that of course is the question around which most interest centres in Manitoba. We know we can grow the crab apple, but certainly as to whether we can grow the standard apple, that is the

question as to which considerable doubt exists.

By Mr. Ross (Ontario) :

Q. How many acres do you cultivate in orchards and fruits?

A. Something about 8 acres and we have in the orchard 500 trees planted, and last year 240 of these, including crab apples bore, and 110 of the standard apples. I might say that we have about equal numbers of the Standard and the crab apple planted out in orchard form. The Standard apple, the large apple trees, are 14 years old.

By Mr. Smith (Wentworth):

Q. What variety is that ?

A. What is known as the Calville. Fourteen years ago I planted in Manitoba 500 standard trees of Russian variety. These were got for Manitoba years after, when some eastern grown trees were brought from Ontario. We have had no success whatever with eastern grown trees; the winter killed them every year.

By Mr. Richardson:

Q. How have you trees come through this cold weather?

A. I examined them before I left and I could not see that the twigs were discoloured. Evidently they were all right.

Q. It was an exceptionally cold winter ?

A. Yes, but I think we have had as cold winters before, since I planted these trees. In these 500 trees that were planted 14 years ago there were ninety varieties. Of these 38 varieties have fruited. All the rest have gone to the brush pile, so to speak—all the other varieties. Of the 38 varieties out of the 90 planted, the great bulk were of the so called hardy Russian. It goes to show that even the Russian tree is not hardy always. They have grown peaches in Russia.

Out of the 38 varieties we find perhaps seven or eight that we propose to propagate, from the fact that they are early bearing and the tree is hardy and prolific. We grew 50 barrels of apples last year in our orchard. About 27 barrels were standard varieties, just as large and fine as you ever grew in Ontario. It is the same with growing fruit as No. 1 hard wheat. When you get on the limit where you can grow it at all, you can get the best quality. We can raise No. 1 hard wheat better there than here. Just the same with the fruit. Where we can grow apples we grow a very fine quality because the further south you go the fruit gets more woody.

A LIST OF EIGHT VARIETIES OF APPLES THAT SUCCEED IN MANITOBA.

By Mr. Smith :

Q. Would you name the seven or eight varieties—name some of them ?

A. Certainly, I may say that the extreme limit of hardiness of our apples is the variety known as the Hibernal. That is a splendid fruit. It will keep until the month of April. It has kept that time with us and it might have kept longer if the supply had not run short. So it is of very little value as a dessert apple. It is a very good apple for cooking and makes excellent pies. I do not mean to say that it is equal to your Greening or Spy. It is as large as, but not equal in quality. Then we have the Anisette, the Simbersk, No. 1, the Repka Kislaga; these are all fall apples equally good with your fall apple. We have a number of summer varieties namely the Blush Calville. The Hare Pipka, Yell-Transparent, there are one or two others that I have forgotten owing to the Russian names. These are summer apples. They ripen about the middle of August, large fine apples. We have the Yellow Transparent, we have the Wealthy and the Duchess. The Yellow Transparent resembles the Blush Calville. These trees are about 18 feet high and are just now bearing well. They give 2—29

us one and a half barrels of apples; that is our largest crop yet, they gave us that last year. The trees are grown, and I expect more another year. That is our success in the growing of apples. We find it pays. I am a Scotchman without very much sentiment. I want to work and get some money too. Consequently when we find that a variety is not profitable, then it is dropped at once. That is the only way to handle apple trees.

THE CHIEF APPLE PEST PECULIAR TO MANITOBA.

Another little matter that we have in connection with our trees is this: We have some trouble there too. It is not so much bugs, slugs and worms such as you have here that we are troubled with, but we have to fight against sun scald. When the hot blazing sun in the month of March strikes the south side of a tree it starts the sap up the small veins in the inner bark of the wood during the middle of the day, and at night it freezes hard; the sap is frozen in these little cells, and consequently the connection between the root and the top on that side of the tree is cut off and that side of the tree dies. Consequently there is nothing but the bark on the north side of the tree to carry nourishment up from the root. The vitality of the tree is considerably lessened. The trunks of the trees each fall are covered. That is all the protection that is given to the trees. The earth is hilled up a little so that the mice will not girdle the trunk. The land is cultivated the last thing in the fall and the first thing in the spring. That is not perhaps in the preconceived ideas of orchardists. It may upset a good many theories, but we find that good cultivation results in pretty fairly good fruit.

By Mr. Smith (Wentworth):

Q. What object is served by the cultivation ?

A. To conserve moisture, that is the idea.

Q. For the following year ?

A. Yes. The soil in which these trees are grown is deep clay loam with not a particle of sand.

By Mr. Erb:

Q. Does any snow lie on the orchard in the winter ?

A. Yes, considerable snow, but sometimes it blows completely out of the orchard. Then the trees will be injured in the spring, for a good snow blanket is a great benefit.

By Mr. Ingram:

Q. Is that method of preserving trees carried on at Brandon ?

A. Not that I know of.

Q. Is any literature circulated about it?

A. Not that I am aware of. I might say with regard to the large apple, that I don't think they succeeded in growing it at Brandon at the experimental farm.

By Mr. Wilson:

Q. You say they don't circulate bulletins on the growing of fruit.

A. Not on large apples.

Q. They have experimented in them ?

A. Yes.

Q. Don't issue any bulletins on the results ?

A. Not that I know of. Of course, you will find the particulars of their work in their annual report. Years ago they attempted all the hardy varieties on the experimental farm and found them unsuccessful there.

Q. Have they quit ?

A. They have quit trying the same varieties.

By Mr. Smith (Wentworth):

Q. The altitude of Brandon is higher than your place ?

A. The Brandon experimental farm, from my point of view, is one of the most severe locations they could get in Manitoba for fruit-growing. The southern exposure in the month of March would burn the life out of a telegraph pole.

By Mr. Ingram :

- Q. I understand you to mean that would apply to all fruits raised on the farm?
 A. Certainly they can grow a considerable amount of small iruit and plums on the farm.
 - Q. And there is no bulletin in connection with experiments with small fruits.

A. Certainly.

- Q. Regarding what lines of fruits are bulletins issued to explain their experiments?
- A. In all varieties of small fruits, they grow considerable quantities of them, and considerable plums, and considerable of what is known as *Pyrus Baccata*, also crossbred Pyrus, originated by Dr. William Saunders of central experimental farm.

Q. Do they use bulletins in connection with experiments there?

A. Certainly, the annual report.

Q. But they are not circulated for common use ?

A. No, not like what comes from the central farm at all; there is just the annual report which comes out regarding the season's work.

SOURCE FROM WHICH APPLE TREES BEST SUITED TO MANITOBA, ARE GOT.

Q. Do I understand that all your trees come from Minnesota?

A. Yes, ninety per cent of them.

Q. Have you not tested trees from the east ?

A. Certainly, for years and years, and sunk a lot of money in it too.

Q. Do you mean to say that the same varieties of trees from Minnesota are hardier than those you get from the east?

A. Yes, that is my experience.

By Mr. Ingram:

Q. Have you got trees from Ottawa?

A. Yes, I may say that I have some varieties that came into bearing a year or two ago that I got from the Ottawa experimental farm; a few varieties that are fruiting annually; it is only about eight years since we planted them, but they are coming into bearing now, although the trees did not look so hardy or vigorous as the trees from Minnesota.

Q. To what do you attribute the difference ?

A. Simply because the nurserymen in Ontario do not grow trees suitable for us.

Q. Why?

A. They do not grow the variety.

Q. But I say taking the same varieties ?

A. It is just the same I suppose as if you took a box elder seedling from Ontario and planted it in Manitoba, it will die down and kill back, whereas, if you get it from Manitoba it will succeed. It depends upon the conditions under which it has been grown.

- Q. Then you attribute it to the fact that the climate of Minnesota is so much colder.
 - A. Yes, so much more like that of Manitoba.

By Mr. Thomson (Grey):

Q. I suppose the settlers from Ontario that go up there thrive pretty well ?

A. Well, I am a specimen.

By Mr. Blain:

Q. Does the average farmer set apart some portion of his farm for fruit growing ?

A. No, they do not as a rule.

AN AESOLUTE NECESSITY TO SUCCESSFUL APPLE GROWING IN MANITOBA.

Q. In your own section you evidently have a very successful apple orchard; what about your neighbours?

A. Quite a number of them who have shelter belts are now going in for growing apples also, although there are quite a number who take very little interest in the matter of horticulture at all.

By Mr. Richardson:

Q. I suppose it is useless to attempt it without shelter ?

A. It is only time and money thrown away to plant fruit trees or anything of that kind without shelter. At the Brandon experimental farm they have not succeeded very well, and on the other side where the location is higher and the land is higher there are standard apples growing there now in the shelter belt. Patmore has had very fair success there last year in growing the crab-apple and the Duchess apple. They are growing on the prairie, but they are sheltered by a shelter belt, which goes to show that they can be grown there with some judicious care in the way of cultivation and in the selection of variety.

PROBABILITIES FOR THE SUCCESSFUL GROWING OF APPLES IN MANITOBA.

By Mr. Ross (Ontario):

Q. Do you think that eventually Manitoba will grow sufficient apples to meet the requirements of home consumption?

A. I think she will.

Q. Will she have anything for export?

A. She may, but I do not want to say she will. Forty years ago the man in Minnesota who undertook to say that they could grow apples there would be looked upon as having a bee in his bonnet; to-day in Southern Minnesota they have apples by the carload and if I have grown 50 barrels last year there are thousands of locations as good as mine in Manitoba with the same climate and as good soil.

RESULTS OBTAINED FROM TOP GRAFTING.

By Mr. Blain:

Q. Do you do any amount of grafting there ?

A. We do a considerable amount of grafting in one sense.

Q. I mean with regard to apple orchards, is it a success ?

A. We found it a success in this way. For instance, in a severe location if you grow what is known as the *Pyrus Baccata*, the wild crab Siberia, it is perfectly hardy all over the North-west (I believe it is hardier than the Manitoba apple), and can be planted anywhere. When that tree is possibly two or three years' old then top graft it with some variety of large apple. The fruit of the *Pyrus Baccata*, as a rule, is really worthless, there are some apples about the size of a currant and some a little larger, so you see the fruit is of very little use. But if you top-graft it with some of our large apples in a few years they come in to bear and it is the result of observation of all orchardists that the grafting of some good variety on a perfectly hardy stock increases its hardiness.

By Mr. Wilson:

Q. And do they maintain their flavour?

A. The same flavour, we have grown them in that way, we have the Wealthy grown in that way and we grow very good crops.

Q. And you get good crops ?

A. Very good crops.

THE ANNUAL GROWTH OF VARIOUS TREES.

By Mr. Ross (Ontario):

Q. Is the tree growth of Manitoba slower than it is in Ontario because of the cold winter?

A. I would not like to judge of that, because I have not lived in Ontario but a very short time; I was only there about two years after leaving Scotland. But I might say that, judging from the growth of our cottonwood, that in two years it will grow from say one foot to eight or nine feet in height; that is a pretty good growth.

By Mr. Wilson:

Q. How large in girth will it be at that age ?

A. It will be about one inch in diameter, possibly two inches above the ground.

Q. That is after two years ?

A. Yes.

By Mr. Ingram:

- Q. You say your apple trees grow to a height of 18 feet ?
- A. Yes.
- Q. How long do they take to grow that high ?

A. About 14 years.

By Mr. Smith (Wentworth):

- Q. What part of Minnesota did you get those trees from ?
- A. From Lake Minnetonka, from a man by the name of Sise.

Q. Is that in southern or northern Minnesota ?

A. It is in southern Minnesota, near Lake Minnetonka, I think.

Q. You say that the trees from there succeeded very much better than those from Ottawa.

A. Yes, in most cases.

Q. The temperature in southern Minnesota is not lower than it is at Ottawa, is it?

A. I should judge the temperature of southern Minnesota would be a good deal higher; you have a milder climate here than in Minnesota.

Mr. Ross (Ontario) :

Q. Is the altitude higher there ?

A. I should not judge it would, because the Red river valley extends down to where I had reference to, but as you go west the altitude gets higher.

By Mr. Smith (Wentworth):

Q. Then you think that these trees from Minnesota succeed so much better because it is nearer there?

A. Just so. The conditions surrounding their growth are pretty much the same as the conditions where you are going to plant them; it is what we call the continental climate, a dry cold winter, and the soil is the same. Down here we have the maritime climate; it is cold, but it is damp; it does not reach the same low degrees of temperature, and consequently the conditions are entirely different; you have only to see the different things that grow wildly there differ from those that grow wildly with us.

By Mr. Ingram:

Q. Speaking of Minnesota along the Red river valley, how about Dakota? That

runs along the Red river; how is it for growing trees ?

A. They have succeeded fairly well in growing shelter belts in Dakota. They have fine shelter belts there, principally the cottonwood and elm. The cottonwood enters largely into their shelter belts. It is a very fast growing tree and affords shelter very quickly. With reference to fruit-growing, I may say that there has not been very much done in Dakota. There has been in Cookstown, Minnesota. I noticed last year that a horticultural society had been established there, and the same remarks were made on the success of fruit-growing there. It is only about 100 miles south of the boundary. On the Dakota side there is very little bush outside of what has been planted, and a good many of the farmers have given horticulture very little attention. Now, gentlemen, are there any other questions you might like to ask, or are you getting tired.

By Mr. Erb:

Q. Have you ever lost any apple trees from the roots freezing?

A. Yes, a good many from that cause.

RESULTS FROM HARDY ROOT GRAFTING.

Q. Have you never introduced the growing of a cover crop to prevent that ?

A. No. In order to get over that difficulty we graft on the *Pyrus Baccata*. The trees we lost were the trees we had grafted on seedlings. The seed had come from eastern grown apples, such as Spies, or any other kind. And from these seedlings we grafted on the same hardy trees. When the cold winter came these trees' roots were entirely frozen—killed—consequently we discarded them and took up the *Pyrus Baccata* and grafted almost entirely on them now, and find that the root is perfectly hardy now.

By Mr. Smith (Wentworth):

Q. Is it not a slow-growing, dwarfish tree ?

A. Yes.

Q. Does it not outgrow the stock in a few years ?

A. It may in a few years—I have reference to the root growing now.

Q. You spoke of top work?

A. We have not noticed any outgrowth of the scion from the stock.

Q. How long have they been grafted ?

A. About seven years.

By Mr. Erb:

Q. You are aware that here at Ottawa they recommend very strongly a growing crop ?

A. Yes. Of course, your conditions are entirely different here from ours. We have not found it necessary. In fact, we cultivate. The last thing we do in the orchard in the fall is to cultivate. We plough about two inches deep between the trees.

By Mr. McEwen:

Q. What time of the fall would that be ?

A. That would be about the beginning of November.

Q. I thought it was generally frozen up about that time ?

A. Sometimes about the first, but usually it goes to about the 14th.

By Mr. Ingram :

Q. You say the conditions at Ottawa are different ?

A. Yes.

Q. In what way are they more marked?

A. You have a damp climate here and the cold is not so extreme. It is not the dry cold we have in the west.

Q. That is the marked difference ?

A. Yes, and of course that is not so hard upon trees. You can grow trees that are more tender than we can in the dry, cold climate of the west.

By Mr. Erb :

Q. How does your snowfall compare with our snowfall here ?

A. If you judge by the snowfall here, we have had a very heavy snowfall in Manitoba this year. But I think, taking into consideration from the fall to the spring and what melts away, you have more snow here—that is, between November and the latter end of April—than we have.

By Mr. Thomson (Gray):

Q. What was your snowfall last winter ?

A. I would not like to say what the total fall was for the winter, but I should judge from what I noticed in the bush that it must have been about an average of eighteen inches on the level.

Q. The snowfall they gave us was 118 inches in the winter of 1893 and 131 inches

to the end of February last year.

A. Yes, I know that you have had some snow down here. I have heard that you have had considerable snow last winter.

Q. Not much more than the year before, only the difference is we had a steady winter. Before we had thaws.

A. This last winter we have had a deeper snowfall than for a number of years.

By Mr. Ross (Ontario):

Q. What is your annual rainfall ?

A. I would not like to say. I don't know that I have looked much into that.

By Mr. McEwen:

Q. You said there were plenty of wild grapes growing there ?

A. Along the streams.

Q. Are they found west of the Red river valley ?

A. No, they may be, but I have never found them; I have never found any man that ever found them west of the Red river valley.

The CHAIRMAN.—Are there any other questions ?

By Hon. Mr. Fisher:

Q. The trees you got from Minnesota, on what root were they grafted, the Siberian crab or the Pyrus Baccata?

A. As near as I can understand the Pyrus Baccata.

- Q. Have you any trees grafted on seedling roots, that you grew yourself ?
- A. Yes, we had them before we started to grow the Pyrus Baccata. We had seeds from erab apples, and sowed seeds of crab apples and grafted on them.

Q. Have they been a success on the Pyrus Baccata?

- A. Yes, they have been a success. I think possibly they make a little better stock on one year old trees with the Pyrus Baccata at the same age.
- Q. They would be more successful than the seedling from such apples grown in the east?
 - A. Yes.
- Q. You would not have the same trouble with them that you described in the seedling from eastern seed?

A. No, they are perfectly hardy, indeed.

Q. Do you prefer the Pyrus Baccata as a root to graft on to them ?

A. Yes, the Pyrus Baccata has a tendency to dwarf the tree, and for that reason we like to cut and graft on a Pyrus Baccata.

By Mr. Ingram:

Q. At maturity, what height would these trees be—these trees that are dwarfed?

A. From what I have seen of the *Pyrus*, that is the *Pyrus Prunifolia*—this *Pyrus* is a little larger than the trees I have seen in the experimental farm—they may be 9 feet high.

Q. They would not be so subject to the frost ?

A. No, they would not be subject to the same extent to the force of the wind. I may say that was one of the difficulties we had. Another of the difficulties we met was the lack of shelter. Supposing we had at the present day an apple tree of sufficient hardiness to plant generally through all Manitoba without any shelter, you would never keep any fruit. The wind would blow all the fruit off before maturity. We find in our orchards which are fairly well sheltered that we lose considerable fruit from this cause. The wind blows steadily there for weeks at certain times of the year.

By Mr. Smith (Wentworth):

Q. Did you get the trees from Minnesota on the Baccata root?

A. Yes, that is what I understood.

Q. What roots were those on, you got from Ottawa?

A. I do not know.

Q. That might account for the difference ?

A. Yes, it might.

By Mr. McEwen:

- Q. What time is the windy weather ?
- A. Indeed, any time.

By Mr. Smith (Wentworth):

Q. It would be rather unfortunate that it should be understood that you could not grow trees there simply because they came from Ontario.

A. Well, that is my experience.

- Q. Well, you say the difficulty arose from the different conditions under which they were grown and not on account of climate at all.
 - A. Fruit trees.

Q. Yes.

A. Well, you know you take a fruit tree when the root is killed in the winter, and you can easily tell whether it is root-killed or top-killed; there is no difficulty about that, you can easily tell what killed your trees. Those trees which I got from Ontario, the largest part of them, came from the Niagara peninsula.

Q. Well, of course, the Niagara peninsula has a good deal warmer climate than

Ottawa.

A. Yes.

Q. I am speaking of those that came from Ottawa?

A. I had success with those that came from the experimental farm.

Q. You attribute the loss to the top freezing and not to the root freezing.

A. Those from the east ?

Q. Yes.

A. From the Niagara peninsula?

Q. Yes.

A. The whole tree, root and branch. If it had been from the root only, the root would have been killed and the top would not have been dead. In this case, both root and tree was dead; if it was only the root you could very easily tell that the top was hardy enough, but the root was tender.

Yes.

Q. But you said a little while ago, you thought that the top would become hardier from being grafted on Baccata ?

A. Yes.

Q. It might very well be that the loss of the eastern grown trees was on account of the tender root ?

A. I could not say that, because the top died as well as the root.

Q. But the top was tender because it was on a tender root, and I understood you to say that the grafting on a hardier root caused the top to become hardy.

A. Yes; it would be grafted on a tender root, but the top would not be frozen.

Q. I think you had better make a little further investigation on the point whether it was not on account of the root being tender. I think if eastern trees were grafted on the Baccata root you would have found that they succeeded well.

A. That was not my experience.

Q. Have you had any tree from the east grafted on the Baccata root?

A. Not to my knowledge.

Q. Then how are you able to tell?

A. These trees that I got from the east died at the roots, the tops had been perfectly hardy, you will understand.

Q. You might hardly expect that the tops would be hardy if the roots were tender?

A. Well, you could tell in the spring of the year whether the roots or the tops were hardy; but the roots would be dead, but in case of root-killing in the spring of the year, I would have trees that would blossom and then die off, and an examination of the roots showed that they were dead.

Q. Did the Hibernals die ?

A. We have never had them die.

- Q. What are you comparing those from Ottawa with then, with regard to the same variety?
 - A. We have the Hibernals from Ottawa also.

Q. And are they still living ?

A. Certainly, and bearing fruit.

Q. That would indicate then that it was not the top that was at fault, but possibly the roots of your Hibernals from Ottawa which succeeded were on Baccata roots the same as those from Minnesota; it would indicate that it was not the difference in climate, but rather that the root was tender.

- A. Possibly, but you see in this case these trees were planted in one row, and you will understand that the trees usually sent out from Ontario are three years old. Now, these trees sent out from the experimental farm were just one year old. So that the tree was grown up in Manitoba, but our experience with nurserymen in Ontario is that their trees are three years old, and of course they die.
 - Q. How old were these trees from Minnesota?
 - A. They were two year old trees.
- Q. That is hardly a fair comparison with the Ontario trees again. I think you ought in all fairness to the east to plant some of those trees one year old grown on the Baccata stock, and see if they do not compare with the Minnesota tree?
- A. Possibly, they might. The difficulty is when you take up the average catalogue of the average nurserymen of Ontario, you will hardly find any of these varieties I have mentioned.
 - Q. You will find Hibernals in every catalogue.
 - A. Certainly, but not the others.

By Mr. Ingram:

- Q. You are speaking from a nurseryman's standpoint for growing of these trees.
- A. Yes.
- Q. From that standpoint only, not as to the farmers throughout the province?
- A. No, I am speaking with regard to the trees which the average nurserymen in Ontario grow for the market, and the varieties they send out.
- Q. But what I wanted to get at is this, you are speaking now from the standpoint—in connection with these trees they get from Ontario and Minnesota—you are speaking purely from the nurserymen's standpoint.
- A. Purely from the standpoint of the planter, and from the actual experience in planting trees.
 - Q. Is it from the farmer's or the nurseryman's standpoint?
 - A. From the man who plants trees for his own use.
 - Q. That will include the nurseryman and the farmer as well ?
 - Q. Yes, that includes the whole thing.
- Q. Is there anything in the matter of cultivation of these trees? Do all farmers cultivate the trees alike necessarily?
 - A. Possibly not.
 - Q. Then you say frost kills these Ontario trees ?
 - A. Yes, they are frozen to the roots.
 - Q. And the top naturally follows ?
 - A. Yes.
- Q. Would there be anything in the method of cultivation, all farmers would not cultivate alike?
 - A. No.
- Q. Take in Ontario, for instance, and you will find a farmer ploughing through his trees and raising grain. We are told by experienced men that they should not raise grain among the trees and yet they are doing it. Would not the same rule apply in Manitoba. One farmer would probably plough and injure those trees while another would not do so, would not the failure of those trees be due to some extent to imperfect cultivation?

No answer.

By Mr. Maclaren (Huntingdon):

- Q. You are speaking about your own experience ?
- A. Yes, and of conditions under which I have grown them.

By Mr. Ingram :

Q. Yes, but I understood you to answer my question by saying that you were looking at it from a planter's standpoint: if you are you must be giving an opinion from the farmer's standpoint who is not a nurseryman?

A. Of course, I am giving you my experience and the condition under which

these trees are grown.

Q. Individually ?

A. Yes.

Q. Then you are not speaking for the farmer who has planted them. I want to understand who are making the failures with these different trees, whether it is the nurserymen, or Mr. Stevenson, or the ordinary farmer?

A. Well, the experience of nine-tenths of those who buy eastern grown trees and

plant them is the same. The trees invariably get killed out by winter.

By Mr. Ingram:

- Q. And you take it for granted that those that grow up in the fruit belt of Ontario are not successful?
 - A. No.
- Q. I want to find out, is it by reason of the frost altogether, or is it by the different methods of cultivation. Different farmers cultivate in different ways?
 - A. Yes.
 - Q. In every instance is it the frost that kills them ?
- A. Well, you see these trees are grown under different conditions to what they are planted under in the North-west. The conditions in the nursery here are different from what they are in the west, and they succumb to the extreme winters, because in our experience we see no other reason why thy should die, because there are trees which have been brought from Minnesota and which have succeeded.
 - Q. By these same farmers?
 - A. Yes.
- Q. Then there is nothing in the cultivation of the trees at all that interferes with the growth ?
- A. Possibly, when they come into bearing and also with regard to keeping them growing. Of course, there is considerable in the cultivation as well.
 - Q. Then it cannot be altogether on account of the frost?
- A. It is generally on account of the frost. When you get a tree that comes into cultivation you have to treat it in so far as you have to keep it growing. There is so much strain on the tree in bearing fruit, and you have to treat largely any tree that is bearing fruit.

Q. That is a very broad statement you have made. Apply your own argument to the shade trees that fail for one reason or another. Would not the frost kill the shade trees as well as the fruit trees?

A. You can get this statement from a thousand parties in Manitoba. There are thousands and thousands of dollars' worth of Ontario trees sold every year in the west, and they might as well be burned. They are no good to us there. These nurserymen come here with their fine pictures, go through the country and tell about this and that, and show these fine pictures of trees and take the money out of the farmers' pockets every year.

By Mr. Armstrong:

Q. Why did not you not give the nurserymen of the east some idea of the hardy trees and give them some idea of what to send to the west. Would it not be wise to give them a trial after we have tested all the varieties that are found in the catalogue

of the average nurseryman in this province. I have tried them myself, and so have hundreds of others.

By Mr Smith (Wentworth):

- Q. No doubt that is largely the case of failure. They plant the tender varieties there?
 - A. No doubt of that.
- Q. If the hardy varieties were planted on the Pyrus Baccata root I feel sure they would do as well there as do the trees from Minnesota?
 - A. No, certainly not.
 - Q. I think it is only fair that you should make an experiment and see ?
 - A. I have been experimenting for 30 years in the west.
 - Q. Have you conducted experiments on the Baccata root ?
 - A. No.
 - Q. Those grown from Minnesota were on the Baccata root and they succeeded?
 - A. Yes.
- Q. And the inference is that it is because they were on Baccata roots? Were those trees from Minnesota got from regular nurserymen?
 - A. Yes, cultivated by regular nurserymen.

By Mr. Richardson:

- Q. Do you succeed in growing peaches in any part of Manitoba?
- A. No, we have not grown peaches there yet. I do not know what we might do, but so far we have not grown them.
 - Q. They are too tender ?
 - A. Yes.

Having read over the preceding transcript of my evidence, I find it correct.

A. P. STEVENSON, Forester and Fruit Grower, Nelson, Manitoba.

RESULTS FROM IRRIGATION

House of Commons. COMMITTEE ROOM 34. TUESDAY, June 7, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, chairman, presiding.

The CHAIRMAN.—I may say to the Committee that we tried to secure the presence of one of the members of the Department of the Interior to speak to us with reference to immigration. Mr. Scott, who was expected to come, has been in Winnipeg I think for two weeks, and it is not yet known when he can come here, so that instead of immigration we had to fall back this morning on irrigation.

Mr. Samuel M. Genest, from the Department of the Interior, is here, and will be able to give us some information with reference to the work of irrigation in the North-west. It is the first time this matter has come before the committee, but there is a good deal of money being spent in connection with irrigation works, and it is well

that the committee should hear of it and learn what is being done.

Mr. GENEST.—Mr. Chairman and Gentlemen, as irrigation in the North-west is comparatively a new proposition and may be quite unknown to the majority of members here, I have prepared a synopsis of its history—how it was established in the North-west and what have been the results.

IRRIGATION IN SOUTHERN ALBERTA.

Prior to the year 1890, the greater portion of Southern Alberta was thought to be only suitable for grazing purposes, and was, therefore, mostly taken up by ranchers who obtained leases of certain tracts ranging in area from 5,000 to 60,000 acres, upon which cattle and horses were bred. This industry was a great attraction for settlers in that portion of the country, who, besides being paid wages to look after the ranchers' interests, were also desirous of making a home for themselves by securing a bomestead and opening up the same, the wages alone affording them a comfortable livelihood.

These small settlers were in reality the means of bringing to the Government's attention the necessity of distributing the limited supply of water in that portion of Alberta and South-western Assiniboia to the best advantage. For instance, the first thing that these settlers did in choosing a piece of land was to ascertain if water was available on the same, and therefore, they were sure in every case to try and secure a quarter section upon which a spring, creek or a good approach to a river was located; and it was with great difficulty that the government protected the interests of those already established in the country by setting aside such pieces of land as were, or might become the water supply of vast areas surrounding the streams, creeks or river approaches.

THE NORTH-WEST IRRIGATION ACT.

In the year 1893, after having sent out circulars to some of the best known and most experienced settlers of the North-west Territories, it was decided that it would be well to regulate the disposal of the available water in those districts by an Act of Parliament, and consequently the North-west Irrigation Act was passed and assented to on July 23, 1894. This Act was subsequently amended on July 22, 1895, and again on June 13, 1898.

It was probably not without a certain amount of hesitation that the Government decided to lay such a bill before Parliament, for some parties who knew the North-west well were pessimistic as to the results which would be obtained from irrigation, and fear was expressed that such an Act might stop intending immigrants from settling in that portion of Canada, as the Act might be the means of leading them to believe that Southern Alberta and Western Assiniboia were too arid to be farmed and tilled to advantage; in fact, it was even feared that the settlement of the province of Manitoba might be materially retarded if such an impression was implanted abroad. This fear was not without a certain excuse, for even corporations with big interests in that part of the country were doubtful as to its agricultural resources, and such an important company as the Alberta Railway Company, which held thousands of acres in Southern Alberta, disposed of large blocks of the same at the rate of \$1 and \$1.25 per acre, thinking at that time that they were getting good value for their land.

After the Irrigation Act was assented to, it was necessary to find out who were the parties who had irrigation works constructed, in order that they might be notified to come under the provisions of the same; that is to say, secure a license from the Crown for the water required by them within a certain period, which was to lapse on July 1, 1896, and which period was subsequently extended to July 1, 1898.

After investigation it was found that at the time the Irrigation Act came into force, there were about 119 irrigation schemes constructed, or in course of construction. These schemes came under the three classes defined in clause 2 of section 8 of the Act, as follows:—

Twenty-eight came under the heading of domestic purposes, and comprised the diversion of water for railway purposes, the supply to mills worked by steam, and the watering of stock.

Seventy-eight came under the heading of 'irrigation' and were found to have been constructed since 1890, or were in course of construction at the time the Act was enacted, all of them on a small scale, irrigating at the most from 25 to 200 acres, which goes to show that irrigation was in its infancy at that time and the results from the same were only problematical.

The remaining three schemes came under the heading of 'other purposes,' one of them for the purpose of operating mills by water pressure, the other two constructed, or in course of construction, by the Calgary Water Power Company, and the Calgary Irrigation Company which held a Dominion charter prior to the passage of the Northwest Irrigation Act of 1894.

IRRIGATION COMPANIES FORMED.

With the exception of the Calgary Irrigation Company and the Spring Bank Irrigation Company, which had made application for water to be diverted from the Elbow river and Jumping Pond creek, the former to irrigate 45,000 acres, and the latter 21,000 acres, no company had yet taken up irrigation on a large scale, till the Canadian North-west Irrigation Company applied in the year 1897 to be given the water reserved from the St. Mary river for the purpose of irrigating 500,000 acres of land, which after survey, were considered to be susceptible of being irrigated from that source. After having secured the necessary authorization the company began the construction of these works at an estimated cost of \$400,000, but which expendi-

ture has now reached about \$650,000. The company are now supplying water to

about 200 settlers, the majority of whom are experienced agriculturists.

In view of the increased area embraced by this scheme and by experiments made by this company, at their suggestion it was thought advisable to change the ratio of water from one cubic foot per second to the 100 acres, to one cubic foot per second to the 150 acres, economizing thereby a great quantity of water which may at a future date be used in irrigating land susceptible thereto.

This company may be said to be the pioneer of irrigation on a large scale in the North-west, for it was certainly not without a certain amount of risk that they undertook the task of carrying out a proposition of such magnitude, as it was thought that on account of the temperature in those parts being rather low although enhanced by irrigation, the growth of cereals and crops might be ruined by frosts before they could mature, and that, therefore, the aim and advantage which the construction of the works was meant to attain would thereby be nullified. Fortunately, however, since these works have begun to be operated, the fears expressed above have proved to be without foundation, and in consequence the Canadian North-west Irrigation Company have asked and received the necessary authorization to extend their works, so that now they are about to expend over \$1,000,000 to bring under irrigation at least 1.000,000 acres.

THE BOW RIVER IRRIGATION CANAL.

The success of this company has, to a great extent, been the means of deciding the Canadian Pacific Railway Company to undertake the construction of the Bow river irrigation canal, the practicability of which was proved by surveys made under the jurisdiction of the Dominion government, under the able supervision of Chief Engineer J. S. Dennis, whose valuable services have since been secured by the Canadian Pacific Railway Company to carry out the construction of these extensive works which will bring under irrigation at least 2,500,000 acres within the 3,000,000 acre tract. The cost of constructing these works is estimated by the company's engineer at \$4,000,000, and the amount of water granted from the Bow 13,000 cubic feet at high water stages, and 3,000 cubic feet at low water. It is estimated that although only a little over 2,500,000 acres are susceptible to irrigation in this tract, the balance of the 3,000,000 acres will be so benefited by the distribution of water in that locality as to make the same suitable for settlement.

The plans filed by the company show that to carry out these works the construction of about 480 miles of canal and laterals will be necessary, and that to store the water granted at flood and high water stages, at least 15 reservoirs will have to be

created.

By Mr. Ross (Ontario):

Q. Is there sufficient water to supply the irrigation there ?

A. Yes, plenty, the companies having secured by the authorization above referred

to, the full duty required to irrigate the same.

The authorization given to the company in connection with this scheme provides that the whole of these works shall be completed within 15 years from March 14, 1904, that is, by March 14, 1919.

SYSTEM OF DISPOSING OF WATER SUPPLY TO SETTLERS.

The system of disposing of the water by these companies to the settlers, is by argreements entered into on forms approved by the Commissioner of Public Works at Regina, and confirmed by the Minister of the Interior at Ottawa, copies of which have to be filed at Regina and in the Department of the Interior at Ottawa. The

rate at present charged is \$150 per cubic foot per second per annum, which is equivalent to \$1 per acre, provided the purchaser of land demands the full duty of one cubic foot per second for each 150 acres. From the contracts filed in the department I find that in a very great number of instances, the settlers having 150 acres of land susceptible to irrigation only contract for one quarter of a cubic foot which costs annually \$37.50, developing a charge of about 25 cents per acre per annum.

If, later on, when the country is more developed, it were found that the rates charged for water were excessive, section 51 of the North-west Irrigation Act empowers the Minister of the Interior to regulate such rates when the interests of the

country require it.

However, the tax of \$1 per acre per year for the full duty is not, from statistics gathered both in the department and the United States, a heavy charge, as water is looked upon as an insurance on producing a certain crop, the quantity of which largely depends upon the skill of the user.

By Mr. Ross (Ontario):

Q. Do you know anything about the charges for water, say, in California ?

A. Yes. In California, for instance, certain parties will form themselves into a municipality. Twenty farmers who have got lands adjoining will get together, or perhaps only sixteen of them, and they will get a surveyor. They submit their plans to the government of the United States, and if their scheme is feasible the government will grant them what they call a water right, conditional on their carrying out these works to a successful issue. Well, if these sixteen farmers take water from that ditch the cost of the works is ascertained and their lands are assessed proportionately at say \$5 per acre, or \$10 per acre, or even more according to the cost of the construction of the works. Beyond this, outside of the cost of the water itself, there is no charge except for the maintaining of the works, repairs and administration. Then, if later on others want to go into the scheme of these people, they go to the parties that amalgamated together and say, 'we want to get some water, what will you charge us?' They say, 'That is all very well, but you have got to get your water right first.' Well, this water right is simply paying their proportion of the cost of construction.

WATER SUPPLY-HOW DISTRIBUTED.

As to the distribution of the water, it is worked in this way: say there are ten farmers served by one ditch, who require an aggregate of 10 cubic feet. The foreman notifies them that on a certain day he will turn on the water for a sufficient number of hours to irrigate the whole ten farms. The first farmer requires only half a cubic foot and, therefore, as soon as the water has run on his farm long enough to give him his ratio, the inlet is closed, and the water is run on to the second farm. Now, the second farmer's requirements may be 1½ cubic feet, and therefore the water is run on to his farm until he has secured his ratio; and so on till the whole ten farms have got their aggregate of ten cubic feet. This process is gone through as often as once a month during a season, if required.

By Mr. Stephens:

Q. Can a farmer get that water in the dry season?
A. Yes, that is exactly what he secures the right for.

Q. Do they have to take it in the wet season ?

A. Not necessarily, for they do not require it then, although they have the right to take it in any season, wet or dry, but to take water in the wet season when the farm does not require it would be manifestly detrimental to the crop and a waste which is, moreover, provided against by the Act.

In the North-west Territories, that is, in Southern Alberta, instead of using the water for irrigation purposes in the wet season, this is generally the time when provision is made for storing by dams and in reservoirs constructed for that purpose all the water in excess of the low water stage, as licenses to irrigate land in many in-

stances are granted for the use of the water during the flood and high level water stages only of the streams; so that when the dry season comes the water necessary to irrigate the areas requiring the same is available in sufficient quantity to give the full duty, without interfering with the requirements of the domestic rights of farmers whose properties are crossed by or border on the streams affected.

By Mr. Wright:

Q. Is the farmer allowed to use it for domestic purposes ?

A. Certainly. The man who has got, for instance, an application for domestic purposes, that is, for stock or working mills by steam, has a prior right over the man who has an application for irrigation, because it is more important to secure a supply of water for the cattle, and to keep them alive than to take water merely for the purpose of rendering the land fit for cultivation.

But once the license conveying these rights is issued, it takes precedence in rotation in accordance with the number it bears irrespective of the purpose for which it is issued. It should be stated, however, that the use of water for sanitary and household purposes, and the watering of domestic stock (not, of course, including large herds of cattle), is fully protected by clause 9 of the Irrigation Act, under which no license can be granted which would infringe on such rights.

By Mr. Ross (Ontario):

Q. Do they bring it into the houses, too ?
A. Oh, yes, this is provided for by the Act.

COMPARATIVE YIELDS OF FIELD CROPS.

Now, I am going to give you a comparison showing the beneficial results of irrigation, based on statistics I have gathered from United States reports. Let us take as an example the State of Montana, which adjoins Alberta, and take some of the other States which are reputed to great producers where irrigation is not used, and I want to prove by these statistics that where they used irrigation the crops were so much enhanced as to produce about an average of 11 bushels of wheat to the acre, more than the non-irrigated land. These statistics are for the years 1891 to 1900 inclusive, and are taken from the year book of the United States Department of Agriculture for 1900.

In Montana at the present time with irrigation for the last ten years the average production of wheat per acre has been 25'3 bushels, whereas Wisconsin, one of the largest producers of the non-irrigated states of the Union, only gives 14'5 bushels to the acre. Oats are in the same proportion, barley is in the same proportion, potatoes are in the same proportion. For instance, in Montana they got an average of 123 bushels of potatoes to the acre; whereas, in North Dakota, another of the non-irrigating states and said to be one of the greatest producing potato countries of the Union, they only got 90 bushels to the acre. The table of my statistics is as follows:—

State.	Wheat.	Oats.	Barley.	Potatoes.	
Montana North Dakota South Dakota Minnesota Wisconsin Michigan Illinois Iowa Nebraska	Bush. 25°3 12°7 10°4 14°2 14°5 14°1 13°2 14°7 12°2	Bush. 38·4 25·6 23·7 30·9 32·9 29·7 31·5 31·7 24·8	Bush. 31 · 3 21 · 7 21 · 0 26 · 2 27 · 4 22 · 0 24 · 1 24 · 3 20 · 8	Bush. 123 90 71 89 87 80 72 76 66	With irrigation. Without irrigation,

By Mr. Ross (Ontario) :

Q. They don't pretend to grow grain on arid sections without irrigation ?

A. In some places it is impossible to do so; in other places it may be done, but without a certainty of success.

Q. You were talking of the arid sections that need it ?

A. Yes.

In Southern Alberta grain can be grown successfully in a wet season without irrigation, but should a dry season overtake a crop, then if the farmer has not availed himself of the advantages of irrigation his crop is certain to be a failure, as he must rely upon a supply of water to ensure to a certainty the growth of cereals. The last two years have been sufficiently wet ones to obviate the necessity of a very extended use of irrigation.

By Mr. Clancy:

Q. You have given statistics as between the different states rather than the statistics between the arid lands that have to be irrigated and those which have not been irrigated in the same state?

A. I beg your pardon, perhaps I did not make myself quite clear. The State of Montana is under irrigation, whereas the others enumerated are not.

Q. The whole of it?

A. The greater portion of the cultivated areas is.

Q. What I was endeavouring to get at was, we are making a comparison probably on the same conditions?

A. Exactly.

Q. Therefore, the comparison should not be made between Wisconsin and Montana, but rather between the arid lands that are irrigated in Montana and those that do not require irrigation. That is a fair test, under the same conditions, as latitude and so on.

A. I am coming to that. I simply gave these statistics to show what was grown in the irrigated country, and what was grown in some of the non-irrigated country.

I am coming to the other.

In addition to the above schedule, here is one of the many instances in which the benefits derived from irrigation are irrefutably proved. The Fairfield farm, near Lethbridge, produced under irrigation, 91 bushels of oats to the acre, whereas the neighbouring farm, without irrigation, only produced an average of about 18 bushels to the acre, and the grain produced from the non-irrigated farm was inferior in quality to that produced on the Fairfield farm. You will see among the photographs I have here of the grain grown on the Fairfield farm. (Photographs exhibited and shown to members of the committee.)

By Mr. Gilmour:

Q. What year was that ?

A. This last year. The Fairfield farm above referred to was watered from a

supply of the Canadian North-west Irrigation Company's system.

I must here speak of an industry of no mean importance which owes its existence in the North-west to the inauguration of cultivation by irrigation; that is, the beet sugar industry. The same capitalists who are at the head of the Canadian North-west Irrigation Company—

By Mr. Ross (Ontario) :

Q. Just wait a minute before you go on with that. I am told by a friend of mine that it costs as high as \$30 an acre in Southern California for a water supply from irrigation; would that be right?

A. Yes, in some instances the cost fully reaches that figure.

By Mr. Wright:

Q. Annually ?

A. Yes.

By Mr. Ross (Ontario):

Q. As against \$1 for ours?

A. \$1 for the full duty.

Q. But they raise fruits there which they don't raise in Alberta ?

A. Yes, and this is what permits the Californians to pay such a high figure for the water, for a grain crop could not carry this heavy charge. In Alberta they have been experimenting on the fruit-growing capacity of the country, and the results so far obtained have been most promising for ultimate success in raising fruits in paying quantities. This, however, is entirely due to the inauguration of irrigation, without-which fruit-growing would have been an impossibility.

A CUBIC FOOT OF WATER AS APPLIED TO IRRIGATION.

I might explain here what is meant by a cubic foot of water to the second. A cubic foot of water to the second would be the volume of water running through a sluice one foot wide and one foot deep, having a slant which would permit a chip placed on the surface of the water being carried for the distance of one foot in one second.

By Mr. Wilson:

Q. How far would it carry ?

A. That would depend on the slant, but a sufficient slant must be given to carry it one foot in one second.

Q. I think you can give us an idea of the quantity of water ?

A. Certainly, what I have first explained is a practical illustration.

By Mr. Ross (Ontario):

Q. You must have instruments to measure ?

A. We have, and I may further state that water is also measured by the acre foot, which is equal to 43,560 cubic feet to the acre.

By Mr. Wright:

Q. Do they use 30 times as much water in California as we get for one dollar?

A. No, you are entitled in the North-west to get the same quantity of water for \$1 that the Californians are entitled to get for \$30.

By Mr. Wilson:

Q. How do you explain the difference ?

A. In California cultivation must be carried on entirely with the use of irrigation, otherwise no crop of any kind can be raised, the country being a totally arid one, where the rain falls in such small quantity that it is not of any material help to the vegetation. This almost total absence of natural water supply renders the artificial supply all the more expensive. Further, as already explained, the crops raised in California are mostly fruits, and can stand a heavier taxation than a grain crop could carry. On the other hand, in the semi-arid region of the North-west, even in a dry season, the grass attains such a growth in the early spring that when the hot weather comes, and dries it up, it still retains so much of its nutritious quality, that cattle grazing on it can be marketed off the range, and compete in quality with any other cattle in the Dominion. That is one reason why Southern Alberta was regarded as one of the best ranching countries in the world.

The principal difficulty with which the ranchers had to cope was not so much the scarcity of water from lack of sufficient rainfall, as the fact that squatters coming into the region located near all the springs and available water approaches, and by fencing in these springs and approaches prevented their being used by the cattle, thus practically locking up tracts in some instances as extensive in area as 25,000 or 30,000 acres. The department, however, took the necessary measures to obviate this difficulty as far as possible by the creation of stock-watering reserves, on which no settlement is allowed, thus leaving the water supply accessible to every one.

By Mr. Clancy:

Q. You say they have received as much in the North-west for one dollar as in California?

A. Of water? Yes, they are entitled to as much if they wish to use it.

Q. Does it mean that they pay thirty times as much for a cubic foot in one of the United States, as against \$1 in the other, or that it serves the same purpose. It is a fact which most people know that they are obliged to use more water in California for the reasons stated than in Alberta?

A. In the North-west they don't have to use the water continuously. They only use it perhaps once or twice in the season. In California they have to use it mostly at all times, say once or twice a month, and consequently although our people have the right to the same quantity of water as they have in California they don't actually need it or use it.

Q. If they did, they would pay more ?

A. They would pay no more.

By Mr. Kidd:

Q. I suppose there are two months that they don't use it at all ?

A. Yes; in California they do not use the water for about two months, Decem-

ber and January.

In Alberta irrigation is more of an insurance on good crops. It is the same as a man who owns a vessel and is putting to sea with a valuable cargo. He places thereon an insurance securing the value of the same, so that in case the vessel and cargo are lost, he is protected against loss by the insurance. The farmer, in a like manner, insures his crop against failure by drought by securing the right to the use of a water supply from the irrigation, in case of need; so that if the natural water supply should fail him and his crop be endangered, he is amply protected, and has no cause for anxiety, having a certainty of a successful crop. So that irrigation is in fact an insurance on a sure return for his labours.

PRODUCTION OF SUGAR BEET BY AID OF IRRIGATION.

I will again refer to this matter in connection with an industry of no mean importance, which owes its existence in the west to the inauguration of cultivation by irrigation; that is, the beet sugar industry. I have here some photographs by way of illustration.

The same capitalists who are at the head of the Canadian North-west Irrigation Company, have constructed a beet sugar factory at an estimated cost of about \$50,000, and in connection with the same have begun the cultivation of sugar beets upon a tract covering 3,000 acres.

By Mr. Ross (Ontario):

Q. Where ?

A. Near Cardston.

Mr. CLANCY.—At Raymond?

A. At Raymond.

Experience has proved that to cultivate sugar beet with success the same cannot very well be cultivated on newly broken land, and in fact it takes at least three breakings before the land is ploughed deep and is mellow enough to render the growth of sugar beets successful. This will be easily understood when one takes into consideration the depth to which the sugar beet reaches. The first year's ploughing only disturbs the ground to the extent of about three or four inches, and as in this case, is generally sowed with oats; in the fall this ground was again ploughed up and the next spring, after the land had been copiously irrigated, it was sowed with beet sugar Here I must say that the company experienced a difficulty which was most unfortunate for them, but which again shows the power of that country for grain raising. Although the ground had been well ploughed before seeding with beet sugar, the waste oats of the previous season started to grow in such abundance, that of the 3,000 acres the company had sowed with beet sugar seed, they had to abandon 1,800 acres and restrict their efforts to the cultivation of the remaining 1,200 acres, and although the beets were almost choked by the growth of the oats, which in some instances had reached a height of about eight to ten inches, the results of that crop were about eight tons to the acre, which, under the circumstances, was considered very satisfactory.

Q. I had information that I believe to be reliable in character that it did not

reach six, in fact that it was somewhere about five tons.

A. Of course I do not question your information, but my authority for the statement is a person who is thoroughly reliable and who had personally seen the result of the crop.

By Mr. Smith (Wentworth):

Q. I would be surprised if they got five tons, after what they had done.

A. The 1,800 acres which were abandoned gave a growth of from 20 to 23 inches of eats; that is, of straw, which, I was informed, was used green for fodder.

It took the factory three weeks to reduce this crop to sugar, and the gross product

of the same was about three quarters of a million pounds of sugar.

I have been informed that to permit this company to reap fair profits on their outlay, say 10 per cent per annum, the cultivation of 3,000 acres is necessary, and the average yield per acre must be about ten tons, being equal to 60,000 pounds of beet, yielding on an average ten per cent of sugar, leaving after expenses are deducted about one cent per pound of a profit, paying, therefore, a dividend of from 10 to 12 per cent on the outlay.

By Mr. Clancy:

Q. Well, that man did not know much about beets, or he would not write that.

A. Well, I have read that in England at the present time some assays have been made to ascertain the percentage of sugar in beets, and that in some instances the results were as high as 15 and 18 per cent. Of course, there is some loss in manufacturing sugar from the beet, but to offset this I only give ten per cent. I think that what has been done in the North-west shows that this industry is a success, and will be a great help to settlement in that district.

In addition to the above, let us see to what extent the cultivation of sugar beet may be a factor in helping financially the parents of a large family of young children. The price paid to farmers by the above mentioned company for sugar beet having a fair percentage of sugar is \$4.75 per ton on board the cars; this would be at the rate

of \$47.50 per acre, which shows that the beet sugar will be a great factor in the development of the west.

Q. What does it cost to produce per acre?

A. I suppose the cost would be about from one to two-thirds of the receipts, according to circumstances, covering expenses for weeding, ploughing, seeding and taking up, leaving a fair margin of profit.

Q. Well, you have no figures for that ?

A. I have actually no statistics on the cost of producing, and therefore cannot speak on the point with certainty.

Q. That is very important, you know.

A. I recognize that it is. The greatest portion of the labour required to make the growing of beet sugar a success is weeding, so that a settler who is the happy father of children who are not yet old enough to undertake the more arduous work required on the farm, can profitably employ them in weeding the beet field, a work which would not be detrimental to the health of the children so employed, and which would be financially most beneficial to the parents, as it would reduce the expense of cuitivating this crop to a minimum.

To be able to do that is illustrated above, irrigation is simply indispensable, for sugar beet requires plenty of water and the risks of having a season's work lost through drought must be ensured against, and the only assurance possible in this case is to have at one's back a certainty of a water supply by irrigation.

CONDITIONS ADOPTED TO FOSTER IRRIGATION.

To foster irrigation in the North-west Territories the government have sold land to settlers under the following conditions:—

The price of the land to be the current regulation price of \$3 per acre, 25 per cent of the acreage so bought to be brought under irrigation, the cost of constructing the works to be credited as part payment to the maximum of \$2 per acre, so that in every instance the cash price of the land so sold will not be less than \$1 per acrs. Before the lands thus sold under these regulations are patented, the chief engineer, or an engineer under his supervision, has to inspect the works constructed, verify the expenditure incurred in the construction of the same and then send in a certificate to the Department of the Interior, that all the conditions attached to such a sale have been carried out; and upon the receipt of such certificate and a fee of \$10, the Crown issues the patent for the land so purchased, and also the license conveying the water necessary to irrigate the same.

AREAS COVERED BY APPLICATIONS GRANTED UNDER THE ACT.

The number of individuals and companies who have availed themselves of the privileges given under these regulations is 27, the acreage aggregating approximately 503,609 acres. Since the passing of the North-west Irrigation Act in 1894, 84 licenses conveying 144.58 cubic feet per second of water to irrigate about 21,686.51 acres have been issued, and there are still in course of construction 159 schemes, embracing a total area of 4,150,700 acres which will involve the distribution of 27,650 cubic feet per second of water, showing thereby that as the country opens up, the importance of irrigation is being realized more and more every day. In addition to the above, 41 licenses, conveying water for 'domestic' and 'other purposes' have been issued, and about 123 applications for water for similar purposes are now being dealt with.

In summing up my remarks on irrigation in Southern Alberta and Western Assiniboia, I must not overlook the importance of irrigation on the forestation of that portion of the North-west Territory. As proved by observation and experience in

other countries, the growth of trees has been the means of arresting the run off of freshets, spring and rain water from the ground, thereby keeping the moisture in the earth sufficiently long to permit the vegetation to sprout out with sufficient strength to enable the same to stand the heat of the more advanced season without much more need of water. By referring to the Canadian Forestry Association's report for 1901, pages 22 and 23, I find two very interesting reports made therein by Mrs. Zina Y. Card, and by Mr. Wm. Pearce, which show what an important factor irrigation has been in the successful effort in tree growing in that country.

GOVERNMENT EXPLORATORY IRRIGATION SURVEYS.

I may state that in addition the government have carried on extensive exploratory irrigation surveys covering important portions of that part of the North-west, so as to ascertain from the general contour of the country where the most eligible locations were situated for the construction in the future of different irrigation works. The effect of these surveys, moreover, has been to prevent the possibility of the launching of wild-cat schemes by speculative promoters not possessed of the requisite data to give assurance that their schemes were feasible, and who, by inducing the investment of large amounts of capital in works which could not be carried out, might cause the investors serious financial loss, which would, of course, be greatly detrimental to the good name of the country.

Another valuable result of these exploratory irriagtion surveys has been to furnish the department with complete records, for office use, of the water supply at different stages of all the rivers and streams, so that to-day when an application is filed in connection with a district where such surveys have been made, the department is able at once to judge pretty closely from its records whether the stream affected carries a sufficient body of water to justify the granting of the application. These surveys cover large tracts of the country, such, for instance, as the St. Mary and Bow rivers basins. What is known as a basin in irrigation is the land surrounding the main stream and tributaries, which is capable of being irrigated by the same. So, to get at that basin and to ascertain what proportion of the area can be irrigated in the same, the government—

By Mr. Gilmour:

Q. You mean the Dominion government?

A. Yes, the government are making surveys to that end. The result of these surveys has fully justified the expenditure for, as I have already stated, by the construction of the works carried out by the Canadian North-west Irrigation Company, for which the company were enabled to partly utilize the government surveys, large tracts which were only suitable for grazing purposes have been rendered most valuable for cultivation, and large tracts which were thought to be useless for any purpose whatever have been made very valuable for grazing purposes, and these latter mentioned lands are now being disposed of by the company at from \$3 to \$4 per acre, although in some cases the water does not actually touch them. The explanation of this is that before irrigation was introduced the large herds of cattle would bunch round a spot where they could be near the natural water supply, and, with herds numbering from 6,000 to 10,000 head, the grass was soon eaten entirely off, as the cattle would not go far away to the more arid portions where they could not have ready access to water. Then, the areas near water where grass was good were not large enough to give subsistence to these herds sufficient to bring them into good condition for marketing direct off the range.

I have here some photographs showing where cattle can now graze, and where, previous to the year 1890, before irrigation was started there, they could not feed, as there was not sufficient grass, and because they would have to go too far for water.

The construction of the Bow river irrigation canal, which was also proved by the government's surveys to be feasible, will bring as valuable results as those attained by the Canadian North-west Irrigation Company's scheme; and the climatic conditions of the country, joined to the results attained through irrigation, I am satisfied justify me in predicting that Southern Alberta and South-western Assiniboia will in a very short time become the Garden of Eden of Canada.

Having read over the preceding transcript of my evidence, I find it correct.

SAMUEL M. GENEST.

FARMING IN WESTERN CANADA

House of Commons,

Committee Room 34,

Friday, March 25, 1904,

The Select Standing Committee on Agriculture and Colonization met here this morning at 10 o'clock, Mr. Douglas, Chairman, presiding.

The Chairman.—We shall have the pleasure this morning of hearing an address from Mr. Angus MacKay, superintendent of the experimental farm at Indian Head, North-west Territory. This is Mr. MacKay's second appearance, I believe, before this committee. Some years ago I remember listening to him here. Personally, I have knowledge of him individually and of his work, and I can speak in the very highest terms of the success of the farm at Indian Head. I am sure we shall all be pleased to hear him. It has been suggested that he might give us a description of the farm, mentioning the wind-breaks, the soil and the location; in fact, a general outline.

Mr. McKay.—Mr. Chairman and Gentlemen, I am sure it affords me very great pleasure to be present here this morning, but I can assure you that I am very diffident in speaking before an audience like this. I hope, therefore, that you will overlook any deficiency on my part.

THE EXPERIMENTAL FARM AT INDIAN HEAD.

You are aware, Gentlemen, that I am superintendent of the experimental farm at Indian Head, which serves the North-west Territories. This farm was established in the year 1887, under the charge of Dr. William Saunders and myself. I have been superintendent of the farm since that year. The farm consits of 680 acres of land. It was part of the old Bell farm, obtained in 1882 from the government and the Canadian Pacific Railway by that company, and the section on which the experimental farm now is was the first whole section broken in the Territories. It was broken by the Bell Company in 1882, and was cropped for five years before the government purchased it. It was in crop in 1883, 1884, 1885, 1886 and in 1887.

By Mr. Ross (Ontario):

- Q. What kind of a crop ?
- A. Wheat.
- Q. All wheat?

A. All wheat. I think one year there was barley on part of the section, but as a rule the crop was wheat. The whole section was under crop when the government got it. A few acres of land was prepared in that year after harvest for the first crop in 1888. We obtained a few acres of land on adjoining section from the Bell Farming Company for a small crop in 1887, but our first crop on the experimental farm was in 1888. The soil consists of a clay loam, and the subsoil is entirely clay. It is a porous clay, and retains the moisture. For some purposes a lighter soil would have been better, but taking it for the whole work of the experimental farm we find that the soil 2—33

is very suitable for the Territories. We have heavy soil, and on the edges of two coulees or gullys which run through the farm a little lighter soil, which suits better for trees and fruits and any other experiments we make in that way.

By Mr. Ross (Ontario):

Q. What is a coulee ?

A. A coulee is a ravine. We have two creeks or little streams that run through the farm during the rainy season. One comes from a lake, and the other from springs six or seven miles distant from the farm. Both meet on the outside of the farm and run down to the Qu'Appelle River. We have the farm entirely fenced, and have on the west side and on two-thirds of the north side a wind-break of trees one hundred feet in width.

By Mr. Wilson:

Q. Will you tell us what kind of trees ?

A. The trees in the wind-break are mostly maple. A few are elm, and a few pine, Scotch pine.

Q. But not the maples such as we have in Ontario, I suppose ?

A. No, we call them the box elder.

By Mr. Stephens:

Q. The leaves do not stay on those trees all the winter, do they ?

Q. It would not be much of a wind-break, I should think ?

A. It breaks the wind, and that is the principal thing. Although the wind may go through, still it does not do much harm after passing through one hundred feet. We get our worst winds in May and the beginning of June, just when the crops are coming up, and that is the time we find the most benefit from the wind-breaks, and we find that one or two rows for a wind-break is just as good as one hundred feet.

By Mr. Ross (Ontario):

Q. Of what do you build your fences ?

A. Wire is the only thing we use for fences; but there are very few fences, I may say, in the Territories except in some districts in Alberta and Saskatchewan, where they have cattle and no herd law. In the wheat-growing districts we have what is called a herd law. Every man must look after his own cattle, many of which are tethered. We have the farm divided into fields, and have thirteen miles of roads. On each side of the roads we have either a hedge or single trees. We find the edges a very great benefit in protecting grain, &c., from winds, that are prevalent throughout the Territories. That was one of the principal objects in planting so many hedges and making so many roads through the farm. It was to break the force of the wind and to save the crop. We find a foot of hedge in height will save a crop fifty feet away from the hedge. It will save that perfectly, and it will save imperfectly thirty feet additional. A hedge ten feet in height will save a crop five hundred feet away perfeetly, and it will save a crop another three hundred feet imperfectly.

By Mr. Robinson (Elgin):

Q. What kind of a hedge is it ?

A. The hedges are generally maple—box elder.

Q. Planted thick ?

A. Planted two feet apart in one row and then trimmed and made to thicken out in the bottom. It makes a good wind-break.

Q. You keep them trimmed?

A. We keep them trimmed. We trim them twice a year.

By Mr. Ross (Ontario):

Q. You keep them cut down?

A. We keep them cut down, and keep the sides trimmed.

By Mr. Erb:

Q. Have you machines for that, or is it all done by hand ?

A. It is all done by hand.

By Mr. Ross (Ontario):

Q. Does it push out from the bottom?

A. Yes, projects from the bottom. The work carried on at the experimental farm at Indian Head is nearly the same as that conducted on the other experimental farms in Canada.

CULTIVATION OF THE SOIL IN THE NORTH-WEST.

There are, however, some experiments that we have to conduct there, that are not necessary for Ontario and the other provinces, especially in the cultivation of the soil. We find on account of the climate that the soil on the experimental farm at Indian Head has to be worked somewhat different to that on any of the other experimental farms. For this purpose our chief experiment has been summer fallowing. We find the only way we can be sure of obtaining a crop in the North-west Territories year after year is to summer-fallow the land, and have it ready so that it can be sown the first thing in the spring.

By Mr. Cochrane :

Q. When do you commence ploughing ?

A. Just as soon as possible after we get through seeding.

By Mr. Robinson (Elgin):

Q. Do you put manure on the fallow ?

A. We put all our manure that we make on the farm on the summer fallow, that is to be prepared the following year. After the land is frozen in the fall we spread on the stubble, and next spring we plough and work it under. Unless applied in this way, it would remain in the ground for two or three years without rotting properly. I have seen it remain in the ground for four years on account of having not sufficient moisture to rot it.

By an Hon. Member:

Q. Do you plough down clover ?

A. Yes, sir, we are making experiments on that line also. We sow clover in the spring and plough it down in September or October. Some years, however, on account of the dry spring we get very little growth of clover to plough down.

By Mr. Stephens:

Q. What kind of clover ?

A. Red clover, Alsike and Lucern. We find these give us the largest quantity to plough under.

By Mr. Sherritt:

Q. To what height does it grow ordinarily ?

A. We find some years it grows 6 inches. We saw Alsike and Lucern together, and in favourable years they attain a height of 6 inches. Some years they would be only 1 or 2 inches above the ground, and on that account would not be of much benefit.

2-331

By Mr. Cochrane:

Q. You spoke of manure that would be in the land four years without rotting; what kind would that be?

A. Straw or barnyard manure. We draw it out as made and put in a heap, and it sometimes does not rot before putting it on the soil, and dry weather would cause it to remain there for four or five years without rotting.

Q. How does your stable manure do ?

A. As a rule we draw this manure and put it in a heap the same as other manures and draw it out probably five or six months afterwards, but if the weather is dry the effect is the same; it does not rot.

By Mr. Stephens:

Q. Do you keep stock enough to use up all the feed you have and tramp the straw down?

A. No. We do not have more than 60 or 70 head of stock. We are not able to use all our straw. We use all the hay that we grow and about two-thirds of the straw. The rest of the straw we have to burn or give away.

Q. If you pile up barnyard manure, does it rot ?

A. Sometimes, if there is not too much hay, it will rot.

By Mr. Cochrane :

Q. There must be careless feeding when you would have so much hay?

A. I allude to the farmers. Where they have hay feed and when thrown out in a heap it does not rot, but dries up. On the experimental farm our hay is cut up and fed with other fodders.

By Mr. Kendall:

Q. You say Lucerne grows out there?

A. Yes.

Q. What crop does it make, 6 or 8 inches?

A. The first year, you mean ?

Q. Yes.

A. Six to eight inches.

Q. Does it last over the winter?

A. We have had it stand for one winter. Last year was the first winter we had it go through safely. We have tried it six or eight years, and last winter was the first winter it came through safely. We had a crop last year of two tons to the acre.

Q. Does Sainfoin grow there?

A. No. We have tried it, but so far it has not succeeded.

SUMMER FALLOWING AND GRAIN RAISING.

By Mr. Ross (Ontario):

Q. What do you put on the summer fallow field—what crop?

A. We put wheat, oats and barley. Wheat is put on all summer fallows as a rule, but on the experimental farm we grow oats and barley also. We use summer fallow for all our crops on the farm. The farmers use summer fallow for wheat almost entirely, and grow their oats on stubble ploughing.

By Mr. Sherritt:

Q. Are we to understand that in order to grow a good crop of grain it has to be grown every other year?

A. Yes, sir, to get a sure and good crop it has to be grown every other year on summer fallow.

By Mr. Lennox:

Q. To get a sure crop of wheat you would have to take a crop every other year? A. Yes, sir, off the same land.

By Mr. Smith (Wentworth):

- Q. Do the farmers there as a rule burn the straw?
- A. They burn the straw instead of putting it on as manure.

By Mr. Cochrane:

Q. There would be a certain amount of manure in the ash, would there not?

A. Yes. The farmers as a rule take the crop off their summer fallow, and leave the stubble as long as possible and then burn it, and sow a second crop without any cultivation whatever. In that way there is a little ashes left on the soil, which some claim does good.

By Mr. Wilson:

- Q. What kind of a crop do you get by such sowing as that?
- A. Some years a good crop is obtained.

Q. But on the average?

A. Last year about two-thirds of a crop. I may say it was the only crop that came out satisfactory. On all summer fallows there was a large crop, but the frost overtook it before maturing. We had it wet and cold in the last week in August, and the crop instead of ripening continued growing, and got caught with the frost on the 5th September. On the other hand the grain on stubble land was ripe, and in stook a week or ten days before the frost came. As a rule we have never been able to get as good a crop on stubble as we do on summer fallowed land, and some years when moisture is deficient it may be a very small crop, from five to ten bushels, and in some cases no crop at all. As a rule, however, two-thirds of a crop is obtained. The grain does not always grade No. 1 hard grown on stubble land, but it is always a good wheat, and commands a good price.

By Mr. Smith (Wentworth):

Q. Do you think the land can continue to grow good crops forever without putting

anything back on it?

A. No, I do not think so. But I may tell you, as I stated at the beginning, the experimental farm was the first section that was broken in the Territories. There were five crops of wheat taken off the land before it was obtained as an experimental farm. We have been cropping it ever since. We have taken one crop every second year off the land, and the crop in 1901, and last year were the two best that were ever grown on the experimental farm. That is twenty-two years since the farm was broken up, and the crops of 1901 and 1903 were the two best we have ever obtained.

Q. I understand you are putting considerable quantities of manure back on the

land? Are you able to say with what results?

A. For roots and hay, manure has given good results; but for grain too much straw growth results. The land on which we had these good crops had never been manured and had no other cultivation than summer fallowing every second year.

By Mr. Robinson (Elgin):

Q. You do not advise the farmers out there to burn their straw ?

A. What else can they do ? I would not so advise them if they had cattle. You can understand that farmers growing 200 or 400 acres of wheat cannot raise enough cattle at the same time to consume the straw; one thing against them is scarcity of water, fencing is a consideration also.

By Mr. Maclaren (Huntingdon):

- Q. Is it possible for farmers in the North-west to have rotation of crops, as we understand it in the east?
- A. No, sir, it is not. The rotation best suited is summer fallow, one or two crops wheat, one crop oats or barley, and then fallow again.
- Q. Why do you not do as we do ? Sow seed of some kind and get a meadow and pasture.
- A. Except for two varieties of grass there is nothing we can sow that will make good pasture, and these are uncertain in many districts.

Q. You cannot make any pasture ?

A. Not as a rule by the farmers. We have good pasture on experimental farm.

By Mr. Cochrane:

Q. Did you ever try peas ?

A. Yes, sir, peas do well in the North-west.

Q. That is good for rotation ?

A. The only trouble from pease is, that when you have them out there may be a very heavy wind, and you will find them in your neighbour's crop the next day. No man could undertake to grow more than a few acres so that he could look after them. On the experimental farm we have to let them get quite ripe, then cut and stack or thrash them the same day.

By Mr. Wilson:

- Q. You told us the wheat grown on the summer fallowed land is later than on the stubble?
- A. Yes, because there is more moisture in the soil and the grain is longer in maturing, and better yields and grades are obtainable.

Q. You can get it sown just as early, can you?

A. Yes, we get it sown a week or ten days earlier than on the stubble land.

ACREAGE YIELD AND QUALITY OF GRAIN CROPS.

By Mr. Blain:

- Q. How many bushels of wheat to the acre did you have last year ?
- A. We had something in the neighbourhood of 33 or 34 bushels to the acre on our summer fallowed land.
 - Q. What would you regard as a very poor crop on the farm, how low an average?
- A. It just depends on how put in. As I said before, we do not care to grow grain on stubble land, except for experimental work. A very low average on stubble land would be from 18 to 25 bushels, while on the summer fallowed land it would be from 30 to 35 bushels to the acre. We have some varieties of wheat that went over 40 bushels last year. Our oat crop last year was very large. One variety (Banner) gave 119 bushels per acre.

By Mr. Smith (Wentworth):

Q. There was a good deal of wet last year?

A. Yes. We had it at the wrong time, however. All the dry weather was early in the season, and the grain was late in germinating, and on that account it was late in ripening, and having cold, wet weather during the latter part of August and the first September the grain, instead of ripening, continued to grow, and was damaged by frost.

By Mr. Robinson (Elgin):

Q. What variety of it went 40 bushels to the acre?

A. The Huron wheat, and the Preston wheat, went 40 bushels.

By Mr. Sherritt:

Q. Is 100 bushels of oats a common thing?

A. On well worked summer fallowed land 100 bushels is a common yield. In the Indian Head district, and the district of Regina and Moosejaw, where the soil is heavy and strong—there are a good many districts in the Territories where the soil is lighter—60 or 80 bushels is a good average. In the Indian Head and in other districts south and west where the soil is heavy 80 to 100 bushels to the acre can be depended upon.

By Mr. Ross (Ontario):

Q. How much per acre would be considered a good crop in the district served by

the farm?

A. Thirty to 35 bushels of wheat to the acre is considered a good crop, but the yield is often as high as 40 bushels on summer fallowed land. Unless a farmer gets 40 bushels he is disappointed in the Indian Head and the districts west of that place. On stubble land 20 to 25 bushels to the acre is satisfactory. A good average crop of oats on stubble is 40 to 60 bushels.

By Mr. Robinson (Elgin):

Q. To about what height does the straw grow?

A. On the summer fallow?

Q. Yes?

A. About 4½ feet. That is a good ordinary height.

Q. It never lodges there?

A. Red Fife does not lodge as a rule, but on the summer fallows it will lodge a good deal if there is a heavy wind or rain storm, but without these it does not lodge.

By Mr. Ross (Ontario):

Q. In what is known as good seasons what portion of the crop would be No. 1 hard?

A. In a good season, if we have no rain or snow all the wheat on the summer fallow would be No. 1 hard. On stubble land the percentage of white wheat determines the grades. Usually there is a considerable quantity of white grains in the crop, which causes the grade to be lessened.

Q. Have you sown any of that magnificent Preston wheat there on your farm?

A. Yes.

Q. How did that turn out ?

A. It has given us a little higher crop (about 2 bush, per acre, for the last five years) than the Red Fife.

Q. It cuts and ripens earlier, does it?

A. It ripens earlier. Last year we sowed Red Fife on April 9, Preston wheat on April 14, we cut Preston wheat on August 29, and the Red Fife was not ripe on September 5, when the frost came.

Q. That was seven days' difference?

A. Seven days' difference, and there was also the difference in the earlier sowing. The Preston wheat has continued to improve since we got it.

Q. From where ?

A. From Dr. Saunders, at the Central Experimental Farm, who propogated it.

Dr. SAUNDERS.—It is a cross between the Red Fife and Ladoga, so that it was one-half Red Fife and the other half Ladoga. It was from the Ladoga that it got its early quality.

By Mr. Wright:

Q. Is 'Preston No. 1" hard ?

A. Yes, and it has continued to grade No. 1 hard from the second year. The buyers cannot tell the difference between Preston wheat and Red Fife. In the early years it seemed to be longer and thinner, and they could detect it, but at present they cannot do so, and it grades just as high as Red Fife, and I understand from Dr. Saunders that the millers pronounce it is just as good as Red Fife for flour. The only objection the farmers have to Preston wheat, in the Territories, is that it is a bearded variety. If the season is damp, or if it is threshed damp, it is hard to get the grain out of the straw. Otherwise there is no complaint.

By the Chairman:

Q. I would like to ask if it has ceased to throw back to the parent or original varieties?

A. I think it has. We went through the grain last year, as we do each year, and found very little in it but what was true to name. The straw is hardly as strong, I think, as the Red Fife.

By Mr. Robinson (Elgin):

Q. You have not found any lodging, have you ?

A. Not in ordinary weather; a rain storm will lodge it considerably more than the Red Fife wheat.

Q. Then it will be harder to cut with the binder?

A. A little harder than the Red Fife, but we never found any difficulty in cutting it with a binder, and in cutting it four ways. There are a great many varieties of wheat that are very weak in the straw, and we have to cut them all the one way, but the Preston, Stanley, Huron, which are all hybrids, and the Red Fife, are just about the same in regard to straw. One of the parents was Red Fife wheat, and the straw partakes of the good quality of the parent.

By Mr. Henderson:

Q. Before you leave this portion of your subject, may I ask you is the system you work on at the experimental farm, of summer fallowing, the same system as generally carried on in farming operations in the Territory? Do the farmers as a rule summer fallow? Do they not take a crop off their farms every year?

A. All successful farmers fallow a portion of their land each year. In the Indian Head district and in all the wheat-growing districts of Assiniboia they follow the course we do on the experimental farm. They summer fallow a portion of their land each year, but they do not do it as extensively as we do, for the reason that we have to grow pure grain, which can only be done on fallowed land. As a rule, the farmers have one-third of their cultivated land in summer fallow each year, and in that case they will have one-half their crop on summer fallow and one-half on stubble land. They vary that a little as circumstances compel them. They may be able to prepare a little more one year than another. On the experimental farm all the land intended for crop is prepared the year before, and consequently the entire crop is on fallowed land. As a rule, all farmers that now grow wheat summer fallow a portion of their land. In 1900 we had a very dry spring, and all crops on stubble land were poor. Although the seed germinated it dried out before it had attained the height of a foot, and the consequence was that a good many acres of wheat were ploughed up in many sections of the country. In the Indian Head district, which is noted for its wheat

crop, there were thousands of acres, grown that year on summer fallow that gave from 25 to 35 bushels to the acre.

Q. Do you not think the farmers up there will eventually grow more stock and

get into a different kind of farming than that they now pursue ?

A. I think they will have to, probably in another 50 or 60 years. But in heavy land like that at Indian Head and Regina, I do not think that the next 50 or 60 years there will be very much difference if summer fallows are continued. If they are not, weeds and want of moisture will compel them to make a change.

Q. Do you think there will be more money then in wheat growing than in mixed

farming?

A. Yes. It is a lottery, however. You may miss it one year, but a man will make as much out of a good wheat farm in one year as he will make in mixed farming in five years. There are a great many districts where wheat cannot be grown successfully, and therefore mixed farming must be carried on.

By Mr. McEwen:

Q. How many times do they plough the summer fallow ?

A. We plough it once in the spring as soon after we get through our seeding as it is possible to do so.

Q. How deep do you plough ?

A. Just as deep as we can, 7 to 8 inches, and after that we cultivate it on the top as shallow as it can be worked. We do not plough again afterwards for fear of storing up too much moisture. In a wet season too much moisture is retained, which produces too much growth, and results in late ripening. We try to work the soil so that if the year is dry there is sufficient moisture to ensure a crop, and if the year is wet not too much to delay ripening. We find that one ploughing early in the spring, with surface cultivation afterwards, gives the best results.

By Mr. Erb:

Q. Is any part of your farm under drained, or has it sufficient natural drainage?

A. It has natural drainage; we do not drain in any case whatever.

Q. Is the farm fairly level, or is it rolling?

A. It is rolling, with two ravines or creeks running through the farm length ways, and the drainage is into these creeks.

Q. Do the farmers drain their land in other parts?

A. They have only the natural drainage.

By Mr. Smith:

Q. Do these creeks through the farm run throughout the year or not?

A. No. They did last year for the first time.

Q. There is a scarcity of water there, is there not?

A. In some districts it is hard to obtain, but as a rule it can be found at the depth of 50 to 60 feet.

By Mr. McEwen:

Q. At what depth do they get it in wells?

A. At Indian Head town water is found at 25 to 30 feet. On the experimental farm half a mile away we have gone 108 feet without finding it. About 100 feet away from that well we found water at 32 feet. As a rule, however, the water is found in that district at from 65 to 125 feet.

Q. Do you usually bore these wells or dig them?

A. We bore first and try to find water, and enlarge by digging.

Q. How far below the surface is the rock?

A. Rock is found at about 400 feet in our district. I do not know how far it is in other sections of the country.

By Mr. Kendall:

- Q. What leguminous crops or plants grow best out there—pease or vetches?
- A. Pease do very well.
- Q. Better than vetches?
- A. Yes, sir, larger bulk is obtained. Farmers do not grow them on account of danger from winds.

By Mr. Wright:

- Q. Do you grow many varieties?
- A. We grow a good many varieties.
- Q. Don't the long varieties run too much to vine?
- A. Sometimes they do.
- Q. The Crown pea?
- A. They do very well. We get very large crops, sometimes 60 bushels to the acre of this sort.

By Mr. Robinson (Elgin):

- Q. Subject to bugs?
- A. No, sir, we have no bugs there yet.

By Mr. Wright:

- Q. Have you tried the wrinkled variety?
- A. Yes; as a rule they do well. The Champion of England is the latest growing variety we have tried.

By Mr. Kendall:

- Q. Have you silos there?
- A. Yes, sir.
- Q. What do you put in them?
- A. We put in corn. We seldom get it past the tassel stage, but it makes good ensilage. We allow it to wilt two or three days on the ground, cut it and put it in th; silo and it keeps perfectly.
 - Q. Would you get a better result by mixing peas with it ?
- A. Peas have not made good ensilage, but have not tried them in connection with corn.
 - Q. You don't get the vetches dry enough ?
 - A. No.
 - Q. Do you ever silo oat hay—green oats ?
- A. We have tried oats, grass, barley, wheat, peas and vetches, and have not obtained satisfactory ensilage from any of the sorts.
 - Q. Have you kept a record of the fermentation ?
 - A. No.

EXPERIMENTS WITH DEPTHS OF SOWING WHEAT.

By Mr. Henderson:

- Q. Have you had experiments in the farm in the matter of deep planting and shallow planting of wheat? Do you find that to put wheat in, say four inches deep, you get better results than at two inches?
- A. We have experimented on this for ten years, sowing wheat at one, two, three or four inches deep. We found that wheat one inch deep was generally blown out of

the ground, and if not blown out it would dry out. Two inches is all right in favourable years—three inch or four inch is too deep in wet seasons; in the ten years grain sown from two to three inches has given the best results. Grain sowing two and one-half inches deep last year gave the best results.

Q. In a dry season deep planting would be most successful ?

A. Yes, if season continued dry. We sow all grain as near 2½ inches as possible.

Q. Would you not go deeper than that ?

A. No.

By Mr. Ingram:

Q. You spoke of two streams of water. What season have they dried up—is there any alkali in the water?

A. Yes, part of the water comes from a deep lake or string of lakes eight or ten miles south. Alkali collects in the lake and comes down with the spring or June rains. The creeks dry up in August as a rule.

Q. In what part of the farm are the streams located ?

A. One enters the farm on the south, and the other on the west boundary, and runs north and north-east through the farm.

Q. You spoke about having 75 or 80 head of cattle. Do you keep horses, swine

and sheep ?

A. The 75 or 80 head includes horses and swine. We keep 13 to 15 horses to do the work on the farm. We have three breeds of pigs and keep poultry. We have no sheep.

By Mr. Henderson:

Q. Why don't you keep sheep ?

A. One objection to keeping sheep is the wolves, which are very numerous in that section of the country, and would destroy them.

By Mr. Kendall:

- Q. Pardon me if I return to the question I asked a few minutes ago. You say you don't get good results from siloing green fodder?
 - A. No.
 - Q. Does it mold ?
 - A. Yes.
 - Q. Have you tried siloing half-dried fodder ?
 - A. No, we have not tried that.

EXPENDITURE AND RECEIPTS.

By Mr. Ingram:

Q. What number of people are employed on this farm, and how do the receipts and expenditure compare?

A. We generally have 13 or 14 men in the summer time and 6 or 7 in the winter

to do the work. The expenditure is from \$8,000 to \$10,000.

Q. Greater than the receipts?

A. No, sir, the receipts are about \$2,000 to \$3,000 a year.

By Mr. Robinson (Elgin):

Q. Do you keep a debit and credit account of everything?

A. No. We keep an account of all the money paid out, all the grain sold and fed, and so on.

By Mr. Wilson:

- Q. Do you mean to say that you had a balance of \$3,000 or \$4,000 ?
- A. No. sir.
- Q. It is the other way?
- A. Yes.

By Mr. Ingram:

- Q. What are the receipts and expenditures?
- A. The expenditures average about \$9,000 and the receipts between \$2,500 and \$3,000.
- Q. In the matter of feed of any description, are you supposed to sell it or buy any of it?
- A. No, sir, we have never yet had to buy except the first year for the farm. The men that are boarding on the farm pay for supplies the same as I do myself, and that goes in with the revenue each month to the Receiver General, as well as all receipts for grain, cattle, swine, poultry, &c.

Q. What do you do in the matter of fruit?

A. We have been experimenting with fruit since the farm started, and have been growing small fruits successfully each year. In the way of apples, we have never been able to grow large varieties. We have crab apples, and hope in a few years to have good sized fruit. Dr. Saunders has been propagating and improving these Russian crabs, and we have trees growing that are quite hardy, and I have no doubt will in a few years produce good fruit.

By Mr. Smith (Wentworth):

Q. Do you fail to grow such crabs as Transcendent?

A. We have crab apples as good as the Transcendent, but not that variety. We have tried all known varieties of apples that could be obtained from the United States, Canada and elsewhere, and everything has failed.

Q. What caused them to fail?

A. It is pretty hard to say, but we think it is the spring frost. The trees apparently are all right up to the first of May, then the bark shrivels up, and the trees die.

By Mr. Lennox:

- Q. When you supply grain to the Ottawa experimental farm, you are paid for that, are you not?
 - A. We get credit for that.
 - A. And that would be part of your receipts?
 - A. Yes.

By Mr. Ingram:

- Q. In the matter of machinery, and repairs to your machinery, how do you manage that?
 - A. We have to buy machinery and pay for it. That is a part of our expenses.
- Q. There is no system of buying machinery, and supplying it to the different farms throughout the Dominion? You simply buy for each farm separately?
 - A. Yes.

By Mr. Henderson:

- Q. Do you mean to tell us that the receipts from all the farm products from these 600 acres only amounts to between \$2,000 and \$3,000?
- A. Yes. You will understand we have never been trying to make a revenue from the farm, we have been instructed to experiment entirely.

Q. Yes, but I think the difference is far too great. I would not expect you to operate on the system of a revenue producing institution; perhaps being an experimental farm it cannot be operated that way. But it does seem to me that if you have only a revenue of \$2,000 to \$3,000 and your expenditure is \$8,000 or \$9,000, there is

altogether too much difference between the two sides of the ledger.

A. Nearly the whole farm is under cultivation, but last year we had not over 120 acres in crop. There is a good deal under hay. We have between 50 and 60 acres of land in trees, and have from 40 to 50 acres in experimental plots which never bring in any revenue, and which take up a great part of our time. The largest plot of grain is usually five acres, the crops from all the plots have to be kept separate. Much of the grain is hand picked before sowing or when in head; they have to be threshed separate and kept separate after threshing, and the expenses in doing so are very high. We sell probably 400 or 500 bushels to the farmers and to the experimental farm at Ottawa. We send a large quantity for distribution, and the rest is consumed by the stock on the farm.

By Mr. Ingram:

Q. In the matter of repairs to machinery, where do you get the repairs made?

On the farm?

A. No, we get them made at the blacksmith shop, or from the machine agents in Indian Head.

By Mr. McEwen:

Q. Do you have a threshing machine of your own ?

A. We have always had a thresher for the small plots, but had to hire a machine for all large plots. Last year a gasoline engine was obtained and with a thresher purchased in 1902, we do all the threshing on the farm?

By Mr. Ingram:

Q. Do you use a Canadian machine ?

A. We use Canadian machinery.

Q. Exclusively?

A. No. We have a separator from the other side which was obtained, I think, through a mistake; but as a rule we get all the binders and all our other machinery, the gasoline engine included, in Canada.

By Mr. Wilson:

Q. You distribute or you give to the authorities at the experimental farm to distribute free, what you raise on the farm ?

A. Yes. We will distribute about 150,000 trees this year.

Q. Well, you do not make any charge for them, do you ?

A. No.

The CHAIRMAN.—And you distribute samples of grain free, do you not ?

A. We send out probably 10,000 or 12,000 samples of grain or other seeds each year.

By Mr. Wilson:

Q. There was no charge for those ?

A. No. We sent out small seeds of all kinds grown. We also gather tree seeds and shrub seeds of every kind, and send these out free to the farmers. We pay postage on all samples, amounting to a large sum each year.

By Mr. Ingram :

Q. You were appointed about 1897?

A. In 1887.

- Q. What experience had you before your appointment in growing shrubs and other experiments?
- A. I had very little experience in anything except growing grain. I lived in that section of the country from 1882 and was growing grain there.

Q. Have you experts in these various lines ?

A. I had an expert in tree growing and fruit growing in the early years. The late Mr. Lang, who was until lately head of the forestry branch at Indian Head, was with me. He had charge of the fruit growing and the trees until about 1895.

Q. Do you do anything in dairying.

A. No, we have not done anything in dairying.

Q. Neither in cheese or butter ?

A. No.

By Mr. Smith (Wentworth):

Q. You said you grew small fruits with success ?

A. Yes, currants and raspberries especially. Goosberries are ont successful every year, and strawberries are not a sure crop on account of the frost in the spring.

Q. Killing the bloom?

A. Yes.

By Mr. Wright:

Q. Do the gooseberries mildew?

A. No.

Q. English varieties growing there ?

A. The English varieties will not stand. We have just two varieties that stand, the Houghton and Smith's Improved.

By Mr. Smith (Wentworth):

Q. The wood freezes?

A. Yes.

FATTENING STEERS.

· By Mr. Ingram:

Q. My reason for asking about the dairying is because you have 75 or 80 cattle.

A. We have 50 to 60 head of cattle, the balance are horses, swine, &c.

Q. What is the object of keeping them if not dairying ?

A. We are feeding steers. We are feeding 20 head at present on a test, feeding two-year-olds against three-year-olds.

Q. For the purpose of raising beef ?

A. Yes. I may say we started in the early years on the farm with four breeds of cattle, Holsteins, Ayrshires, Polled-Angus and Shorthorns, but none of the farmers wanted either the Holsteins, Ayrshires or Polled-Angus. Now we are raising entirely Shorthorns and selling the bulls to the farmers in the district or any other place in the Territories, and we have now a supply of heifers that we will be able to let the farmers have.

By Mr. Sherritt:

Q. Do you find the two-year-olds better than the three-year-olds?

A. Our test is not through yet, but so far the two-year-olds have made the most gain, and I think will give us the best return when we sell them in a month from now.

By Mr. Ingram:

Q. Have you ever had a demand for raising a certain breed of horses ?

A. No. We have raised a few for our own use. In the early years of the farm the government kept a stallion there which was used in the neighbourhood.

By Mr. Wilson:

Q. How do you sell the cattle ?

A. When we had any large number to dispose of we sell by public auction. We have had two auction sales. We kept the cattle until we had a sufficient number, enough to make it worth while. I sell the steers each spring when test is over.

Q. Sold them without reserve at the auction ?

A. Yes.

By Mr. Smith (Wentworth):

Q. Do you work the whole of this farm?

A. All that is under cultivation. We have about 80 acres in pasture. We have 100 acres in hay. We have 50 or 60 acres under trees, and a great deal under experiments each year, both in trees and in all sorts of grain.

By Mr. Sherritt:

Q. Have you any difficulty in getting grass to catch?

A. Yes; some years in a dry spring it is difficult. Two varieties of grass succeed, one the Russian Brome and the other the Western Rye grass. These two do very well as a rule.

By Mr. Robinson (Elgin):

Q. Have you tried the Brome grass?

A. We depended upon that for our hay and for pasture.

By Mr. McEwen:

Q. What price do you get for these cattle?

A. I am in hopes of getting four cents live weight for the steers this year. Four cents will be a good price.

LENGTH OF PERIOD FOR HOUSING CATTLE.

By Mr. Wright:

Q. How long have you to house your cattle in the winter?

A. We put them in about the middle of November, and keep them in until about the middle of May. The farmers let their cattle run out until the first of December, and about the middle of March they turn them out for the spring. This year there is too much snow to do so.

By Mr. Kendall:

Q. Do they get any feed after the middle of March?

A. There is plenty of feed all over the prairies when the snow is gone, and they are not fed anything but what they can find.

Q. Out at pasture?

A. Yes.

- Q. Has the government any dairying stations in connection with your farm?
- A. None in connection with the experimental farm.

Q. Any in the Territories?

A. Yes, a good many, especially along the Calgary and Edmonton line. There is one at Moosejaw, one at Regina, one at Qu'Appelle (9 miles west of us), and others at Grenfell, Whitewood and Moosomin, and one or two in the Yorkton district.

By the Chairman:

Q. One at Churchbridge?

A. Yes.

By Mr. McEwen:

Q. What depth of snow have you this winter?

A. Between three and four feet of snow; that is, taking it fresh after it has fallen. There is probably two and a half feet now on the level all over.

Q. When you left?

A. Yes. Around our trees we have two and a half feet solid snow.

NOXIOUS WEEDS.

By Mr. Henderson:

Q. Are you troubled much with noxious weeds on the farms in that western country?

A. Yes, very much so.

Q. What kind of weeds?

A. The worst weed in that country is called the Stink weed—a weed that germinates and ripens its seed twice a year, and lives through the winter.

Q. Quite prolific?

A. Yes. Lives through the winter and starts early in the spring.

By Mr. Hazard:

Q. A yellow flower?

A. No; white flower.

By Mr. Henderson:

Q. We expect to have to consider a bill respecting purity of seeds in the House, and I was in hopes that perhaps we could find pure seed in the western country. You seem to be troubled as well as we are with noxious weeds?

A. They are very bad in a great many sections of our country. I think it will

be a good thing to have a bill of this nature.

By Mr. Stewart:

Q. I have found that wild oats are more injurious than French weeds?

A. Wild oats are very bad, and are getting very prevalent in the Territories. Settlers in Alberta brought wild oats from California and Utah in the early years, growing them as fodder; they are spreading all over the country.

The CHAIRMAN.—They are sowing wild oats ?

A. Yes.

By Mr. Wright:

Q. In more senses than one ?

A. Yes.

By Mr. Ingram:

Q. Speaking of wind breaks, do you find them succeed very well for a year or two, and then a number of trees die?

A. No, sir, we have not found that on the farm, where the soil is cultivated. Some years if the ground is not cultivated, the soil will dry so much in the fall that there will be no moisture left to carry the trees through until next spring, and some may die from that cause. We have never lost any trees on the experimental farm. We cultivate every year three or four times around the trees and the wind break which keeps sufficient moisture to carry them through the year.

By Mr. McEwen:

Q. Are there any other weeds besides those you have named ?

A. Oh, yes, there are several varieties of mustard. The worst is the 'tumbling' mustard. The stink weed, the tumbling mustard and the wild oat are the worst weeds in the Territories?

Q. Are wild oats good fodder ?

A. Yes, they make good fodder when cut and cured as hay.

By Mr. Erb:

Q. Where the soil is not cultivated for several years, does it become covered with native grass?

A. Yes, sir, there is a gradual return to native grasses and weeds; twitch grass comes up first, and between that and the weeds and sage bush the land gets covered in a short time.

Q. Is that the same with grass that grew on the prairie originally ?

A. Yes, sir, one of the grasses.

By Mr. Robinson:

Q. Do you say that couch grass is natural to the soil up there ?

A. Yes, sir, but it causes a great deal of trouble on grain farm, and is very difficult (if the farmers do not summer fallow their land) to get rid of it. By the summer fallows the land can be kept clean.

By Mr. Stewart:

Q. Is that couch grass, what is called Indian or sweet grass ?

A. No, the sweet grass or Indian grass is a very deep rooted grass, while the couch grass is shallow rooted and a totally different grass in character.

By Mr. Robinson:

Q. The roots are like wire ?

A. Yes.

Q. What do you find the best way to get rid of them ?

A. We find the best way is to plough the land as late in the spring as possible, and to sow grain on it for fodder, and cut it green, and then immediately after cutting plough again in the dry weather; that usually kills it.

Q. You plough very shallow, do you not ?

A. In the case of the twitch grass we plough shallow, but for Indian grass we have to plough six or seven inches to get below the roots.

By Mr. Erb :

- Q. You were saying that the practice was for farmers to burn their stubble ?
- A. Yes, sir.
- Q. Do you find that where that is done, the weeds become less? Does it destroy the weeds?
- A. Yes, sir, a great many are destroyed in that way, and that is one advantage in burning the stubble. The burning destroys a great many of them.

2 - 34

By Mr. Henderson:

Q. And by burning the stubble land in the fall you get rid of the volunteer grain at the same time, I suppose?

A. They do not burn the stubble until the spring, they allow the stubble to remain in order to catch snow. There is always some moisture from the snow, and as soon as the weather gets warm it is burnt in time for spring seeding. Volunteer grain is killed to some extent when stubble is burnt.

By Mr. Haszard:

Q. In speaking of burning the straw, have you ever tried stacking it with green wetches?

A. No.

Q.I have known people in my part of the country to take the straw and put it tier upon tier with green vetches between, so that when you come to use it the vetches have made the straw quite juicy.

A. We have never tried vetches, but have used corn in place of vetches, and the whole heated and spoilt.

Having read over the preceding transcript of my evidence, I find it correct.

ANGUS MACKAY,

Supt. of Indian Head Experimental Farm.

EXPLORATIONS OF THE NORTH-WEST

House of Commons. Room No. 34. FRIDAY, April 8, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., the chairman, Mr. Douglas, presiding.

Professor John Macoun, Assistant Director and Naturalist of the Geological Survey of Canada, was present by request, and addressed the committee, as follows:

Mr. Chairman and Gentlemen, I will just give you a short synopsis, and then I will answer any questions that any hon. member or members may desire to put to me. I may first state why I went into the Peace river district.

In 1868 Archbishop Taché published a pamphlet called the North-western country, or the North-west. In it he stated that wheat would not grow throughout the Red river country, except on the borders of the river and then very little of it, owing to the severity of the climate.

THE EXPLORATION PARTY OF 1872.

In 1872 Sir Sandford Fleming and Principal Grant and a party were going out to go across the prairie and eventually pass down into British Columbia. I was on the upper lakes at the time and I pleased them so well, I suppose, that they extended an invitation to me to accompany the party across the prairie and I gave not a reluctant consent. In 1872, therefore, I had the honour and the pleasure of crossing the prairies to Edmonton with Sir Sandford Fleming, and I was instructed on the way to take a note of the botanical productions of the country. I was then a comparatively young man, and active both in mind and body and of course I made a great many observations and drew a great many conclusions.

At Edmonton Sir Sandford Fleming came to me and he said, 'Now, Mr. Macoun we have got to change our views; we have just got word that there is a possible pass for a railway by means of the Peace river, and if you have no objection I would like to send you and Mr. Horetsky to go through the Peace river pass and see the value of that pass. So he went on across to the Yellow Head and Mr. Horetski and myself started from Edmonton and forced our way through the country and reached Little Slave lake on the borders of the Peace River country about the 23rd or 24th September. That was in 1872. Well, that led me to the Peace River country. then went across on the trail to Peace river landing, as it is called now, to the mouth of Smoky river or North Heart river, and then up the river to Hudson's Hope and through the Rocky mountains and down to British Columbia. That was my first trip. When the report of that trip was made to Mr. Mackenzie, Sir Sandford Fleming thought it was so good that he would have it published in its entirety, and in the railway report of 1873 or 1874 my report of the Peace River country, including the whole of the country from Winnipeg west was published. After that came out Dr.

Selwyn saw it, and he said, 'I want that man to go with me when I go to the Peace river country.'

EXPLORATION OF THE PEACE RIVER DISTRICT IN 1875.

In 1875, Dr. Selwyn was commissioned by Mr. Mackenzie to go to the Peace River country and to make a better exploration—because I had made none, I had only crossed the country in one line and up another. And so I went to British Columbia and came up from Victoria and arrived on the Peace river east of the mountains on July 15, 1875. When we arrived there my astonishment was great. I have here my report of 1875 and my opinions are set forth in this book. I was astonished to find at Hudson's Hope in the valley of the river all manner of vegetables in first-class condition—carrots and potatoes and onions, an inch and a half across, grown from the seed and everything growing most luxuriantly. That was on July 15, 1875. We passed down the river and then went down to St. Johns. Dr. Selwyn and myself ascended the north bank of the river and went into the country for about a distance of nine miles. Vegetation was so rank that it was nearly as high as my head. The common grasses were very tall, and vetches were seven or eight feet high amongst the brush and the vegetation was extraordinary. Dr. Selwyn and myself both stated in our reports that we never saw the like of it. I passed down the river to Dungevan. I might just state in parenthesis here that Dunvegan as I witnessed it 30 years ago, or 27 years ago, was the central post of the Hudson Bay company in the Peace river To-day it is occupied by two Indians and the company have only a small post there. It is just occupied by two Indians who have a claim on an island in the river and they are holding it to-day for fear of the white man getting it. So that Dunvegan of the past and the Dunvegan of the present in a person's mind are not the same. At Dunvegan when I was there they were cultivating stuff in the valley, and in 1872 I found very good wheat right there.

In 1875 in going down the river, we got there about the beginning of August, some time about then—I found they had a little wheat growing and some barley and some oats and everything was doing well. There Dr. Selwyn instructed me to go down the Peace river to meet the Hudson Bay boats that were coming up and make a further examination of the river to the north, while he and his party went up Pine river south to Pine Pass. I may say parenthetically, that in 1872, when I was at St. Johns, in talking with the half breeds and Indians there, I discovered that at the head of this Pine river, south, as we call it, there was a pass and that if we could go up the river we could cross over to Fort McLeod in British Columbia without much effort, that the pass was quite low. Well, I got the Indians to explain to me about the pass. I may say that a lake that has an outlet, a stream running out of it, is not very likely to be at the top of the pass, but if it has two streams running out of it, one on each side, and marshy all around, anybody knows it is just a height of land. A swamp as it were, a marsh, a small lake, and when the water runs both ways you are sure to be at the head of the pass. Now, the Indians explained to me when I asked the question, 'Yes, it is marsh all around.' I said, 'It is all right then, it is a real pass.' So I put that in my note book, and that is the original of the knowledge of the Pine Pass. Dr. Selwyn then in 1875 determined to go up this Pine river, and to go up into that pass for the purpose of bringing back information to the government. Whether he did or did not, I am not prepared to say, because I left him there and I did not see him again for nearly a year. I went down the river then with a gentleman called King, an officer of the Hudson's Bay Company, and as we went down the river I discovered that it was constantly getting warmer, that vegetation was becoming farther advanced, and that everything showed that the northern country was warmer than where we had been farther up.

It was on August 16 when we reached Vermillion, and when we reached there the wheat was then ripe. The barley had been cut on August 6, 1875, and the country

all round Vermillion was a most lovely region. I went out and looked round and examined it for some distance, and was satisfied that it was a grand tract of country in every sense. They had vegetables growing there of one kind or another, and when I went down to Little Red river-I forget how many miles farther, but below the falls on the Peace river-I found ripe cucumbers in the garden that had been grown from seed in the open, that same year. As I went on going down the river, the stream widened and went donw to Fort Chipeweyn and to Lake Athabasca. I might say this, that when the Peace river is high the waters of that river run into Lake Athabasca, but when the Peace river is low the waters of Lake Athabasca run into the Peace river. It was getting late in the season about the last of August, and when we got down there the water was running out of Lake Athabasca into the Peace river. We went on this river 24 miles to Fort Chipeweyn and arrived there about August 24. Now, this is what I wanted to mention. There the land is on a level with the water. There is a Catholic mission there, and in the Catholic missionary's garden I got wheat and barley that to me was the most extraordinary I had ever seen. The ears were broad, and there was in some of it six grains in the fasicle.

By Mr. Ingram:

Q. Are you speaking about your trip in 1872 ?

A. No, 1875. I said to myself, 'The people won't believe me if I tell about this,' so I took the ears and brought them out with me and brought the grain as well, and I took them to the department. I could not say who was the Minister of Agriculture a that time, but I took them to the Department of Agriculture and turned them over to the secretary of the department, who had them sent to Philadelphia in the spring of 1876, and I obtained two bronze medals for this grain. That was for wheat and for barley in the spring of 1876.

By Mr. Stewart:

Q. Grown at what altitude ?

A. I will give you that later. It was my intention to go right back and take up these statements I have made to show you something further in that very matter, and I am glad you brought the point up.

By the Chairman:

Q. I want to ask a question just here before you leave the subject. Was the grain to which you referred as growing in the garden of the missionary in any quantity or just a few heads?

A. There were stooks of it. All the wheat that was grown in that interior country in the time I am speaking of was grown for the purpose of boiling in place of barley. You know what I mean. We make barley soup, and they boil the wheat and use the wheat in that country precisely as we use the barley that we buy in the stores to make barley soup. That is what they were raising wheat for, not for any purpose in connection with cultivation.

By Mr. Robinson (Elgin):

• Q. Mr. Macoun, was that a level plateau on the Peace river through which you travelled?

A. You can ask me that in a few minutes and you will see what I mean by it. I will answer this other gentleman's question. I mentioned Hudson's Hope. Now, I have taken the latitude and altitude I am going to give you from a book issued by the Geological Department, by Mr. White, who is geographer to the Dominion at the present time. I took this out yesterday afternoon because I knew I would be before you this morning. They were taken out, gentlemen, for the purpose of giving you better information than I could from my own personal reminiscences.

ALTITUDES AND LATITUDES.

I mentioned that Hudson's Hope was where we go down from the Peace River Pass into the Peace River Valley, and when we go down into the valley we find, according to Mr. White, that this was 1,522 feet above the sea. Hudson's Hope, in the bottom of the Peace River Valley, is on a level with the water and in latitude 56'02. We went down the river then to Fort St. Johns, where I told you we found the grass was so tall. The river then fell down to 1,461 feet above the sea, and in latitude 56'11. I may say that according to my estimate the level plateau at Hudson's Hope, because it is a plateau undulating but not extraordinarly rough, I made it out to be about 1,000 feet above the river, and that would make the elevation of the plateau there about 2,500 feet. Well, down at St. Johns the bed of the river was 1,462 feet above the sea, and those that have examined it there say that the plateau above the river is about 800 feet. So that the level of the plateau above St. Johns would be 2,200 feet and over, not under. Then, the next stop was Dunvegan. Now, at Dunvegan the river is 1,305 feet above the sea. Mr. Hortsky and myself, when we were there, levelled it from the water up, because we were on a railway expedition, and not for the purpose of looking at the agricultural value of the country at all. It was a railway reconnaissance that we were on, and we levelled from the bottom of the river to the top and we found it to be 687 feet, and of course it rises still more, because Ogilvie measured it later on and found that it ran from 600 to 800 feet. That is at Dunvegan. Now, that is where I got the wheat growing.

PRODUCTIVENESS OF CEREALS AND VEGETABLES AT VERMILLION.

Then at the mouth of Smoky river, what they call the Peace River Landing, the height of the river is 1225 feet above the sea, and when I was there in 1872 I estimated the height from the Peace river to the level of the plateau at 700 feet. So that at the Peace River Landing the level of the country is about 2,000 feet above the sea. Now, here is the extraordinary part. That is in latitude 56.15. Now, go down the river—a most lovely river meandering just like a brook in the meadow, only the bends of the river are nearly a mile or more, and here it meanders back and forth through its valley and finally as you get farther down towards Battle river you find that evidently the country had begun to fall, as the banks were lower, that everything indicated a greater warmth and a less elevation in the country and when I got down -I was always in the river valley you see—to Vermillion, I found that the country is there about 25 feet only above the river and a little back from it rises to about 50 feet, and as far as I could see in travelling through the country I found a most lovely valley, rich apparently in everything and for every purpose, and in the gardens I found every vegetable that we grow here in perfection. As I said before I found wheat ripe on August 16, and the barley that year had been cut. When I said that wheat ripened you will understand it was very little, but a little is just as much as a muckle when you come to see about the reckoning, and the barley had been cut on the 6th. But this is the extraordinary point, and this is the point I want to make. What was the elevation above the sea, do you think, for the country as well as the river? According to Mr. White, Vermillion is 950 feet above the sea. When we started on the river up at Hudson's Hope the level of the river itself was 1,500 feet above the sea and the country was 1,000 feet above that, so you see as we went north the whole country dipped, almost with a slope, dipping north all the time. Now at Vermillion it was 950 feet, and the river had no current but meandered through a most lovely country. The latitude of Vermillion is 58'24.

By Mr. Robinson (Elgin):

Q. Is the water deep enough for navigation ?

A. Yes. There may be a little rapid that I could mention, but they are navigating the river now and running boats on it, there is no doubt about that. They could run boats up to Port St. Johns, but the difficulty is there is a constant pull down. The country is as it were a slope. I do not mean that there is much of a slope.

By Mr. Ingram:

Q. Was it at Vermillion you stated there were only two Indians now?

A. No, at Dunvegan. I will tell you about Dunvegan in a moment, but I do not want to break the thread of what I am speaking of.

PECULIARITY OF CLIMATE IN REFERENCE TO SITUATION.

Where I got the wheat I did not know until yesterday that the elevation was 690 feet above the sea. That is the elevation of where I got the wheat at Fort Chipweyan. So that you can see at once that as we go north the country becomes level and low and as I have shown in speaking of the climate of our interior country, the warm airs are a blanket all over the country. It is not a question of warm spots here and there, but the whole country has a blanket of warm airs constantly passing from north to south.

By Mr. Wright:

Q. From north to south ?

A. I should have said from south to north, excuse me. Or to be more accurate, we will call it from south-west to north-east. Now, there is a point I want to make further, that I did not mention in my report.

GREAT SLAVE LAKE-SITUATION AND PRODUCTIONS.

Great Slave Lake, according to the data I have, is only 200 feet above the sea and 2 degrees below that we have wheat on the experimental farm that was grown there. I might here say, for I discussed it with a man who had charge, Mr. Hardisty, who had charge at that time, in 1875, and he said they ripened the wheat at Fort Simpson in latitude 62, four times out of five, and Sir John Richardson, in speaking about this same country perhaps sixty years ago, stated that at Fort Liard there was no difficulty at all, that it was perfectly warm. But I never knew why until I studied the altitudes; you can see it at once. The Liard runs into the Mackenzie below the Great Slave Lake, and there is a less altitude than 200 feet above the sea, and this heated air does not stop.

As I said to a former Minister of the Interior when he was talking to me about the country north of the Saskachewan not being fit for cultivation, I said, 'Do you think, sir, that the heat stops when it comes there?' Why, it is not common sense; any one can see that a current of warm air when moving along does not stop when it gets to a line of what you call frost growth, it will pass on—if you understand radiation you can see what the meaning of it is. Down in these low altitudes there is no radiation at all, and consequently there is no frost in the summer. I think I have explained this as much as necessary from my standpoint, but if any one wishes to ask questions, I will be glad to answer. I will now answer Mr. Robinson's question. Was it you mentioned the point as to whether there was any grain growing in the Vermillion country? You will see at once I have tried to show you that where we strike the river below Dunvegan, coming from north to south, and Dr. Dawson says in his report and so does Mr. Ogilvie, that the country is of an altitude of 2,000 to 2,500 feet on both sides of the river.

Q. How far back ?

A. As far back as you wish to go.

Q. Are there no mountains ?

A. No mountains.

By Mr. Stewart:

Q. The level keeps about the same ?

A. It keeps about the same. I am not speaking from knowledge now, but that is the statement of these gentlemen.

By Mr. Bell:

Q. How wide is the valley of the Peace river ?

A. It is not wide until you get away down; where you get into the low country, the river valley is not more than from one to three miles from brim to brim.

By Mr. Richardson:

Q. What is the length of the daylight in that territory in midsummer?

A. It is very great; I could not say the exact length, but this I know, that when I was in the Yukon country Fort Simpson is in latitude 62, while in latitude 64 at Dawson there was no darkness from some time in May until about—well, I could see to read until 12 o'clock at night on the 7th of August, 1902.

Q. What is the effect of the long day upon the maturing and ripening of the grain?

A. Well, it will apply to the Peace River country as well as to the Yukon, and

this is an important question.

When I went down the Yukon I left here late in June, thinking that the growth would not be anything out there by the time I arrived, but when I got to Dawson I found that the blueberries were ripe, and that vegetation was far advanced. I began to think about it and started out, and on August 15, 1902, I found that all the rative plants, including birch trees and poplars had made their growth, and all the flowering plants were in seed, and everything was ready for winter. In other words, the growth was so great that the native plants of the Yukon country were ready for winter on August 15. Now, the point I want to make in this connection is this, that the same thing applies to the Peace River country in that valley I speak of. In the midde of July I found an extraordinary growth, I could not realize and I cannot say how it was, but here it was, down in the valley where it had been exposed to these long days and long sunlight the growth was most extraordinary, and that is the meaning of that extraordinary growth in all this north country. You can see where the days are constantly long there is no chance for frost, because the temperature cannot sink, and it is because the temperature cannot sink that there is no frost until the proper time for the frost comes.

By Mr. Ingram :

Q. How long ago since you have been in that country ?

A. I have not been there since 1875.

Q. Do you know whether the climate has changed there since?

A. No, and I will tell you why I know that. My son was at Vermilion last year, and he found that all the conditions I mentioned in my report exist there now, and that there were at least 250 acres in wheat and all the vegetables grew, and I think they say they can grow Indian corn there, but everything is just as I found it in 1875, except that last year it was a trifle earlier. I think in his report, I have not read it, but I think he says that wheat was ripe last year on August 10, and I found it ripe on August 16 in 1875.

Q. Do we understand you to approve of the report that your son has made in connection with the Peace River district?

A. What I saw, certainly, but I do not think this moment that there is any point I made in 1872 and 1875 that has ever been controverted. Mr. Ogilvie agrees with me, and Dr. Dawson agrees with me, and my son agrees with me, but why? I stated what I saw. Sir Sandford Fleming told me when I was going out, 'Don't draw on your imagination, give us facts,' and in my reports I gave the facts, but mark you, please, my son was both on the plateau and in the valley, and he describes the plateau as he found it, and as Dr. Dawson found it, and as Mr. Ogilvie found it. I was never on the plateau.

By Mr. Smith (Wentworth):

Q. But there are areas of land in this northern country which you say are low and warm?

A. Yes, and my son went 50 miles back from the river, on both sides he went, and he went all over, and to where there were farms, and he even got a letter the other day from a man out there stating that his crop went from 8 bush. to 40 bush. per acre. Allow me, then, I will just read this out of his report for last year. This is from a man that writes to him from there in connection with it.

'As you will remember, we had a very dry and late spring, and the crops looked very backward in June'—this is last June, when he was there—'about June 22 and for the following three weeks we had heavy showers with hot weather, and this pushed the grain along very rapidly until July 20, when a light frost touched some of the earliest of the wheat, causing it to fail of developing a kernel and also to give the straw a bluish appearance. After this frost we were favoured until fairly late in August with hot moist weather without any sign of frost. Wheat cutting commenced on August 17'—that is a day later than my letter—'while barley and oats were ripe on the 10th. Had the weather remained hot and dry for a week longer there would have been some very heavy crops, but during the latter part of August cold, windy weather set in, with little sunshine, so that the grain though ripe did not harden. The first fall frost occurred on September 5.

By Mr. Wilson:

Q. What is the date of that report ?

A. It is just out.

By Mr. Ingram :

Q. Whose letter is that that you are reading now?

A. It is just mentioned as from 'my correspondent.' It will be very easy to find out. (Reads),—'Wheat will vary in quality from the best quality of No. 1 hard to pig feed and in yield from 8'—mark you—'to 50 bushels to the acre. About 50 acres of my wheat will run about 40 bushels to the acre. There will be in the neighbourhood of 15,000 bushels of grain here, about half wheat. Potatoes are of very good quality and yield about 250 to 300 bushels to the acre. Garden stuff gave poor returns; the cold spring killed the seed to a large extent.'

Then my son goes on to explain the other part. You see what he is talking to you about there, and what I am talking to you about are quite distinct from the upper plateau towards Dunvegan. I was never on the plateau, and the reason I was not sent to the Peace river in 1879 by the government was that I had already reported on the valley of the Peace river, and Sir Sandford Fleming, who was in the railway department, said, 'We will send you to the south—to the desert.' You will understand that when I went in 1879 that the whole country from Brandon west—in fact from very far east of Brandon west—was the 'desert,' and was condemned as sand. The Brandon country that I reported on as going to be such a good country, I wrote in my book in 1879 as being unknown, as it were, in Winnipeg. I was the man that in Winnipeg told them of the value of the great land in the Qu'Appelle River valley, in fact in the whole country, and sent people to settle there.

Sir Sandford Fleming said: We will send you into the 'desert'—the country called the desert below the fertile belt. You understand there was a belt which the newspapers called the fertile belt. I had the honour of exploding that. I did not deny the fertility of the belt along the Saskatchewan, but said the whole country is fertile, and that that was all nonsense.

Dr. Dawson was sent and the present principal of Queen's College was sent with, him with the understanding that they would go through the Peace River country and report upon it, so that they would have another report other than mine. Dr. Dawson reported, and in 1879 and 1880 it was printed in the Geological report. I incorporated the report in the book I wrote on the Great North-west and incorporated his report on the Peace River country in this book, because it was full in comparison with mine. As I showed you, I did not have much to say about it, but he had seen much of it.

By Mr. Ingram:

Q. What is your opinion of the Peace River country; is it a good country?

A. Yes, and no. First, decidedly no, and I will show you why, and decidedly yes in another sense. This Vermilion country that I am speaking about is away in latitude 58 and there is no communication with it. The man who goes in and settles there with the expectation of making a fortune by selling either to other people or getting it sent out is a fool that is all, from my standpoint. Hence, if you say to me, 'Do you think that a man ought to go there and settle,' I say decidedly not, if he wants to make a home and get all the accommodation.

By Mr. Erb:

Q. Why could'nt we use the valley of the river ?

A. They do, some of them. I have no objection whatever to the man who goes away into some parts of that country. From Carleton to Edmonton there is a settled country and we have a grand country in the Carrot river district. That whole valley I believe ought to settle.

Q. Then all they need is railway facilities ?

A. Yes, and they could settle. I look forward to the day when that northern country will support not a mere population like you have scattered over the North-west at the present time, but a people that will go into settle it and not exploit it and come out sick.

By Mr. Ingram:

Q. What do you say as to this in your son's report ?

(Reads.) 'To conclude on this subject, I would not advise any one seeking a home in our great North-west to think of Peace river. There is but a limited area in the valley, which is the only place success can be reasonably expected, and even there success is merely an assurance of a living, as there is no market at present.' What do you think of that? 'I regret that I have to present such an unfavourable account of a region of which much has been said and written. That the soil is excellent and much of it available for immediate use cannot be denied, but the occurrences of severe frost on the plateau when the grain is not far enough advanced to resist its effects may be, as far as our experience goes, considered a certainty in the majority of seasons.' That would show they had frosts in the majority of seasons?

A. He is speaking there of the plateau, not the valley at all. That is the plateau that Dr. Dawson and Mr. Ogilvie said is from 2,000 to 2,500 feet above the sea. Now, Gentlemen, I am going to show the same principles apply in other parts of the country.

There is a gentleman here from Assinaboia—

THE CHAIRMAN.—Here he is. The same statement is true of the North-west to-day.

A. I am sure of it. I will read you something on this point which I took down for fear that statement would be made.

By Mr. Stewart:

- Q. Sometimes we thought we were too high up in lower Manitoba in the early days. We are 1,600 feet above the sea ?
 - A. Yes
 - Q. In the early days we had frost ?
 - A. Yes.
 - Q. With the same season now we overcome the frost ?
 - A. Yes, because you put the grain in earlier.
 - Q. We know how to manage it ?
- A. Yes, and your statement, Mr. Chairman, to me last year, opened my eyes, and I have learned more since then. Take the station at Indian Head. It is 1924 feet above the sea and it is risky there, and as you say, sir, it was formerly risky at 1,600 feet. Mark you, Indian Head is in latitude 50, but the latitude at Dunvegan on the plateau is 56 degrees further north, and there is a greater elevation by 300 or 400 feet. That is the easy way to look at it. I agree with my son, but I do not want to answer his questions. He is of age. As the old man said to the Jew, 'Is your son of age?' And he answered, 'my son is of age, ask himself.'

By Mr. Ingram:

- Q. You are giving an experience that you had while in that country, looking about for railway lines ?
 - A. Yes.
- Q. Your particular duty on that occasion was not to experiment or look for agricultural land ?
 - A. No.
- Q. This is a recent report made by a person who went there expressly to find the agricultural resources of the country?
 - A. Yes.
 - Q. What I want to know is, do you endorse the report he made ?
 - A. I do.
 - Q. In every particular ?
 - A. I do in every particular.
- Q. Because I will tell you why. The glowing description you have given here in my judgment is not in keeping with the report made last year, and if you will read that
- report I think you will see that ?
- A. You will see the point—my glowing description, Gentlemen, is of this country to the north. You see I went down the river and in the river bottom at an altitude of 1,500 feet I found in the middle of July a certain growth, and I go further down the river and I find wheat a success, and I go still further down and they have grown wheat in that river valley ever since, where I saw it. When we come down to Vermillion, I speak about a little patch, and my son comes along and looks over the whole land, and sees a big patch, and I tell you, I go farther than I knew then and say that the whole of the Vermillion country down to latitude 61 or 62 is also good. I do not profess to be a prophet, but I have the power of drawing deductions, and I do not object to your deductions at all, but to try and make my opinions dove-tail in with my son's, I never shall.
- Q. But you see our position is that it is our duty to read these reports and if we find statements made by two officers that are rather contradictory in their nature, to find out what it means?
- A. You are quite right and that is exactly what I wish to do. I want to disabuse your minds of any mistakes I may have made, and I am just as 'glowing' to-day in my opinion of the Peace River country as any man can be, but I never was in that high plateau country, and there is no gentleman in this room but knows that altitude is a serious thing in connection with that North-west country. Take Edmonton in

1872. I wrote down in my notes that it was a land of doubtful wheat growth. I did not believe it could be a success, growing wheat in that country in 1872, although it has been a success, but I did not believe it, because according to my light it was too elevated and too far north. You will see the difference, and I put further in my report that I believed the climate of the Peace River country, and there is the curiousness of it, was better than that at Edmonton.

Q. What you would say is that the soil would be adapted to grow certain crops, but that the climate is against the growing of those crops?

A. Yes.

Q. That is perfectly true? A. Yes.

Q. Now in the matter of thermometer readings, how long is it since the depart-

ment have established thermometer readings in that district ?

A. Well of course Dr. Dawson, and all of us, carried thermometers. I carried thermometers with me on the prairie in '79 and '80. I went even further, every half hour I dug out the sub-soil on the prairie to prove the correctness of it; I kept the minimum and the maximum thermometer readings, and I went further than that, and Dr. Dawson did the same. Mr. Gordon come down to 30 miles south of Edmonton, where the telegraph station was and reported that they had frost in the Peace River country in August, and I came up the next day from the south, and I found that in my readings I did not have it, and I had the honour of telegraphing to Sir Sandford Fleming that in the section of country that I travelled through we had no frost whatever. 'Why did you do that,' you say. I was looking at the railway going into the lower pass, and there was a number of men wanting to go through the northern pass, and I suppose I had a little animus and I wanted to show my section of the country was good, and so I telegraphed.

THE CHAIRMAN.—I have been now about 21 years in that country and probably ought to know about as much as any visitor making a trip through it, and perhaps I can give the committee a little light on this question. When you made this reading you dug into the prairie? Is it not an established fact that there is a difference of 8°

between prairie and cultivated land?

A. I was only trying the depth of the soil when I dug.

Q. Because when you may have a certain temperature in the prairie soil cultivated soil will have a different temperature. The fact is that the prairie sod is a protection, that it does not distribute the sun's heat, nearly so rapidly as the ploughed land, and when once the land is broken up or bearing, it is altogether different. So that when you indicate a temperature on prairie soil at which grain growing would not be successful, when the land is cultivated it may be all right. I will give you another idea. I wrote to Mr. McKay, who gave evidence here a few days ago, some years ago in reference to the probability of success in the Qu'Appelle valley in grain growing, and he strongly advised me not to purchase land in that valley for that purpose. We have proved since that his opinion was not correct for the reason that a great many have purchased land, and I own 640 acres in the valley, and had a large crop last year, and even in a year that was not favourable we had over 31 bushels to the acre in the Qu'Appelle valley. It was always thought that there would be frost that would cut it off.

A. Yes.

By Mr. Cochrane:

Q. Has not the cultivation of the soil something to do with the change in temperature in reference to frost ?

THE CHAIRMAN.—Quite so. When I left to come down to the House here, the fields that were ploughed and the fallow ground was bare and the soil exposed to the sun, whilst the prairie was covered with snow, and it remains covered with snow often after considerable seeding is done.

By Mr. Richardson:

Q. I may say in this connection that in the section of Ontario where I live, the highest parts of Ontario are in Grey county; 30 or 40 years ago, it was almost impossible to ripen wheat, four seasons out of five the wheat would be frozen. Such a thing as frozen wheat is unknown in that country now.

A. That is right, but you are not more than 1,700 feet above the sea there, that is

the height at Dundalk station.

Q. That is the territory I speak of.

A. Close to Orangeville it is 1,700 feet above the sea; that is the highest point as far as I am aware in Ontario, and what you say I know is correct, because I was ir that country when nobody would purchase it 50 years ago. They would not think of going into it then because it was nothing but swamps, and everything was wrong about it they thought.

By Mr. Blain:

Q. Respecting the wheat and barley that would ripen in the month of August. What time in the spring was that sown?

A. I could not answer that; I think it is possibly in my son's report, and possibly

it is in my report here.

Q. I was referring to your trip to the west in '75 ?
A. I may have it here if I take time to look it up.

Q. I would not stop to look it up.

A. There was one point I wanted to make. You heard me speak of Archbishop Tache last year. For many years I thought that Archbishop Tache wrote what he knew was not right; I wish to take that back. Archbishop Tache wrote about the half-breeds. They settled out along the River Assiniboine. At some of your earlier settlers did in Manitoba, they used to sow on until late in June, kept sowing on all the time, and is would be frozen, hence I have found that it was because of the settlers being slow to put in the grain that the frost came and cut it.

By Mr. Ingram:

Q. Do we understand you to say there was no thermometer report in 1879—none until 1891.

A. You will find that Mr. Ogilvie got thermometer readings all the time he was there. He reported to the Department of the Interior in 1883. Mr. Ogilvie was very particular and reported to the Government. He made almost identical statements in connection with the temperature that my son has made—that was in 1885—and they will be found in a book in the library.

Q. Your son says:—'No thermometer readings, of which we have any knowledge,

were ever taken there before 1903, except those by Dr. Dawson in 1879.'

A. Ogilvie took them the year he was out, in 1883. You will find them in his

Q. If you take Brandon in Manitoba and Edmonton in the North-west Territories, would you say that Edmonton is as good a district for wheat, or anything like it, as Brandon is ?

A. No.

Q. What is the reason ?

A. My reason is this; as I said, I was at Edmonton in 1872. They were growing wheat there at that time. I left there on September 7, that year, and the wheat was not ripe. When I went out to Lake St. Annes, 60 miles to the north, I found barley there that had been killed in July, and when I began to sum up my knowledge of the plains that I had gathered, and the condition of the crop at Edmonton, I set it down that Edmonton was outside the limit of the successful growth of wheat.

Q. You concluded that in 1872?

A. Yes. Of course last year, Gentlemen, when I had the honour of being before you, I wound up my remarks by telling you that since that time I had discovered that Edmonton was well suited, and I said with a flourish that I was willing to add another million acres to the arable lands of the country because if wheat growing was successful there it would be successful to the north.

By Mr. Henderson:

Q. What brought about this change between 1872 and the present time? How does it come if it was unsuitable then that it is suitable now. That is something I can't understand.

A. It was proved last year, every bit of it. There was not an acre last year that escaped the frost, not one.

By Mr. Ingram:

Q. Then you hold that this additional wheat land is still further away than Edmonton, and that it is equally as good or better than Edmonton to raise wheat?

A. I hold it is as good as Manitoba.

- Q. But the district of Edmonton is not as good as Manitoba?
- A. Edmonton is 2,177 feet above the sea, and if you get above 2,000 feet anywhere in the North-west it is risky, and I think that is the great risk at Edmonton to attempt to live by raising wheat.

Q. But still further in the interior you would say it would grow ?

A. Six hundred miles further into the interior the wheat will never be a failure, because it has a continental climate, and it is fixed, and there is no altitude would interfere with the radiation at all.

By an Hon. Member:

Q. You mean farther north from Edmonton.

A. Five degrees farther than Edmonton.

Q. Six hundred miles north of Edmonton is quite as dry.

A. Three hundred miles—below Vermillion. The valley of the Vermillion is 58'54 degrees and Brandon is only 50.

By Mr. Ingram:

Q. What sort of country is that ?

A. It is the most beautiful country you ever looked on.

Q. How much land is there suitable ?

A. My son travelled over 50 miles there and found there was no difference, and all the reports that come from the north show that the country is level, and from my standpoint getting lower, and the change in the altitude keeps up the temperature. Thus as you go north you get farther away, but the temperature is as high, because the altitude is less.

By the Chairman:

Q. Land that hangs to the north is safer than land that lies to the south.

A. I did not know that until you brought it out last year. You are perfectly right—I was wrong. I studied it out, because if I make a mistake once I am bound to rectify it if I can, and your correction of me last year was exactly right. There is no doubt at all of the reason of it. Take a comparatively calm night and the wind in very likely to come from the north-west. It makes a little motion and distributes the cold and carries it away from fields facing the north. In the other side in fields facing the south there will be no wind, and there will be quiescence; there will be frost.

By Mr. Cochrane:

Q. Explain this to me, please; I am a little confused. I understand you to say that along the valleys of these rivers that you travelled you found everything all right, that you could raise grain, but that on the plateaus that were level it was liable to frost.

A. I did not know that when we went down the river; that is merely later information.

Q. How much land would there be in these valleys along the river outside the plateaus where the probabilities are that frost will not touch the wheat? Is there any great amount of land?

A. Very little. My son says in his report about 10,000 acres down there by the crossing and that is all occupied. Of course in the valley of the river there is quite a lot, but it is not available, because of the rivers cutting in and out. The valley of the Peace river is a good deal like the valley of the Saskatchewan, and you gentlemen know that the valley of the Saskatchewan is not wide in any place.

By Mr. Henderson:

Q. How far would you get away from Edmonton if you desire to purchase a wheat growing farm?

A. I don't mean to say that I would keep away from Edmonton at all in the sense of keeping away for that reason. I have no knowledge of it only what I have told you. In the year I was there the wheat was not ripe on September 7. When I went north from Edmonton I found that even barley would not grow at Lake Ste. Annes that year. Then again, the soil of the country was fine rich black earth; as I remember it there the vegetation was rich and good and fine.

By Mr. Cochrane:

Q. Would the same be applied to the country around Edmonton? If cultivated, would'nt it affect climatic conditions?

A. You see, I hold it is the altitude that affects them.

By the Chairman:

Q. It will improve it ?

A. It has improved it, as explained here last year. The wheat this year at Edmonton was as fine wheat as will be seen anywhere in the North-west, only it was not allowed to mature.

By Mr. Ingram:

Q. I would like to ask the chairman if it is the intention of this Committee to have James M. Macoun before us to give evidence?

The CHAIRMAN.—I do not know, just as the committee desires.

Q. I would like to say that it seems very inconsistent. We are questioning this gentlemen about the Peace River district and he has not been there since 1872, and we are omitting to question the gentleman who made the report on this district last year.

The CHARMAN.—If the committee desires that Mr. James M. Macoun should give

evidence there is no reason why he should not be called.

Q. This gentleman is giving his evidence as to what he saw in 1872, and farming conditions may have changed out there since that date.

WITNESS.—I deny that conditions have changed, but you understand I am not

reporting on my son's report at all.

Q. But it is quite inconsistent to have your evidence here on that point and excluding the gentleman who made the report last year.

The CHAIRMAN.—We are not excluding the evidence of the gentleman who made the report last year.

WITNESS.—I am quite willing to answer all the questions I can.

By Mr. Henderson:

Q. It is the practical value of the information that we are receiving here we all appreciate. Now I would like to repeat my question, since you made the statement that in 1872 you found the district of Edmonton unsuitable for wheat raising, and also that last year you found that around Edmonton the wheat had frozen; now, if I wanted to buy a farm in that region, would it be wise to make a selection within, say 30, 49 or 50 miles of Edmonton? Or how far should I keep away in order to keep outside the frost belt if I desired to huy a wheat farm?

A. Go down in the valley and buy a farm and you will be perfectly safe.

Q. How far away would that be?
A. Just right underneath the town.

Q. Well, then your statement is practically misleading ?

A. So it is, I admit that, but I am not condemning the Edmonton district.

Q. I thought you were ?

A. No, I am doing nothing of the kind. You were asking me where you would go if you wanted to buy a farm, and I say get down 200 feet in the valley, and you are probably safe in getting a farm there where you would be free from frost. Thirty miles from Edmonton is the Hay lake, and I travelled east 170 miles and I reported in 1875 that there was not one acre of bad land for 120 miles. I say that country is just as fine as lies out of doors, but the question comes, if a man loses two crops out of five from frost, is he safe in placing his whole dependence in wheat raising?

The Charman.—That statement might be modified. It is impossible to answer such a question as Mr. Henderson has asked. Within the range of a strip of country of ten miles' width you will find certain settlers who lose perhaps two crops out of five, and yet their neighbours close by do not lose at all by frost. I am here to say that in 21 years we have raised grain on the north of the Qu'Appelle, we have never lost one dollar by frost on my own farm. Still there are neighbours within easy distance who have suffered in that respect. There are currents of cool air that pass all through the country at night, and the temperature gets lower as anyone who drives there at night will speedily learn, and it requires a very minute knowledge of the country to know just where to settle, and where grain can be raised successfully. You may not be able to raise grain, but you may be able to make it up and do well in mixed farming. Take Indian Head, for example, for many years they could not raise grain without suffering from frost, and yet it is one of the grandest parts of the country.

By Mr. Robinson (Elgin):

You need no go to Edmonton or to the Qu'Appelle valley for proof of that, because in the section of country where I live you will find fields of corn cut down by the frost sometimes and only a few miles away the corn is not touched at all.

By Mr. MacLaren (Huntingdon):

Q. Does this current of cold air always run in the same direction ?

A. No, it does not.

By Mr. Henderson:

Q. I understood you to condemn the whole Edmonton district?

A. You are drawing deductions from my statement that are unfair.

Q. I do not think so.

A. From my standpoint they are.

Q. Not from mine.

A. Certainly not. That is just the reason I am so persistent about this, and that is the reason why I told you when you wanted to know how far you would have to go

away from Edmonton. I said, go down in the valley and you will very likely get a grain farm down there. I do not want to make sweeping statements, but to show you that on account of the latitude I have doubts of the success of agriculture in certain points of the North-west, although many persons are satisfied with them, but 'I have my doubts,' like the old Scotchman. I will go further. I know of no place in the North-west with finer soil than is to be found in the vicinity of Edmonton.

By Mr. Ingram:

Q. Well, here is what he says on page 36:-

'The general altitude of the whole upper plateau, which includes Grande Prairie, is about the same as that of Edmonton, 2° turther south. Wheat is grown at Edmonton, but not always with success, and there is no good reason for supposing that the conditions are any better at the same altitude near the Peace river.'

A. That is common sense.

Q. Well now, you said a while ago that further in the interior than Edmonton, wheat can be grown very successfully; is that in the direction of the Peace river?

A. I wish we had a map here so that I could explain more readily the difference between the part of the country he is speaking of and that to which I refer.

WITNESS.—Now, on this map, Gentlemen, you will see there is Edmonton (pointing to map).

Witness then indicated on a map the route he had taken when on a visit to the Peace River country. He continued: The part to which my sons report applies is the upper Peace river country. He crossed the river at Dunvegan and speaks of the Grande Prairie as being a high plateau 2,200 to 2225 feet above the sea. During my visit I was at Hudson's Hope in latitude 58.

By Mr. Ingram:

Q. What distance would you say it is from Vermillion to the Grande Prairie?

A. In a straight line I think it is at least 300 miles. Q. How far from Dunvegan to the Grande Prairie?

A. It is perhaps 40 miles. At Dunvegan it is 2,300 feet above the sea, while at lGreat Slave Lake it is only 200 feet above the sea. At the mouth of the Liard it is less than 200 necessarily. I hold that all the land in this section of the country, being low and having a good soil, has a good future. Now, you may disbelieve or doubt me, gentlemen—and you have a right to do so—but you can't change my opinion.

By Mr. Henderson:

Q. You are Scotch?

A. Scotch-Irish, and that is a pretty strong combination. At any rate, gentlemen, I hold and have held always, that a man who professes to have scientific knowledge should give you facts, and if he draws deductions from the facts he should state the premises on which he bases his deductions. That is what I am doing to you. You may say you doubt me. You are quite willing to doubt me, but you can't make me doubt. I know the country has got a climate and I know it has got the soil. What else do I want—that it be dry—

By Mr. Henderson:

Q. You have the altitude ?

A. The altitude is all right. It is lower than the Pembina mountains, which are 1,600 feet. You can grow wheat in the valley, there is no difficulty. There is the Liard, and Sir John Richardson says that they got wheat there as early as 1826; they grew it in first-class condition. At Fort Simpson they grew wheat successfully four times out of five. And it has given me great satisfaction to learn that a family that I recommended to the Vermillion have made a great success. We have a great future

in the north. I would not advise anybody to go. I would tell them the facts, because if a man is bound to make a fool of himself he will; and a woman, as you know, is worse.

By Mr. Stewart:

Q. Professor, there is one thing contrary to my experience in the south. In the Pembina mountains we keep out of the valley. The Pembina is very apt to freeze.

A. The freezing would be where it would be sheltered, but if the wind got a

chance to go into the valley there would be no frost.

Q. The valley is one to two miles wide. Out on the plateau the higher you get

with a northern exposure the better farm you get.

A. I remember well advising people in 1877 to go beyond Pine creek or McKinnon's. I said to them, 'Don't stay here, go on the high prairie.'

By Mr. Wright:

Q. Mr. Mackenzie, who worked for me, went with Sir John Richardson on that expedition. I had a copy of Richardson's report and was reading it to him and he told me what you say that all that country was low and that it would be a magnificent wheat-growing country.

A. I have not the slightest hesitancy in saying so. A railway promoter was in my office the other day and he talked of bringing a railway from Hudson Bay, and I said, 'If you bring it into that country you will get one of the richest wheat coun-

tries we have yet.'

By Mr. Clancy:

Q. I would like to ask, has the character of the soil anything to do with produc-

ing a plant that may be affected by frost independently of its altitude ?

A. No, there is a law in vegetation, as I mentioned to you, in connection with the Yukon country. The native plants of a country are prepared for the vicissitudes of that country. If the vicissitudes are too great—for instance, if we had four consecutive winters like the present one—my son has told you that on the experimental farm two+thirds of their hardy things would disappear, and they would disappear off the country altogether. So with our native plants in any section which have been for ages subject to all the vicissitudes. If they can resist them they remain, but if they once die out they never can return.

By Mr, Wright:

Q. No man there to replant them ?

A. No. Remembering this, I say there are certain things grow there, there is a crop there that would not grow here. They would not grow if certain conditions prevailed. Then I say this country is suitable for growing these things.

By Mr. Clancy:

Q. Is that not rather the theory than the experience? I know several cases in western Ontario where land was covered with a rich black vegetable mould. Fires got into the land, on many large areas that vegetable mould was consumed, in some places it was left. That became farming land subsequently, and in every instance where the vegetable mould remained untouched the frost killed everything weeks before it did right within one foot of it where the vegetable mould was burnt off or left, but killed.

A. You are quite right, that is just the experience that the Chairman has related. Now, if the land had been ploughed and mixed with black earth, which receives the sun's rays in the day time, but as soon as the sun goes down the radiation commences.

and the heat goes out just as quick as it came in.

Q. Then the character of the soil has something to do with it ?

A. Certainly. The breaking of the soil always has power to ameliorate the conditions, always does so. You will all understand that all the objection I have to altitudes above 2,000 feet is that it is risky. Think of putting 2,000 feet on the top of King's Mountain here at Ottawa, and then sending people up there to grow wheat. What will they tell you? That if it is so hard to grow wheat in the valley what will it be to do so away up there? What I want to do is not to let you take a false impression from what I say. I am prepared to explain anything as to what I know, but beyond that I am not going. As you remarked, my deductions are here, and I will challenge you to prove me wrong, because of course you cannot.

By Mr. Ingram:

- Q. You want to reconcile that with some of your arguments, I would suggest that you read this book, there are some arguments here not quite in line with your statement.
- A. As I said before, my son is of age, and I am not answerable for him, and if you do not agree with him, heckle him all you can. He did what I did not; he went last year with thermometers, and he had the reports of Dr. Dawson and Mr. Ogilvie, and he went on the same spots in the country that Dr. Dawson was on, and had the temperatures, I was going to say the very same notes, and found the same conditions apparently as Dr. Dawson found.

Q. They are different I think in some cases.

- A. Well, the deductions are different. At any rate he had thermometers there and consequently a better chance of getting accurate information, and if his information is wrong and if it conflicts with mine, I will argue with him because I believe I am right. But I do not think that it does conflict.
 - Q. He has better right to know than you.

A. He had better right to know.

Q. Well then, you should yield to him, should you not ?

A. I am not prepared to yield to him. It was only last year I was before the committee, and I spoke then theoretically about Dawson city. On account of the impetus I gave to the people of Dawson when I was there in 1902, they went to work last year and began to cultivate the land some, and last September they had an exhibition in Dawson that astounded the whole country. Here are some of the photographs of the vegetables that were shown there; here is one of the cauliflower, and I think it is well within what I stated to this committee. When the report came out I sent 40 copies to Dawson and they were distributed before the exhibition. What did the papers do? Both the Opposition and Government papers took my report and printed it in full, and then put all the photographs I have shown you in the paper when the exhibition came.

By Mr. Clancy:

- Q. We are to take the evidence of your son and yourself both; now, as touching the people what are the facts? Your son and you seem to be at variance to some extent. Which is the public to accept and believe?
 - A. We are both honest men, and both talk of what we know.

Q. What you believe you know ?

A. I beg pardon, sir. I stated to you what I know and what I saw with my own eyes, and then like a good Presbyterian, I stated my views and my deductions.

ADDENDUM

To Preceding Evidence of Prof. John Macoun, Furnished by Himself.

Extracts from 'Manitoba and the Great North-west,' by Professor John Macoun, dealing with the Peace river country referred to by Professor Macoun in Evidence before Committee on Agriculture and Colonization, April 8, 1904.

Dr. George M. Dawson, F.G.S., was sent out by the Dominion government in company with one of the C.P.R. surveying parties in 1879, and spent the greater part of the summer in exploring the Peace river country, and the following extract is taken from his official report. I prefer giving his report which is as follows to my own, as he takes up the whole subject:—

G. M. DAWSON'S EXPLORATION AND REPORT OF THE PEACE RIVER COUNTRY IN 1879.

The portion of the Peace River country, for which the exploration of last season enables pretty accurate general information to be given, may be considered as extending eastward from the Middle Forks of Pine river. West of this point, as already stated, the areas of fertile lands are small, being confined to certain river valleys, which penetrate the foot hills of the Rocky mountains and high plateau attached to them. With this western limit, the region now to be described may be considered as bounded on the north by the fifty-seventh parallel, to its intersection eastward with the Peace river. Thence the boundary may be assumed to follow the Peace river southward to the mouth of Heart brook, near the confluence of the Smoky river. Thence to run south-eastward to the extremity of Lesser Slave lake, to follow the western border of the hilly region to the south of the lake to the Athabasca river; thence to follow the Athabasca westward to the foot hills, and skirting the foot hills to run north-westward to the first mentioned point on Pine river.

'The tract included within its limits above given has an area of about 31,550 square miles, and by far the larger part of this area may be classed as fertile. Its average elevation may be stated as little over 2,000 feet, and this is maintained with considerable uniformity, for though the general surface slopes slightly from the north and south towards Peace river, the region as a whole may be considered as a plateau through which the great gorge-like valley of the Peace has been excavated. This valley has in general a depth of 600 to 800 feet below that part of the plateau bordering it, with a width of two to three miles from rim to rim. Its tributary streams, at first nearly on the plateau level, flow in valleys of continually increasing depth as they approach that of the Peace river. Those from the south-eastern portion of the region rise either in Rocky mountains or near Athabasca, the tributaries received by the latter stream from the north and north-west being, with the exception of the Batiste, quite considerable in this part of its course.

'The luxuriance of the natural vegetation in these prairies in truly wonderful, and indicates not alone the fertility of the soil, but the occurrence of a sufficient rainfall. The service berry, or amalanchier, and the choke-cherry, are very abundant in some places, particularly on the so-called Grand Prairie, which constitutes the great berry gathering ground of the Indians.

'With regard to the climate of the Peace River country, we are without such accurate information as might be obtained from a careful meterorological record, em-

bracing even a single year, and its character can at present be ascertained merely from notes and observations of a general character, and the appearance of the natural vegetation.

'It may be stated at once that the ascertained facts leave no doubt on the subject of the sufficient length and warmth of the season to ripen wheat, oats and barley, with all the ordinary root crops and vegetables, the only point which may admit of question being to what extent the occurrence of late and early frosts may interfere with growth. This remark is intended to apply to the whole district previously defined though it must be remembered, in considering the subject, that the conditions of places situated in the bottom of the trough-like river valley, and 600 to 800 feet

below the plateau, may be considerably different from those of its surface.

'The summer season of 1879 was an unusual one, characterized by excessively heavy rainfall, with cold raw weather in the early summer months. These conditions did not extent to the west of the Rocky mountains, but appear to have been felt over the entire area of the plains of the Red River valley. As a result of this, crops generally throughout the North-west were later than usual, and the mean temperature of even the latter part of the summer appears to have been rather abnormally low. Notwithstanding this, on my arrival at Dunvegan, on August 16, small patches of wheat and barley in the garden of the fort presented a remarkably fine appearance, and were beginning to turn yellow. On my return to the fort on August 31, these were being harvested, their complete ripening having been delayed by the overcast and chilly weather which prevailed between these dates. At the first mentioned date potatoes were quite ripe, with the balls formed on the stalks, and the garden contained also fine cabbages, cauliflowers, beets, carrots, onions, lettuce, and turnips. Dwarf beans, cucumbers, and squashes, were also flourishing, and though these plants are particularly tender showed no sign of frost. The two last named having been sown in the open ground did not appear likely to perfect their fruit. A few stalks of Indian corn were also growing though it is improbable that this plant would ripen its seed in this district.

'When this garden was again visited on the last day of August, the beans, cucumbers, and squashes had been cut down by a frost, but not completely killed. The

potato tops were also slightly nipped.

'We have already found reason to believe that the early and late frosts, and not the absence of a sufficient aggregate amount of heat, constitute the limiting condition of wheat culture in the North-west; but that neither the Saskatchewan nor Peace River countries lie upon the actual verge of the profitable cultivation of wheat appears to be proved by the facts that oats succeed on the Saskatchewan, and also—in so far as one or two seasons can be accepted as evidence—on the Peace river; while it is well known that this cereal is less tolerant of summer wheat. This is further proved by the fact that at Fort Vermillion and Athabasca lake, 180 and 300 miles respectively northeast of Dunvegan, Prof. Macoun found wheat and barley ripening well; but in this instance the fact is complicated by the circumstances of the decreasing altitude of the country which introduces a new condition. As no knowledge has been gained of this country on the lower Peace in addition to that collected by Prof. Macoun in 1875, it is not included in the above discussion, though from it additional great areas might doubtless be added to the fertile tract.

'Near Fort Vermilion, in latitude 58 degrees 24, I found both soil and climate everything I could desire. The soil here is of the very best description, evidently alluvial and of great depth. About half a mile from the river the land rises nearly fifty feet, with increased luxuriance of vegetation, although two degrees north of St John barley and vegetables grow much quicker and ripen earlier than at that post Barley sown on May 8 was cut August 6, having been on the ground just ninety days. Turnips and early rose potatoes were large with indications of heavy crops. The whole country around this point is a plain, elevated from fifty to one hundred feet above the river. From frequent enquiries regarding the character of the soil at a

distance from the river, it is believed to be exactly like that seen at Vermillion. The country intervening between this and the Caribou mountains seemed level or to slops gradually up towards the mountains, and as far as the eye could see was covered with aspen forest interspersed with a few groves of spruce. No frosts occurred from early in May to September 8, 1875. Often whole seasons pass without frost from early in May to October. Peace river at this point is 3,000 feet wide.

'At Little Red river, farther north, the climate seemed milder, and if anything the soil is richer. Cucumbers sown and ripened in the open air were seen August 15, and all garden vegetables were ripe. Fort Chipeweyn, at the west end of Lake Athabasca, has comparatively poor soil in its vicinity, being largely composed of sand; still here I obtained fine samples of wheat and barley that took the bronze medal at centennial exhibition, held at Philadelphia in the summer of 1876. The land is very low and swampy, being but little elevated above the lake.

'Mr. Hardisty, chief factor in charge of Fort Simpson, informed me that barley always ripened there, and that wheat was sure four times in five. Melons, if started

under glass, ripen well. Frost seldom does much damage.

'Chief Trader McDougall says that Fort Liard in latitude 61 degrees north, has the warmest summer climate in the whole region. All kinds of grain and garden vegetables always come to maturity. He has been on the Yukon for twelve years, and says that in most seasons barley ripens under the Arctic circle in longitude 143 degrees west.'

Exeracts from Report of Prof. John Macoun on the Lower Peace river and Athabasca river, to Dr. Selwyn, in May, 1876, and referred to in evidence before Committee on Agriculture and Colonization, April 8, 1904.

'While you were getting ready to proceed down the river I employed myself, as usual, making a thorough examination of the flora in the vicinity for the purpose of comparing it with that further down the stream. The following extract from my journal, written on the spot of July, 1875: I have been extremely surprised at the rarkness of the vegetation around here, although there is very little rain at this season and has been little all spring. Wild peas and vetches grow to an amazing height in the poplar woods, and form almost impenetrable thickets in many places. Vetches, roses, willow-herb and grasses of the general Poa, Triticum and Bromus fill the woods and cover the burn ground, and surprise Canadians by their rankness and almost tropical luxuriance. Charlette, who is in charge of this post, has two small gardens, in which he has growing potatoes, onions, turnips, beets, carrots, cabbage and various other vegetables. Yesterday we had new potatoes for dinner, of a very fair size, which were planted on April 28. Numbers of the onions were one and a half inches across, raised from seed imported from England and sown about the first of May. Growth is extremely rapid, owing partly to the length of day and cloudless skies supplemented by heavy dews, and possibly also in part to the great range of temperature during the twenty-four hours, from about 45 degrees at sunrise to 80 degrees Fahr. at noon. Sometimes the range is even more, but the above may be taken as the average. The rankness of the vegetation on the west shore of Lake Superior has frequently been alluded to, and may be caused by somewhat similar great range in the temperature there. Can it be that all the rank vegetation observed around Lake Superior, in the Rocky mountains and here, is connected with the sinking of the temperature during the night, and increased activity given to the vegetation during the day on this account ? We have warm sultry days, and cool pleasant nights, with constant regularity, and we are told that this is the usual summer weather. The left bank of the river is much drier than the right, and as a consequence of this, growth on it is much further advanced. The frost of June 28, however, was more severe on the left bank than on the right. Charlette informs me that in 1874 there was no frost from the first of May until the fifteenth of September. In

1875, sowing commenced the last week in April and the first frost came on the eighth of September.

Peace river, at Hudson's Hope, runs in the bottom of a deep valley about 700 feet below the plateau, and has a general easterly course for more than 200 miles. Through out this distance the right bank, on the slopes near the water, is clothed with thick forest of tall spruce, but as you ascend, this gives place to an aspen forest, which either covers the country or passes insensibly into prairie. The left bank, on the contrary, it mostly destitute of trees, except in the hollows, and these are always aspens. It is on this bank and on the prairie on both sides, that the Indians collect such immense quantities of service berries. In many places the slopes are very steep, and so arid that a species of cactus appears to be just as much at home as it is ten degrees further south. These dry slopes were always observed on the left when the river ran eastward, but along north and south bends both sides were clothed with wood. The general altitude of the country decreases as you leave the mountains, and by the time Battle river is reached, the valley is less than 200 feet deep.

'Around the springs which gush out with such force on the lert bank, opposite Hudson's Hope, I detected a large number of very fine mosses, and the beautiful Mimulus Lewisii, which I found in a simlar position on Stewarts lake. It was growing very luxuriantly and covered with a profusion of fine large flowers. On my former trip I had obtained a few specimens of a new moss, Amblyodon Macounii, an I I now collected a number of others. Only a few novelties were detected here. Near a spring I found a few specimens of Anglica Genuflexa, and up in a small stream a Juncus and a Glyceria, together with a Stellaria and a composite plant. Prosartes Hookerl, Marticaria Discoidea, Dryas, Drummondii, Epilobium, Latofolium, Cratoegus Douglasii, Mimulus Lewsii, Pinus Contorta, Spiroea, Betulfolia, and a few other western species were not seen east of this point, and many new eastern ones were

observed.

During the afternoon of the 25th and forenoon of the 26th of July, we floated down the river on a raft, and although we had ample time to admire the magnificent scenery, there was no opportunity to botanize. At St. John's a few minutes' observation tended to show that this point was much warmer than Hudson's Hope, that the soil was richer, and that the vegetation was in a far more advanced state. Raspberries and service berries were fully ripe, and in great abundance. Potatoes, oats, barley, and many varieties of vegetables were in a very flourishing state in 'Nigger Dan's' garden. The oats stood fully five feet high, and the barley had made nearly equal growth. After the tents were pitched Anderson cut a quantity of wild grass for our beds, which was over three feet in length; it consisted principally of species of Triticum and Poa. On your decision to build a canoe for the ascent of Pine river, I found I would have several days at my disposal, and on the morning of the 27th, accompanied by Anderson, I started up the hill in rear of the fort, for the purpose of examining the region north of the river. We found the level of the country above the river valley to be about 700 feet. On the plateau the surface is either a dead level or slopes away from the river. For nine miles, the distance travelled, the whole country was covered with the most luxuriant vegetation. Clumps of willows and poplars of various ages were interspersed with the most astonishing growth of herbaceous plants I ever witnessed. Willow herb, cowparsnip, Geum Strictum, Triticum, Bromus, Poa, and a number of other tall-growing species covered the whole region with a thick mass of vegetation that averaged from three to five feet in height. Wild larkspur (Delphinium Elatum), was found over seven feet high and many vetches were even taller. In many places the climbing Leguminosae were in such abundance as to completely cover up all other plants and cause the country to look like a field of mixed peas and vetches. The species were Vicia Americana, Lathyrus, Venosus and Ochroleusus, the first named being the most abundant.

'It would be folly to attempt to depict the appearance of the country, as it was so much beyond what I saw before that I dare hardly make use of truthful words to

portray it. The country passed over your own excursion ten miles to the north-west, you report to bear a vegetation similarly luxuriant, more so than that around Edmonton, or anywhere in the Saskatchewan country. Rainy river and the Little Slave lake marshes are the only regions known to me that are in any way comparable to it. The latter, however, is swamp, while this is a plateau, nearly level, and in parts over 700 feet above the river.

'The soil must be exceedingly rich to support such a growth year after year, and the early summer temperature must be high for the vegetation to be so far advanced at this period. All the cultivation at St. John is on the terrace immediately above the spring flood level on both sides of the river, but there is no reason why cereals should fail on the plateau above, as the soil is, if anything better. Notwithstanding the difference in altitude, the berries on the plateau ripened only about a week later than those near the river, and Nigger Dan stated that there was about the same difference in the time the snow disappeared in the spring on the plateau and in the valley.

'My observations all tend to show that—omitting the slopes on the left bank—the flora of this region is almost identical with that of Ontario. I spent over a week in the vicinity, and had ample opportunity of examining the country on all sides.

'Having decided to rest one day at Vermilion, I employed it in making a botanical survey of the neighbourhood. I first examined the field and garden, and found with the utmost astonishment that, although more than two degrees further north than Dunvegan or St. John, the barley and vegetables were much further advanced. Barley was standing in shocks in the field, having been cut on August 6, while scattered ears of wheat, which I found around the fence were fully ripe (August 12). Wheat is seldom cultivated in the North-west, owing to the fact that barley is more useful, as the former is only used when boiled with meat, while the latter is fed to horses in the winter. The barley was sown on May 8 and reaped on August 6, having been in the ground just ninety days. The heads averaged from four to six inches in length, and were full of large grains of a beautiful colour. In fact, both wheat and barley were the plumpest I ever saw, and must weigh as much as that brought from Chipewyan. They stood very thick in the ground and were uncommonly stout, and must have yielded very heavily. Turnips and early rose potatoes were quite large, and both gave indications of a heavy crop.

'I occupied myself on the 1th collection fossils, and making a botanical examination. The vegetation indicated that Red river was even warmer than Vermillion, and all garden vegetables were much more advanced. When St. Cyr, who had charge of the fort, knew I was a botanist, he asked me to look at a strange plant he had in his garden. What was my astonishment to find a bed of cucumbers, with a number of ripe ones on the vines, and many green ones also. I asked him if he raised the young plants in a hot-bed, but he knew not of such things. He told me he had no plough, and could only cultivate a small patch, but that all kinds of grain would succeed admirably if the ground was cultivated. His beans (both windsor and pole), cabbage, turnips, potatoes and cucumbers were first-class. Summer frosts never do any harm here and the soil is of first-class quality. At Vermillion I noticed that the country was beginning to show signs of being parched, and here the grass was beginning to wither. I learned afterwards that the rainfall had been unusually small throughout the whole Peace River country this season.

The tract of country drained by the Peace. Liard and Athabasca rivers is of immense extent, and contains a vast amount of arable land that in the future will support a very large population. Mr. Hardisty, the gentleman in charge of Mackenzie River district, told me that at Fort Simpson, latitude 62° north, barley always ripened between August 12 and 20. Wheat succeeds four times out of five, and melons, after being started under glass ripen well. Frost seldom does much injury in summer, and there is quite a sufficiency of heat to ripen any kind of grain. At Fort Liard, latitude 61° north, the climate is said to be warmer than on any part of Peace river, and

wheat always succeeds. Even under the Arctic circle, at Fort Yukon, barley hardly ever fails. Mr. Macdougall, the gentleman from whom I received this information, had been in charge of the Yukon district for more than ten years.'

Having read over the foregoing transcript of my evidence, I find it correct.

JOHN MACOUN.

Assistant Director and Naturalist to the Geological Survey Division.

FORESTRY ON DOMINION LANDS

House of Commons, Committee Room 34, Friday, April 15, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock, Mr. Douglas, Chairman, presiding.

The CHAIRMAN.—Mr. Elihu Stewart, Superintendent of Dominion Forestry, is here on the invitation of the committee, and will address you.

Mr. Stewart.—Mr. Chairman and gentleman, I will not take up much of your time, perhaps no time at all, in going over what I have spoken to on former occasions. I am beginning now to feel somewhat at home before this committee, on account of the numerous occasions I have appeared before you. There are, however, a few points that I have not touched upon before that are of very great importance, and which it would be well, perhaps, for me to say a few words on.

THE AREA OF TIMBER LANDS UNDER CONTROL OF THE DOMINION.

The first is with reference to the area of timber lands under the control of the Dominion. Now, it has been frequently said, and perhaps it is the impression of a great many who have not given attention to it, that the Dominion has very little timber land under its control, or that perhaps the greater part of the lands owned and controlled by the Dominion of Canada is prairie, or partially prairie. But a glance at the map, if we have a map showing the wooded portion—

Mr. Wilson.—There is a map here.

Mr. Stewart.—Yes, but that map is not coloured to show the wooded portion and the prairie portion. I might just say here in passing that when I undertook this work my first idea was to endeavour to prepare a map which would show the area of the wooded lands of the Dominion. I got hold of a great number of maps, but I found that in order that this map should be of any practical value it would need to be a work of years to prepare it, and, moreover, that the data at our command was not of that form that would enable us to make such a map, and I recognized, too, that to make a map that was not correct would be worse than not having any at all.

A FURTHER EXPLORATION NORTHWARDS URGENTLY REQUIRED.

Just in this connection you will allow me to say something that has perhaps not been thought of to the extent that it should be by the people of this country, and that is the necessity, the absolute necessity, of greater exploration of the northern portion of the country. We occupy or we control a very large area, but we cannot fail to see how little we know of it. I had occasion several years ago when I was practising as a land surveyor to bring this matter before the Ontario government. It was brought before the association at first that we should have an exploration of the province of

Ontario. We pointed out that we were surveying year after year a territory that should not be surveyed at all, that it was adapted only for the growth of timber, and that preceding the surveys we should have exploration, not to supersede but to precede them, and direct them as to what should be surveyed and what should be left permanently for timber. We went up and interviewed the then Commissioner of Crown Lands, who received us in his usual affable way, that was the late Mr. Hardy. We talked over the matter for some time, and I spoke of it as being necessary, and how we could proceed with it. I am not rehearsing this for the sake of narration, but to come to what I wish to bring about. I said that we could go up rivers. We could make practical surveys which would not necessarily be very expensive, but simply exploratory. We would go up the rivers and have a man who was competent to express an opinion regarding the agricultural capabilities of the land, another one who was an expert in timber, and another perhaps who was an expert in minerals, and just go over the country and ascertain in advance what sections of the country did show signs that it was adapted for each of these purposes; what should be surveyed and set aside as agricultural lands, and what was worthless for that purpose and should be retained in timber. Well, as I say, he received us very affably, and asked me how I would proceed about it, and by what rivers we would go. I said we would go up the rivers, and have men make a survey and examine the lands in the valleys. He asked me what river I would propose going up, and among others I mentioned Nepigon, and he at once replied, 'very fine fishing there,' and that ended the matter for about ten years. I do not mention this except to call attention to the fact that within the last two years the Ontario government have made explorations to the north country, and have found an immense clay belt, which is of real agricultural value from all reports, and also ascertained what is the value of the timber. As I say, it is impossible for any man to prepare a map of the timber lands controlled by the Dominion government showing the timber of any value without this exploratory work in advance. Is it not the part of wisdom for us to know what we have in the country. We resemble a man living on 100 acres of land who has a little clearing and has never found time to explore the rear of his lot. The first thing would be to know what districts of the country. are well adapted for agriculture and what should not be assigned for agriculture but left for the growth of timber, because we know that timber will grow on land that is unfit for agriculture. We had an instance of that here yesterday in the committee. I happened to come into the committee yesterday, thinking I might be called upon, and Mr. Macoun was engaged here, and his evidence showed the necessity of further exploration. There is a district of country not very far from Edmonton that is only known to a very few in an authoritative way. I do not see my good friend Colonel Hughes here—but he is a gentleman whose cart tracks I followed for about 300 miles in the north country a few years ago, though I do not think he penetrated as far as the Peace river. I do not wish to take up your time unnecessarily, and I want to go on and speak of the quantity of timber under the control of the Dominion as far as we can ascertain it.

A short time ago I wrote an article for the Canadian Magazine, which has been quoted very widely, and it just shows the necessity in speaking of anything of that sort to be very cautious, and not publish anything where you have not proper data to base your opinion on. For I found, though I qualified the statement, that we have so many acres of timber lands by stating that it was only a rough estimate, that it was in fact an exceedingly low estimate; still I find that it has been taken as the actual quantity of the timber of this country.

AN ESTIMATE OF THE QUANTITY AND VALUE OF TIMBER LIMITS UNDER THE DOMINION GOVERNMENT.

I have in my report of last year, and as you have it before you, I am not going to read from it except to give you just what I have found as nearly as possible to be the

area of the timber that is controlled by the Dominion—that is, outside of the provinces altogether. I found in the census of 1891 (for when I made up the statement, the present census figures were not available), but probably that would not make a very great deal of difference as probably very little of the timber has been destroyed by fire since and the extent of the timber would not be changed very much during the ten years—I found that in the census of 1891 an estimate is made of the area of forest and wood land for each province, and also the Territories.

By Mr. Wilson:

Q. What page are you reading ?

A. That is page 4 of my report, the forestry report. Sessional papers, No. 25. I find that Manitoba and the Territories have an area of 722,578 square miles, and adding to this 20,000 square miles of Dominion territory in the railway belt of British Columbia, it gives 742,578 square miles as the total of timbered Dominion lands. That is the area of the timber, as far as we know, as far as the census goes in that year, of the area of timber lands controlled by the Dominion outside of the provinces. In other words, a belt which would, if brought together in one solid lot, be about 742 miles in one direction by 1,000 miles in another—that is, about 742,000 square miles. Now, that is a very large territory, and we cannot expect that all or it is timbered in the sense that the provinces of Ontario and Quebec are timbered. You know it is not, and I have made an estimate that one-fifth of this contains merchantable timber, or say 150,000 square miles or 96,000,000 acres. This is certainly a very low estimate, and after thus reducing the area, and remembering that in addition to the timber suitable for lumber a part of it is covered with spruce very valuable for pulpwood, it can scarcely be considered an extravagant estimate to place the merchantable timber, including the pulp wood at 2,000 feet board measure. That is only a very low estimate, 2,000 feet board measure per acre; I was putting it purposely very low. Now, that would give in all 192,000,000,000 feet board measure of timber.

By Mr. Stephens :

Q. 2,000 feet to the acre is not very much?

A. I mean taking the whole average, some perhaps would be 20,000, other lands would not have any. I am just making the average. Now, we have here approximately as I say, the quantity of timber now fit for use on the lands owned and controlled by the Dominion, a very large quantity indeed. Now, suppose we put that at the very low value of \$1 per 1,000 feet, and we have at present available and full grown on Dominion lands a value of \$192,000,000.

By Mr. Ingram:

Q. Do I understand you to say \$1 per thousand ?

A. I mean simply \$1 per 1,000 board measure for royalty.

By Mr. Stephens:

Q. Stumpage ?

A. Not stumpage dues alone. I am just putting it in the usual way of selling timber limits that we do for the Dominion and for the provinces, including bonus, stumpage and ground rent.

By Mr. Ingram:

- Q. Is it not a fact that a great many of these limits are sold for a great deal less than that now?
 - A. They are sold for a great deal less. Some are and some more.

Q. Onc-eighth less now ?

A. Some are, and some a good deal more.

Q. On the average ? A. I think so.

By Mr. Ingram:

Q. I think you are placing it too high in stating it at a dollar. The department is not selling it at that.

A. It is going to be good timber, and the appreciation in the value of timber is so great that I cannot think a dollar a thousand is placing it too high. I know in the British Columbia railway belt a few years ago limits that were sold for a few hundred dollars are now worth more than the same number of thousands.

Q. But all I can say is this that the department at this present time has

sold some for less than 25 cents a thousand.

A. I grant you that for the bonus alone. Of course when limits are put up by tender it depends on circumstances as to what is bid. If a man wants a limit very badly he pays more, and if not sometimes it will go for very little.

Q. It depends upon the location ?

A. It depends also upon the location, but I cannot think that you would be fair in placing the value at less than a dollar a thousand, that is for the bonus, stumpage and ground rent. However, that is a matter of opinion.

Q. It is only an estimate, anyway?

A. It is only an estimate, and it must be remembered that by far the greater part of this timber will not be sold for the present, and if any one takes into account the appreciation in the value of timber in Ontario and Quebec, and it has been advancing in the Territories and British Columbia as well, I do not think that my estimate of \$1 a thousand is too high when we know how it has been sold in the provinces here and especially when we consider the building of railways throughout the country. Then again, I am including pulp wood as well. As communication gets into the new country pulp wood will advance in value very much too. However, I do not wish to waste time on that. Of course, this represents only the royalty, that is, including the stumpage dues and the ground rent.

Of course it may be said that a great deal of this is not available at present, but nevertheless it is a value there and deserves protection. Now that is only the present crop. We have not yet taken any account of the younger growth. Now, this in other older countries has been worked out very carefully. Of course, we cannot do it in our natural forest, and I have attempted to give an idea of what the annual increment would be in the same forest. Of course, this is merely an approximation, but at the same time it is based to a certain extent on figures that are in my possession, and other estimates, and if I have erred at all in this respect, it has been the same as in the other, in placing the quantity very low. If we confine out cut of saw logs to all trees above 12 inches at the butt and pulp wood, say to 7 inches, the annual increment of growth fit for use will not be less than 140 feet board measure to the acre, or an annual growth increment equal to 13,440,000,000 of feet, which at the rate of \$1 per 1,000 royalty would give timber of the annual value of \$13,440,000.

By Mr. Wilson:

Q. We would like to know how you arrive at that ?

A. The means of arriving at that will be the annual growth that is made usually in the forest. I have made inquiries from parties in different parts of the country. In the province of New Brunswick, the Hon. Mr. Snowball, lieutenant-governor. informed me that he could go over his spruce limits about every twelve years, and cut out equal to what we cut before, cutting down I think to 12 inches. Mr. Bertram, who cuts in the Georgian Bay district, has given an estimate also and it was on these different statements as well as the growth in other countries in similar latitudes that I base these figures.

By Mr. Wade:

Q. Fifteen years in our province ?

A. Yes, about fifteen.

By Mr. Wilson:

Q. There is a very great difference in the kind of forest and the way they are located ?

A. Oh, certainly. You take near the coast the growth is more rapid, because there is more moisture. In the interior there will not be so much.

TIMBER ON THE HUDSON BAY COAST.

I want to pass on now and state that in the Globe of yesterday will be found an article by Mr. Tyrell, the explorer, who has been through our north country, especially in the neighbourhood of Hudson Bay and can speak authoritatively on the subject. After going over the natural resources of the country, such as the fisheries and so forth, he comes to the timber, and I will take the liberty of just giving a few extracts from what he says which may be of interest. He says on the subject of timber, 'The Hudson Bay district is not, as a whole, a great timber country. Indeed the northern half of the district is entirely devoid of timber'—that is beyond the timber line—'of any description, but the land of the southern half is covered by forests of more or less value, some of the river valleys and more favored localities being well wooded by valuable trees of good size. The following is a list of the forest trees of the Hudson Bay district arranged in the ascending order of their northern limits:

'White Elm.—Found only in the most southern parts of district, its extreme north limit, east of Lake Winnipeg, being about latitude 51 degrees; not very abundant.

White Pine.—Now, of course, he is speaking of the Dominion Territory only—found only as far north as latitude 52, in the neighbourhood of Lonely lake, common, and of fair size, about the head waters of the branches of Moose river.

'Red Pine.-About the same as white.

'Black Ash.—Found as far north as latitude 53, towards Lake Winnipg, but only 50 degrees towards James Bay. Common on the various branches of the Moose river, but of small size.

'Cedar.—Found as far north as the mouth of the Rupert river, on James Bay, along the Moose and Albany rivers, around Lake St. Joseph and Cedar lake, on the Saskatchewan river, being in about latitude 53 degrees 40 minutes. Many trees are of large size though not very abundant.

'Banksian or Jack Pine.—Extends as far north to the east of James Bay in latitude 55 degrees and trees of good size are abundant throughout this western part

of the Labrador peninsula.'

The Witness.—Of course, we know Banksian or Jack Pine is not considered valu-

able timber here, but it is of fair value for railway ties and very good fuel.

'To the west of Hudson Bay the range of this tree extends much further to the north, having been discovered by me at the north end of Selwyn lake, in latitude 60 degrees 30 minutes and at the north-eastern extremity of Great Slave in latitude 62 degrees 45 minutes.' Dr. Bell reports it as being abundant and of large size in the valley of the Albany river.

'Balsam fir.—Northern limit on east side of James Bay at Great Whale river.' This I do not care to notice, because it is not a particularly valuable timber. The poplar timber has a very wide distribution all over that country. In going from Lesser Slave lake to Peace river a couple of years ago I found the finest white poplar I ever saw. It would be 12 to 15 inches running up to 75 feet without a limb and growing very thick indeed.

By the Chairman:

Q. Fit for building ?

A. Oh, yes, fit for building, and I think where the timber is scarce they would saw it into lumber.

By Mr. Ingram:

Q. How many years ago ?

A. Since I went through there ?

Q. Yes.

A. A year ago last fall. You must remember that the white poplar in that country is a different treee from what it is in the east. The chairman perhaps knows that. It is a much harder wood and makes much better fuel when growing in the northern climate. It is a very different wood and would make very fair lumber. It is very different wood from the balsam poplar, what they call the black poplar, which is a softer wood and not nearly as valuable. Mr. Tyrrel goes on to speak of the American larch or tamarac.

Tamarac and Spruce.—'This tree is the rival of the spruce in the range to the northward, and as regards abundance it stands second only to the black spruce.' In fact, we find the spruce and the tamarac growing right up to the limit of tree growth, right up to the Arctic regions—'and is as abundant nearly as the black spruce. It is usually the largest tree of its neighbourhood. It attains a fine growth throughout many parts of the country south and west of James Bay.' I remember in conversation with Mr. Tyrrell, after he returned a year or two ago, speaking of a river that empties into Chesterfield Inlet, which would be shown on the map very far north, which was considered farther north than there was any quantity of timber. I remember him saying he went up that river for several hundreds of miles and there was good timber along the valley as far as he could see. He does not mention that here. Now, he comes to the black spruce. 'Black spruce is by far the most abundant tree in the Hudson Bay district, forming, I should judge, 75 per cent of the whole forest.'

It is well known to those who have been in the country that the spruce is the most widely distributed, except perhaps the poplar, of any tree in the northern sub-Arctic region. It extends from the Atlantic to the Pacific. You find the spruce on the Pacific coast, and you find it in the provinces of New Brunswick and Nova Scotia, and you have it northward in Labrador, and then go right across to Lake Winnipegosis and there are several mills there cutting spruce. And when you go into northern Manitoba the spruce is the wood used most largely for lumber. I referred before to Lieutenant-Governor Snowball. He informed me that he considered his spruce limits of more value than his pine, inasmuch as they are faster growing, and he has a market in the Mediterranean for the spruce quite equal to that for pine. But I cannot speak authoritatively on that subject.

By Mr. Kendall:

Q. What is the size of the spruce that is used at Lake Winnipegosis?

A. It will run as high as two and three feet. I have seen it as high as two and three feet in diameter.

Q. On the stump?

A. Fully that, perhaps more.

Q. How tall do you find, it growing ?

A. Well, scarcely as tall as our white pine, but making four logs, say 60 or 70 feet.

Q. Are there forests of it, or only isolated trees?

A. There are considerable forests in north-western Manitoba and north-eastern Assininobia and south-eastern Saskatchewan, I should say, a considerable extent of it; in fact, I have set that in Manitoba aside as a timber reserve. I went through that country a few years ago, travelled through from Swan river to Prince Albert, in

order to ascertain what area of timber we had in that district, and I was so impressed with the necessity of preserving it for the use of the prairie settlers and not allowing it to be homesteaded that I made a memorandum and it was set aside and reserved from homestead entry. Not that it will always remain in that state, but it is rather a wet country and the land is not as well adapted for settlement as the prairie section, and moreover, it should be kept, I think, for the growth of timber for the prairie settlers. The government of the country ought to be very cautious not to allow indiscriminate settlement in the country. First of all, the land should be, as I have already stated, thoroughly explored in order to know what districts may be properly settled upon for agricultural purposes and what ought to be reserved for timber.

By Mr. Kendall:

Q. Are there any large areas where the trees will average 10 to 12 inches on the stump?

A. Oh, yes, there are large areas.

Q. Spruce ?

A. Oh, yes, there a number of mills in there now.

White Spruce.—Now, next Mr. Tyrell speaks of white spruce. I might say that the greater part of this timber in the country just mentioned is white spruce. In the far north country, though, it is largely black spruce. The black spruce in certain districts is a better tree, but generally speaking the white spruce is better in our west. Then, going on to speak of the white spruce, Mr. Tyrell says: 'Its northern limit, which is about the same as the black spruce, is on the east side of James Bay, in about latitude 57 degrees, a few miles north of Richmond Gulf. On the west coast of the bay the limits extends to latitude 59 degrees, at the mouth of the Seal river; thence it extends in a north-westerly direction, passing close to the mouth of the Coppermine river, and on to the mouth of he Mackenzie river. In latitude 62 degrees 15 minutes north on the shore of Cary lake, I have seen white spruce trees the largest of which measured 29 inches in diameter 2 feet above the ground. This was, of course, very exceptional. Mr. Low reports 18 inches as no uncommon size for the species in Labrador, and 20 inches at one locality nead Lake Mistassini. Dr. Bell reports cut spruce logs on Lake St. Joseph 18 and 20 inches in diameter. Mr. Tyrell concludes this article by saying, in connection with the forest resources of the district, it is very much to be regretted that disastrous bush fires are of such frequent occurrence.

By Mr. Wilson:

Q. Is Mr. Tyrell a government employee now?

A. Mr. Tyrrel has conducted several explorations. Years ago he and his brother, who is in the Yukon now, went through what is known as the 'barren lands,' going through from Edmonton to Hudson Bay across the country, through that north country and going down to Hudson Bay; I think it was about two or three years ago that Mr. J. W. Tyrrel, the one who has written this article, made another exploration into the same country, and his report, I think, is out. I just happened to notice the article, and that is my reason for bringing it before you. Now, I mentioned a little while ago—

By Mr. Ingram:

Q. Before you leave that, do I understand you to say that Mr. Tyrell has resigned

from the department and that he is not a government official?

A. I could not say at all whether he is or not. I know him very well and have talked with him frequently on the subject of his explorations, but I have not seen him recently. I think he has not been in the government service for two or three years that is my opinion.

By Mr. Wilson:

Q. How does he come to be at this exploration business? Is it for a company?

A. No. He made this trip two or three years ago. That was when he went out over this country.

Q. This is hardly three years old, is it ?

A. Yes, this is a summary.

Q. I thought it appeared in yesterday's Globe as something new ?

A. It does appear there, but it is epitomized in this way, and I thought it was the best way to bring it before your notice.

Q. What, a report of three or four years ago ?

A. Well, I do not know if that is in the report of three or four years ago, but I thought it would be interesting to you.

Q. It is not much news.

A. Well, if it is not I do not wish to take up the time of the committee in going over anything of that kind; I would prefer just going on with the work of my branch. But I thought that it was a matter of interest and that the timber of this county should receive greater attention than it has before, especially the timber of the Dominion. It is for that reason I have taken the liberty of mentioning this, but I hope that if I have transgressed you will be good enough to pardon me.

By Mr. Ingram:

Q. I understood from your report that you are superintendent of Dominion forestry?

A. Yes.

Q. Your duties are confined to the prairie province for the purpose of raising trees there for wind breaks and such like. I did not understand your duties were in connection with the timber of the whole Dominion, the timber lands, am I correct?

A. No. My first year's work had very little to do with tree planting. My appointment is that of superintendent of timber and forestry. I recognize that there are two duties involved. The first with reference to the existing timber on Dominion lands. I looked upon that as my principal duty, the setting aside, as I say, of timber reserves and for the protection of the timber that we have. I have attempted to do that as far as the limited appropriation which you gentlemen give us, will allow. I am glad to say it was increased for the last year and we have endeavoured to make the best use of it possible.

Q. I understand from this report that your appointment took place in 1900 ?

A. My first report, I think, was in 1900; I was appointed in 1899.

Q. Therefore, your duties are both combined ?

A. Oh, both combined certainly, in fact similar to forestry in other countries. The United States government, the Bureau of Forestry in the United States is not very well defined yet, but they look after the timber there and also have attempted a scheme by which to assist the growth of the timber on the prairie land as well, and that is what we have done.

RECENT INCREASE IN THE VALUE OF WOOD.

Now, there is a matter here that I brought out in an article some time ago which perhaps will bear repeating here; some of you may not have seen it. I will give you some statistics with reference to the increase in the value of wood in the last few years. It was thought a few years ago by a great many that the increased use of iron and stone and cement in building and structural work would decrease the use of timber. It would naturally seem so, but it has not been the case. As to the displacement of wood by coal, German statistics show) that from the beginning of last century, when coal began to be generally used as fuel, the wood consumption increased in the

order to ascertain what area of timber we had in that district, and I was so impressed with the necessity of preserving it for the use of the prairie settlers and not allowing it to be homesteaded that I made a memorandum and it was set aside and reserved from homestead entry. Not that it will always remain in that state, but it is rather a wet country and the land is not as well adapted for settlement as the prairie section, and moreover, it should be kept, I think, for the growth of timber for the prairie settlers. The government of the country ought to be very cautious not to allow indiscriminate settlement in the country. First of all, the land should be, as I have already stated, thoroughly explored in order to know what districts may be properly settled upon for agricultural purposes and what ought to be reserved for timber.

By Mr. Kendall:

Q. Are there any large areas where the trees will average 10 to 12 inches on the stump ?

A. Oh, yes, there are large areas.

Q. Spruce?

A. Oh, yes, there a number of mills in there now.

White Spruce.—Now, next Mr. Tyrell speaks of white spruce. I might say that the greater part of this timber in the country just mentioned is white spruce. In the far north country, though, it is largely black spruce. The black spruce in certain districts is a better tree, but generally speaking the white spruce is better in our west. Then, going on to speak of the white spruce, Mr. Tyrell says: 'Its northern limit, which is about the same as the black spruce, is on the east side of James Bay, in about latitude 57 degrees, a few miles north of Richmond Gulf. On the west coast of the bay the limits extends to latitude 59 degrees, at the mouth of the Seal river; thence it extends in a north-westerly direction, passing close to the mouth of the Coppermine river, and on to the mouth of he Mackenzie river. In latitude 62 degrees 15 minutes north on the shore of Cary lake, I have seen white spruce trees the largest of which measured 29 inches in diameter 2 feet above the ground. This was, of course, very exceptional. Mr. Low reports 18 inches as no uncommon size for the species in Labrador, and 20 inches at one locality nead Lake Mistassini. Dr. Bell reports cut spruce logs on Lake St. Joseph 18 and 20 inches in diameter. Mr. Tyrell concludes this article by saying, in connection with the forest resources of the district, it is very much to be regretted that disastrous bush fires are of such frequent occurrence.

By Mr. Wilson:

Q. Is Mr. Tyrell a government employee now?

A. Mr. Tyrrel has conducted several explorations. Years ago he and his brother, who is in the Yukon now, went through what is known as the 'barren lands,' going through from Edmonton to Hudson Bay across the country, through that north country and going down to Hudson Bay; I think it was about two or three years ago that Mr. J. W. Tyrrel, the one who has written this article, made another exploration into the same country, and his report, I think, is out. I just happened to notice the article, and that is my reason for bringing it before you. Now, I mentioned a little while ago-

By Mr. Ingram:

Q. Before you leave that, do I understand you to say that Mr. Tyrell has resigned from the department and that he is not a government official?

A. I could not say at all whether he is or not. I know him very well and have talked with him frequently on the subject of his explorations, but I have not seen him recently. I think he has not been in the government service for two or three years that is my opinion.

By Mr. Wilson:

Q. How does he come to be at this exploration business? Is it for a company?

A. No. He made this trip two or three years ago. That was when he went out over this country.

Q. This is hardly three years old, is it ?

A. Yes, this is a summary.

Q. I thought it appeared in yesterday's Globe as something new ?

A. It does appear there, but it is epitomized in this way, and I thought it was the best way to bring it before your notice.

Q. What, a report of three or four years ago ?

A. Well, I do not know if that is in the report of three or four years ago, but I thought it would be interesting to you.

Q. It is not much news.

A. Well, if it is not I do not wish to take up the time of the committee in going over anything of that kind; I would prefer just going on with the work of my branch. But I thought that it was a matter of interest and that the timber of this county should receive greater attention than it has before, especially the timber of the Dominion. It is for that reason I have taken the liberty of mentioning this, but I hope that if I have transgressed you will be good enough to pardon me.

By Mr. Ingram:

Q. I understood from your report that you are superintendent of Dominion forestry?

A. Yes.

Q. Your duties are confined to the prairie province for the purpose of raising trees there for wind breaks and such like. I did not understand your duties were in connection with the timber of the whole Dominion, the timber lands, am I correct?

A. No. My first year's work had very little to do with tree planting. My appointment is that of superintendent of timber and forestry. I recognize that there are two duties involved. The first with reference to the existing timber on Dominion lands. I looked upon that as my principal duty, the setting aside, as I say, of timber reserves and for the protection of the timber that we have. I have attempted to do that as far as the limited appropriation which you gentlemen give us, will allow. I am glad to say it was increased for the last year and we have endeavoured to make the best use of it possible.

Q. I understand from this report that your appointment took place in 1900 ?

A. My first report, I think, was in 1900; I was appointed in 1899.

Q. Therefore, your duties are both combined ?

A. Oh, both combined certainly, in fact similar to forestry in other countries. The United States government, the Bureau of Forestry in the United States is not very well defined yet, but they look after the timber there and also have attempted a scheme by which to assist the growth of the timber on the prairie land as well, and that is what we have done.

RECENT INCREASE IN THE VALUE OF WOOD.

Now, there is a matter here that I brought out in an article some time ago which perhaps will bear repeating here; some of you may not have seen it. I will give you some statistics with reference to the increase in the value of wood in the last few years. It was thought a few years ago by a great many that the increased use of iron and stone and cement in building and structural work would decrease the use of timber. It would naturally seem so, but it has not been the case. As to the displacement of wood by coal, German statistics show that from the beginning of last century, when coal began to be generally used as fuel, the wood consumption increased in the

same proportionate rate as that of coal. That is the point I wanted to bring out. 'The increased consumption of wood parallel with that of coal,' and on this point I am quoting the opinion of one of the best authorities on the continent, Dr. Fernow, 'this simply accentuates the influence of the great modern development of civilization, which

means increase in the wants of the population.'

Now, I notice that the manufacture of pulp and cellulose alone is now consuming large quantities of our spruce and other woods, and it is important that we should take care of our spruce, forests of which I have shown to be of such wide extent, because I think the day of white pine is pretty near at an end for the present. Future generations have have white pine. As Mr. Booth said at one of our meetings, our grand-children would probably have more white pine than we have, but it will take a hundred years to grow. In view of our great spruce forests and the use to which spruce is being put for pulpwood and cellulose, I think there is no question at all that we hold a position with respect to it that we should look very carefully after.

RECENT GREAT EXPANSION IN THE VALUE OF TIMBER.

Now, with reference to the value of timber, we have noticed here in Canada, in Ontario and Quebec, the enormous increase in the amount paid for timber limits, and some have thought that they had reached their limit. Now, if you inquire in Germany or in Europe generally, the stumpage there is a great deal larger than it is here, and that is the opinion of the best authorities that we can get—and I quote from them here to show this—that this advance in price has not yet been too high. The increase of the value in the forest products in Europe within the past one hundred years may be taken as indicating what the advance in price of these products will probably be in this country in the present century. Dr. John Nesbitt, of England, one of the best authorities on this subject, addressing a meeting of the Royal Scottish Aboracultural Society, makes the following statement:—

He begins by making the following quotation from the London Times :-

'Canada possesses in great quantity certain raw materials which are essential to the maintenance of some important American industries. Among these none are more important than timber. It is a fact that in the northern hemisphere, Canada is rapidly becoming the only country which can afford to export timber. The other countries which possess it in excess of their manufacturing requirements are Russia, Norway and Sweden. It is a topographical peculiarity of the Russian Empire that the rivers traversing the principal districts flow into the Arctic ocean. They are therefore, useless for the purpose of floating our logs to the markets of the world; and so far no method of land transport has ever been devised which will carry timber for long distances cheaply enough to bring it into practical competition with water-carried logs. The forests of Russia may for the present be regarded as commercially inaccessible. Norway and Sweden, which do export timber, are hardly able to support the deficiency of Germany. All other nations requiring timber of the sorts grown in the northern hemisphere must look to Canada for their supply. First among these nations will be the United States.' We know that is the case already. 'It is fully recognized that, owing to the depletion of the forests of the northern states, the timber supply of the United States, for all ordinary purposes of building and manufacture, will not last more than a very limited number of years. The American supply of spruce for pulpwood will fall far below present requirements in five or six years '-it is two years since this was written-' and within ten years, assuming the present rate of manufacture remain unchanged, will be entirely exhausted. This being the case, the United States must evidently, within a very short period, look to outside supplies for the raw material upon which many of her most important industries are based.

When it is considered to how many of these a full supply of timber is an essential conditional existence, it will be seen that there is little exaggeration in the statements

commonly made by the far-sighted Canadian lumbermen, that the position hitherto held by cotton in the markets of the world is as nothing compared with that which

timber is destined within a few years to occupy.'

After making this quotation, which is from the London Times of a year or two before, the speaker goes on to say that 'when one considers these circumstances, it seems impossible to arrive at any other conclusion than that the days of cheap timber in Britain are now almost at an end, and that the next few years must see a rise in price, and this enhancement will be permanent and progressive.'

By Mr. Stephens:

Q. Has our export trade in timber increased of late years ?

A. I don't think it has, altogether. As you know, most of our exports to Europe heretofore has been done in square and waney timber. The total value of our exports from the forest have increased of late years. For 1903 the figures are \$36,386,015, which is over \$1,000,000 more than ever before, but this is probably more owing to increased price than quantity. Then, again, in the report of the same society for the following year, 1901, Dr. W. Schlich, one of the best authorities in the world on the subject, gave a paper. Now, any person that knows anything of the history of forestry in India, knows what a success has been made of the forests there. They have been looked after by Dr. Schlich and Sir Diedrich Brandis. They have done wonders in that country and Dr. Schlich is looked upon as one of the best authorities in Britain. Here is what he says on 'the outlook of the world's timber supply': 'The great standby for coniferous timber will be Canada'—he qualifies it in this way—'if the government does not lose time in introducing a rational management of the forests'—that is, if they don't lose the timber from fire.

M. Melard, Inspector of Forests in the French Republic, says: 'There are but seven countries at present able to supply large quantities of timber. Five are in Europe, namely, Austria-Hungary, Sweden, Norway, Finland and Russia; two are in North America, namely, Canada and the United States. It has been shown that the available surplus of Austria-Hungary, of Russia and of the United States is seriously threatened by increase of population and by industrial development, and that of Norway by the abuse of the axe. There remain only three sources of supply in which confidence can be placed for yet a little time. These are Sweden, Finland and Canada. They are absolutely and hopelessly insufficient. If Sweden, Finland and Canada were to attempt to supply all the countries which reach out their hands for timber their normal production, and their forests too, would be disposed of completely in a very short time, revenue and capital alike. A timber famine is within sight.'

These are the views of some of the ablest old world foresters. You may think them extreme, but they are the views of experts with reference to the quantities. The increased demand for timber and the scarcity that is prevailing at present are things

which will probably continue.

Now, when I started this work, as I say, I looked over the timber and it seemed that our first duty was to preserve it. We had several timber reserves heretofore set aside under the old government, for the purpose of timber permanently, one in the Riding mountain, one at the Turtle mountain and one at the Moose mountain, and there were a few others. I consider that was a very wise movement indeed, and one which should be extended and we have extended it. I might have brought a map in order that I might point out more clearly the location of the timber reserves at present existing.

Now, these are not yet in the position I would like to see them. I have made certain memoranda with regard to that. None of them have any greater authority than that conferred by orders in council or departmental orders. I think these timber reserves should be set aside permanently by Act of Parliament, so that they would not be infringed upon and so that there would not be pressure brought to bear to encroach upon their territory. The difficulty is that men will go in and settle on these reserves,

and then it is usually difficult to dispossess them. Whereas, if they had been permanently set aside as forest reserves, when these people brought their petitions before the government to be allowed to remain, the department would be in a position to say that it could not be done, because it had already been decided by Act of Parliament. I hope we will have that done shortly in the interests of the government and of the country. I may say that the government have within recent years set aside a number of these forest reserves, which are not only valuable for timber purposes, but in certain cases are of very great importance with reference to the water supply as well Now, the setting aside of that Riding Mountain reserve, as I said before, I think was one of the wisest provisions that could have been made as a water reservoir for Manitoba. If any of you are acquainted with the topography of the country, or if you have a map of the province of Manitoba, you will notice that the greater number of the rivers of the province rise in these hills; the Assiniboine, which is the second river of importance in Manitoba through its tributaries the Little Saskatchewan, the Birdtail creek, the Shell river and several others rise in these hills. On the north side in the Dauphin country, there are perhaps a dozen important streams, not as large as the Assiniboine, but still important streams which have also their source in these hills.

By Mr. Wilson:

Q. What effect do these forests have on the climate?

A. They will have a considerable effect in the amelioration of the climate.

NECESSITY FOR FOREST RESERVES. .

If you will allow me to proceed to state why I consider it necessary to have these forest reserves in these hills I will come to that question later. It is that they are the sources of water supply of one of the richest parts of the province of Manitoba. If you denude these hills of the timber which is upon them, what must be the result? It cannot be anything else than that there will be a flood in the spring, your water will all rush away, and do great damage, and when it is gone, and when it is needed for the supply of the growing crops in that region, it will not be there. This is no theory, you can see it everywhere. Many of the countries of Southern Europe, of Northern Africa, and of Asia Minor are for very great distances impoverished where Waste the water supply of the prairie in former years they were very fruitful. section of Manitoba and the Territories and there is little enough moisture there at any time, there will be danger of the same results following as is the case in those countries I have referred to. Therefore, it is the duty of the government, and of this branch of the government, to look carefully to the preservation of the water supply of the North-west, and for that purpose to preserve the timber which really forms the natural reservoir for the water supply of that district. Now, that is only one reserve. There is the Moose mountain to the west of Assiniboia, and then within recent years we have set aside the foot hills of the Rockies as a timber reserve. Now, it is evident that if you destroy the timber along the foot hills, the result will be the same as it is anywhere else, you are destroying the water supply, that is, the useful water supply, for the whole Saskatchewan country. And what will be the result? The result will be the drying up of the streams and the wells, the soil will dry up, and the plains will become dry, and the result will be simply disastrous for the whole country. At present there is little enough rainfall over the North-west Territories; on the average there is not sufficient rainfall in South-western Alberta for the crops and they are constructing very large irrigation works at present. What will be the use of these irrigation works, if we allow the timber to be destroyed through fire or otherwise throughout the district from which water supply is received.

SYSTEMATIC GUARDING OF FORESTS AGAINST FIRE.

That leads me to speak of what is being done, or what we have attempted to do in the way of guarding this timber from destruction.

By Mr. Ingram:

A. In British Columbia we have timber lands consisting of territory within the the province of British Columbia known as the railway belt, which was granted by the government of British Columbia to the Dominion as the contribution of the province to the Dominion towards the building of the Canadian Pacific Railway.

Q. Then you were talking about the necessity of having fire rangers ?

A. I am just coming to that.

Q. In British Columbia have they not fire rangers, and do your men work in con-

nection with the provincial government?

A. I am very glad you brought that question up. They have not established a system of forest fire guarding in the province yet, and they are suffering very much for want of it. A year ago last summer there were, as many of you know, most disastrous fires in Washington and Oregon. I dare not tell you now from memory, for I cannot remember exactly the quantity of timber it was ascertained had been destroyed by fire in Washington and Oregon. I went out to the coast at that time. We had our rangers out all along the railway guarding our timber, and Mr. Leamy, who has charge of the fire guardians of this railway belt, had all his men out, and they were working night and day to keep the fire out of the belt. They had fire in our territory near the Washington boundary, and he told me he did not know whether they would be able to keep it out of the green timber or not; it was in the Brule, that is, in the burnt country. There was an expensive logging plant in a limit near the fire, and they worked very strenuously to prevent its getting into this limit. whole of that territory was in danger. They fought the fire three or four days, and they ultimately succeeded. The work was largely at night when there was not much wind. They cut down timber and drew it away, and wherever there was a road they took advantage of that and fired it back so as to check the fire. At the suggestion of Mr. Leamy, I saw the provincial authorities then, and Hon. Mr. Wells told me that he was thinking, in fact, intending to start a system of forest fire guardianship in British Columbia. Just to give you an idea of the excellent work which has been done by these fire rangers, I might be allowed to mention that we have not within the last four years lost any timber worth speaking of within the railway belt, whereas millions of feet have been lost just outside of it.

Q. Then there is nothing in the contention that the building of railways through

new districts constitutes a danger?

A. There was an immense quantity of timber destroyed along the lines of the Canadian Pacific Railway during its construction, but with proper guardianship there need not have been any. To give an instance of this, Mr. Booth has built a railway right from this city to Parry Sound, through perhaps one of the greatest forests of white pine anywhere to be found in Ontario, and they have not lost, as they will tell you, any timber at all.

Q. I think I heard Mr. Edwards say it was very dangerous to construct a railway through a timber district? In fact that a railway running through a district endan-

gers the timber ?

A. There is no doubt about that. The only way it was kept out of there was that he kept a train and men ready to go along and patrol the road. They had engines and crews ready all the time during the dry season. There is no doubt at all that there is danger not only from the engines, but because so many people are going up and down the country and building camp fires, which we have to guard against.

And that just leaves me to say that we have asked—hope we will get it—an increased appropriation this year in order to fire-guard the timber in the neighbour-

hood where explorations will be done in connection with the building of the newly projected railways through the west. It is very necessary that during construction the district should be looked after.

AREAS OF CERTAIN TIMBER RESERVES.

The areas of these timber reserves are as follows—I will take only a minute to give them: In Manitoba we have the Riding Mountain, 1,093,240 acres; the Duck Mountain, 709,760 acres; the Porcupine Hills north of the Duck Mountain, 1,382,400 acres; the spruce woods of Manitoba, 190,080 acres; the Turtle Mountain, 69,120 acres, making a total in Manitoba of timber reserves of 3,449,600 acres. In the North-west Territories we have the Moose Mountain, 103,040 acres, the Beaver Hills, 170,880 acres; Cooking Lake, 108,800 acres; the Rocky Mountain park, 2,880,000 acres—this was very much enlarged in the last year or two, but this is the area at present—in the foothills of the Rockies, 2,350,080 acres. That makes a total in the North-west Territories of 5,612,800 acres. In the railway belt through British Columbia we have Yoho Park, 530,240 acres; Mountain Park reserve at Glacier, 18,720 acres, and Long Lake, 75,520 acres, a total in British Columbia railway belt of 624,480 acres, or a total area of timber reserve, as near as we can approximate it, at 9,686,880 acres.

Now, the system of fire-guarding is not confined by any means to these reserves, but to the timber country as a whole. Just in order to back up what I state with regard to the use that these fire rangers are in guarding the timber, I want to quote what is said by two of the largest lumbermen in the railway belt. These lumbermen contribute one-half of the cost of guarding their limits, that is, of guarding their own timber, and that the system has been successful so far is borne out by this. Here is a letter from the Columbia River Lumber Company of British Columbia, the largest lumber company in that country. They say: 'In the disricts in which our limits for tthe Golden and Beaver Mills are situated we haven't had a single fire last season, although there were two months of the driest kind of weather, and we attribute this result largely to the activity of the government fire rangers, and feel that it would be a serious mistake not to follow up this important matter every year.' And again Mr. Skene, the secretary of the Fred. Robinson Lumber Company, says: 'Re fire wardens, we think that these men did very effective work last season in the prevention of forest fire, and strongly recommend on our part the appointment of them each season.' And we have a letter here again this year from the former company asking that they be increased, and stating that they are willing to pay their proportion.

By Mr. Ingram:

Q. You mentioned 9,686,880 acres of reserves ?

A. Yes.

Q. Can you tell us what the total is of Dominion timber in the Dominion, either in acres or square miles?

A. I think I did that at the very start, the figures given from the census.

By Mr. Lennox:

Q. You gave 192,000,000 acres ?

A. Before that I quoted from the census of 1891 showing that the forest and woodland areas of the Territories, in Manitoba and the railway belt in British Columbia, amounted to 742,578 square miles, and taking one-fifth of this as containing merchantable timber, we get in round numbers 150,000 square miles, or 96,000,000 acres. These timber reserves are very small in proportion to the total number of acres of timbered land in the Dominion. Of course, we do not confine our fire-guarding simply to the reserve, but as far as we can extend it to the whole country.

- Q. You cannot give us the actual square miles of timber belonging to the Dominion?
 - A. That is what I have given from the census.
 - Q. That is the total
- A. Yes, 722,000 square miles. It will be seen from the census of 1891 that this estimate is made of the forests and woodlands in Manitoba and the North-west Territories. Added to that, there should be 20,000 square miles on Dominion territory in the railway belt. So that the grand total is 742,000 acres. That is the total of timbered lands belonging to the Dominion. It is impossible, of course, to have men all over that country. It is not necessary. I avail myself of everything I can. I get out notices; for instance, there is a large notice for posting. (Notice exhibited.)

By Mr. Ingram:

Q. The same as you had last year ?

- A. Yes. And the Hudson's Bay Company have distributed them in the far north all along their trails as far as are necessary in that country, and the Mounted Police and our own men and other men we have, aided in the distributing of these notices. and where it is necessary to have men travelling over the country in the dry season. we do that too.
- Q. Now, you have referred to the large amount of spruce for pulpwood, for instance, and I suppose you know that a number of these plots or blocks are being sold from time to time.

A. I am not aware of that in the Dominion territory.

- Q. You are speaking now of the Dominion—they are being disposed of from time to time?
 - A. Simply as pulpwood.

Q. As spruce?

Q. Yes, timber limits are being disposed of, including the spruce.

- Q. What I want to get at is for the benefit for those who have not the opportunity of being as well posted as you are. We have to dispose of these blocks from time to time as is being done in Ontario and Quebec, and it would be very interesting to know what the procedure would be supposing that I, for instance, wanted a block of this timber in the North-west. Could you tell us the means or method by which we would have to proceed?
 - A. I could give it to you, but it is in the Dominion regulations.
 - Q. I know, but this report is more widely circulated than they are.

A. I have no objections.

Q. If you can-

HOW DOMINION TIMBER IS ACQUIRED BY APPLICANTS.

A. So far as I can give it, I would not try to quote the exact words. In the first place, any person wishing timber limits makes application to the Department of the Interior. After the application is received the limit is advertised for sale.

Q. What period of time—do you remember ?

- A. I think it varies according to the different districts the timber is in and the size of the limit. Sometimes the limits run from 160 acres, and sometimes up to 50,000 acres, and I think there is no set time. After that a notice appears in the Gazette and in certain papers in the neighbourhood, because no particular place is mentioned. Then the limit is put up to competition. The tenders are sent here to Ottawa and the lowest tenderer gets the berth.
 - Q. That is what the applicant does ?

A. Yes.

Q. Is there a day set for opening the tenders?

A. Yes.

Q. In whose presence are they opened ?

A. I can't say that, I have nothing to do with that. That is in the Timber and Mines branch, and I do not exercise any control over the commercial part.

Q. You are not aware whether there is any hard and fast rule as to who are present when the tenders are opened; whether the Minister, the Deputy Minister, or both?

A. I cannot say about that ?

Q. You have no knowledge of that?

A. I had nothing to do with the commercial part of it. In certain cases these applications are sent over to me to see whether they should be allowed to be sold, or should be retained for timber reserves.

Q. It would be very interesting for those concerned, probably to know.

A. I would like to give all the information I can, but I do not want to give information regarding matters of which I have no knowledge.

AID GIVEN TO SETTLERS TOWARDS PLANTING FOREST TREES.

That is about all concerning the timber, but I would like to keep you a few minutes by placing on record what the government of Canada and the United States have done in the way of giving aid to the settlers and others in planting trees on the prairie. In both cases, both in Canada and the United States, at one time a certain area of land was given to any person planting a certain number of trees. In both cases it was found to be a failure, it could not be otherwise but a failure, because the the people planting the trees were simply earning 160 acres of land.

That was their object, and they could always blame Providence or attribute to some other cause if their trees did not grow. They could apply to their member, who would think they were right in their intention, and the land was generally got; at least, that was the case on the other side, although perhaps not here. But in any case the trees did not grow. I recognize the importance of having supervision, so when I started work at first, we had to inspect the land in order to ascertain what particular trees were suitable to the different localities. That system has been followed every year. The experimental farm did not do that. The farms are doing good work but their work is strictly experimental, and they have not given the time and attention necessary to this particular work. It is their work to try experiments and see what fruits, grain, &c., will grow in the district, but the experience they obtained in that way might only apply to the particular district in which the farm is situated. Our work, however, extends all over the North-west, and while it may be an advantage to know what trees will grow at Indian Head or Brandon, it is necessary that our information should take a wider range, as entirely different conditions exist in different districts. They started a system of inspection in the United States, and I followed their example here. They send out agents with a working plan; we make a working plan, which I can show you, and after going to all that expense they left it for the settlers to provide the material for themselves. But we went farther; it perhaps looked rather paternal for us to give them trees, but this work was educative. That is one point in it. We are showing the people of the North-west that it is possible for them to raise trees and how to do so, and in order to do that we found it necessary to supply them with seedling trees. So we are doing that at present; I do not say we can always do it, we do not want to do it, but without doing so at present the system would fail. The idea is to show the people by object lessons by experimental stations, as it were, that are now being established throughout the North-west under our supervision, model plantations, and after they have found out they can be grown successfully, and they have these plantations in their own neighbourhoods to guide them as examples, it is expected they will be able to grow them without our aid. I can show by our statistics that the last three years out of those that have been sent out, that about 90 per cent. I can safely say 85 per cent to 90 per cent of the trees that have left the nurseries and have been planted out under our supervision are growing now. I think that is a very good record indeed, and demonstrates that trees can be successfully grown. I may say that I was at the American Association recently, and many of the members are anxious to see what we are doing in the west in that regard. There is no question at all that this supplying of plant material was a link in the chain which was necessary for us to supply and we are doing it. We are raising the trees very cheaply at Indian Head and at Brandon at present, at the experimental farms, where land has been set aside for the purpose. But we are going to centralize this work at one place shortly and have a forestry station of our own where we can make forestry experiments and raise the trees. At the same time I do not mean to say that if all the farmers of the Northwest ask for 1,300 trees every year we would be able to supply them. We take the right to enter any of these plantations and take cuttings and gather the seeds for use in other plantations where the owner himself does not wish them to extend his own plantation.

ENLARGED AID TOWARDS INCREASE IN FOREST PLANTATION.

I just want to say that we have this year 1,900,000, or in round numbers 2,000,-000 trees, which will be distributed among 1,028 farmers. This is a much larger number than ever before, and the applications this year number about 2,300, that is, for next year's planting. The land is thoroughly examined one year, and if it is in the proper state of cultivation then the inspectors state what kind of trees they can plant and show them how to plant them. This committee at former meetings has perhaps These inspectors are men such as Mr. misunderstood this system of inspection. Stevenson, who was examined here a few days ago, and others familiar with tree growth. who understand what particular trees are adapted for particular soils and for particular climatic conditions prevaling in the districts where they are planted. The names of the applicants, their quarter-sections, their post office address and express offices are all arranged in the office before the inspectors start, and they are furnished with copies. The inspector, in his rounds, sees not only the land to be planted, and whether it is properly prepared, but he also sees that those trees planted in former years, are properly attended to.

By Mr. Smith (Wenthworth):

Q. No trees are sent out until the land has been inspected?

A. No, and until the applicant has his ground in a proper state of cultivation.

Q. That means two inspections at least?

A. Not necessarily. Generally, a man makes an application some time before, and we send out a circular telling him how to prepare the land before the inspector goes.

Q. Supposing we put in an application at any time during the past winter, would

he get his trees this spring?

- A. He would not probably have it ready then, but we send out a circular to the applicant and probably by the time the inspector gets around, which will be well on in the season, he will be able to tell whether the land is in a proper state. We do not usually send out two inspectors in one year, we could not do so, but we do the best we can.
- Q. You inspect the land before the trees are sent out, and you inspect the plantation afterwards to see if he has properly carried out the instructions. Is that right?

A. Yes.

Q. Those are the two inspections I refer to.

A. There may be three or four inspections, because the applicant agrees to take care of these trees, there is a regular form of agreement requiring the farmer to keep up expenses and to protect the trees so that they will not be destroyed.

Q. What is the penalty if he does not do so ?

A. There is no penalty; I considered all that in framing it, but it seemed going a little too far to impose a penalty.

By Mr. Richardson:

Q. Do we understand your duties are confined principally to Dominion lands ?

A. Yes.

Q. Can you inform the committee from your own knowledge as to whether any systematic effort is being made by the older provinces to replenish the forests which have been cleared up for agricultural purposes, but which have been found to be entirely unsuited for the growing of crops and have been abandoned. I think there is a good deal of waste land of that character which has grown good timber, but which is now useless. Has any attempt been made to reforest these lands?

A. I think the Ontario government are proposing to do something in that line just now, and are establishing a forest nursery at Guelph in connection with the Agricultural College. But generally in our north country if we can keep the fire out natural regeneration will take place unless the whole forest has been swept away. If you take a country that is swept over by fire, one fire does not likely kill everything, and the coniferous seeds come up, but if two fires sweep over the country you are apt to have only poplar and birch, or some of those other trees, with winged seeds that will fly further than the seed of the pine or spruce. It will take a long time before the pine and other coniferous trees recover under such circumstances. along the Booth road between here and Parry Sound you will find a great deal of natural reproduction going on. You will see the natural reforesting going on there just from the seeds that have been left in the ground, where there has been only one fire, or where on the other hand a certain number of seed-bearing pines have escaped the fire. In British Columbia there are some pine belts of young timber of good quality that are growing up on burnt over areas, and it is the intention to set aside some of these as timber reserves. I visited Nova Scotia a short time ago and found they were then framing some forest legislation, but it was more for protection against fire.

By Mr. Richardson:

Q. A great deal of attention has been given to this matter by the German government, I understand, so that the reproduction would equal the consumption in Germany or more than that?

A. Of course, that is advanced forestry. It is done in Germany, but all we can hope to do I think at present, especially on the Dominion land, would be to keep the

fire out and let nature do the rest.

I thank you, gentlemen. I do not think there is anything more that I have to say to-day.

Having examined the preceding transcript of my evidence, I find it correct.

E. STEWART,

Dominion Superintendent of Forestry.

BINDER TWINE INSPECTION

House of Commons, Committee Room 34, Thursday, June 2, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, chairman, presiding.

Mr. Joseph Haycock, Inspector of Binder Twine, was present for examination.

OPERATIONS UNDER BINDER TWINE ACT.

By Mr. Clancy :

- Q. I want to ask you some questions with regard to the operation of the Binder Twine Act?
 - A. I will be pleased to give any information that I can.
 - Q. When did your duties as inspector commence, Mr. Haycock ?
 - A. On June 15, I think of last year, a year ago.
 - Q. June 15, 1903 ?
 - A. 1903, yes.

By Mr. Ross:

- Q. Was it in 1902 ?
- A. No, 1903. I submitted my instructions to the committee last year.

By Mr. Clancy:

- Q. Well, give us your instructions in general terms ?
- A. The Act regulating the sale of binder twine provides that upon, or attached to, every ball of binder twine offered for sale there shall be a stamp with the name of the manufacturer, importer, or dealer and the number of feet per pound. It was my duty to see that that Act was complied with and enforced.
 - Q. That included imported twine as well as the twine made in Canada?
 - A. All twine.
 - Q. All twine ?
 - A. All twine offered for sale.
 - Q. Are you engaged all the time in your duties ?
 - A. I have been.
 - Q. Have you been up to this time ?
 - A. Ves
 - Q. How many factories are there in Canada?
 - A. Ten.
 - Q. How often have you visited those factories ?
- A. I have visited the Halifax factory twice, that is, the one at Dartmouth, opposite Halifax, twice. The one at Montreal I think I visited four or five times.

Q. What is the name of that factory?

A. The Consumers' Cordage Company. The one in Peterboro I have visited several times, perhaps five times, and the one in Toronto a number of times.

Q. What is factory in Peterboro called ? A. The Canadian Cordage Company.

Q. And the one in Toronto, what is it called ?

A. That is called the Central prison. The one at Kingston, I guess I have been at from 25 to 30 times. I have been there very frequently, and I was there the day before yesterday.

Q. Well, the next ?

A. Brantford. There are two at Brantford. I think I have been there three or four times.

Q. What are they called ?

- A. The Brantford Cordage Company and the Farmers' Binder Twine Company.
- Q. Two separate companies ?

A. Two separate concerns.

Q. Well ?

A. And one in Walkerton, I have only been there twice.

Q. What is the name of that company ?

A. Well, it is called the Walkerton Binder Twine Company, I think.

A. Then there is one in Brandon; I have been there three times.

Q. Yes?

- A. The one in Chatham; I have been there three or four, perhaps four or five That includes the whole of them.
 - Q. Two of those are under the control of the Dominion-?

A. And the Provincial Government.

Q. Respectively?

A. Yes.

Q. Kingston and Toronto? and eight are private companies?

A. Eight are private companies.

Q. Have you made any seizures during the year since you were appointed ?

A. Yes.

- Q. Was that with regard to imported twine or twine manufactured in Canada?
- A. Some of it was with regard to imported twine and some twine manufactured in Canada?

SEIZURES UNDER THE BINDER TWINE ACT.

Q. Yes, how many seizures did you make?

A. I think there are 15 altogether.

Q. Have you made any seizures since you were here last year ?

A. Yes. I made one since I was here last year. I made one in Chatham and one in Blenheim.

Q. Well, you had made 14 before you were here ?

- A. That makes 16 altogether, counting Chatham as two.
- Q. In how many cases where you made seizures did you find imported twine ?
- A. Well, when I was here last year I stated that of the 14 cases there were 11 American, 1 English, 1 Mexican, and 1 Canadian. Now I also stated-

Q. There were 14?

A. Out of the 14 I stated that there were 11 American, 1 Mexican, 1 English, and 1 Canadian.

Q. Yes.

A. One of those seizures I afterwards ascertained was Canadian twine, but in the hands of an American firm.

Q. One of the 11 that you ascribe to- ?

A. To American. I afterwards ascertained it was really made in Canada. It was made by a Canadian firm for an American firm out of hemp furnished by the American firm, and the twine was sold to an American firm and they had it in their possession when I seized it, consequently I concluded that it was American, but the latter developments gave me the information that it was really made in Canada.

Q. Well, did you find any considerable quantity of Mexican twine in your ex-

amination ?

A. I got in Moosomin, I think, 123 balls. This twine was not marked with the number of feet per pound, consequently under the Act I was not able to confiscate it. The Act only provides for confiscation when the number of feet per pound is stated, and when the deficiency is greater than five per cent of the length stamped upon the ball. It does not provide for confiscation where there is no length whatever mentioned upon the ball, consequently, I was not able to confiscate this Mexican twine.

By Mr. Wilson:

Q. How much of it was there ?

A. There were 123 balls in Moosomin and 400 balls in Regina.

By Mr. Clancy:
Q. Well, you had occasion to examine the twine of dealers as well as of manufacturers?

A. Yes, sir.

Q. Did you find any considerable quantity of Mexican twine in the country?

A. That was the only lot that I found that was marked on the sacks 'made in Mexico.'

Q. That was the only Mexican twine you found ?

A. Yes.

Q. In your examination ?

A. That is all.

Q. Did you find any English twine ?

A. There was one lot only. There were four car loads of that, but I only got 40 balls of it.

Q. Now there were prosecutions in each of these cases, were there ?

A. They were penalized. They were not prosecuted because they simply said, 'We are guilty and are willing to pay the penalty.'

Q. I see.

A. There was some objection made to that here at the committee last fall, and since then anything that I have done I have taken before the magistrate.

Q. When you find twine that is not in accordance with the law, you then make a seizure of it, do you?

A. Yes.

Q. You take possession of the twine and remove it ?

A. No, I take possession of the twine and take a receipt from the party in whose possession it is for delivery on my order or to be——

COURSE PURSUED AFTER SEIZURE OF TWINE-DETAILS OF SEIZURES.

Q. Well, when you find a lot of twine, we will say, for instance, in the hands of a dealer that is not up to the required standard, you take possession of the whole quantity you find there, do you?

A. I did until I reported to the government, to the department.

Q. Well, what is the procedure now ?

A. Then the department decides that where the twine was, for instance, twine not properly marked—

Q. Yes ?

A. Twine marked 600 feet and running 500 feet, that if they pay the penalty, the twine should be given back to them at one-half the cost, on condition that they would re-mark it at its proper length.

Q. Yes?
A. That is what has been done in every case.

- Q. When you seized the twine you did not put anybody in possession of it, I suppose ?
- A. No, except the party that was in possession of it. They were all responsible people.

Q. There was no removal of the twine ?

Q. There was no disturbance in that way ?

A. No disturbance whatever.

Q. Where was the first seizure you made?

A. At Gretna.

Q. At Gretna ?

A. At Gretna, in Manitoba. That was not a seizure because that binder twine had no length per pound marked on it, and all I could do under those circumstances was to collect the 25 cents per ball penalty for not being properly marked.

Q. Who were the parties?

A. The parties? Wilber Hutchinson. You understand the law provides that a dealer shall be held to be a man who buys directly from the manufacturer. Now, the party who had this in possession did not purchase directly from the manufacturer, but purchased from a wholesale dealer in Winnipeg.

Q. Yes?

- A. I then had to go to that wholesale dealer in Winnipeg. I got possession of his invoice and found he was the importer, and I penalized him to the extent of \$25 a hundred balls.
 - Q. You did not bring that before a magistrate ?

A. No.

Q. He paid the fine ?

A. He paid the fine.

Q. And that was all there was about it?

Q. Do you remember the next case ?

A. The next case was 20 balls of unmarked twine at Wawanessa in the possessio. of a man by the name of Alexander D. Nasmith. He said, 'I am only selling this twine on commission for the International Harvester Company. Mr. Heath, the general agent of Winnipeg, left this twine on commission.' Mr. Nasmith paid me \$5. Lyttle and Jickling of Carmen had 20 balls of the same kind of binder twine, and I went to Mr. Heath the general agent and he paid the penalty on that. This twine was not confiscated, because there was no mark on it of the number of feet, as I explained before.

By Mr. McEwen:

Q. How much was the number of feet ?

A. You could not tell because the number of feet was not mentioned on the tag.

Q. You did not find out from him ?

A. Well, if twine is not marked-

By Mr. Clancy:

Q. I would rather we would not get into that branch of the subject at all?

A. All right. I was just going to show the gentleman the tag on that twine.

Q. Then Mr. Nasmith paid you how much?

A. \$5 on 20 balls.

Q. And what did Lytle and Jickling pay ?

- A. Five dollars. That is Heath paid for them, the general agent of the International Harvester Company.
 - Q. There was no trial or proceeding other than you have stated in these cases ?

A. No, that is all.

Q. Do you remember the next case ?

A. Yes, I think the next case was that of Mr. Lunn. I found 40 balls in Brandon. Now the position there was the same as in connection with the Hutchinson case. This twine had not been bought from the manufacturer, consequently under the Act, I could not take any action against him. I went to Mr. Lunn and he paid the \$10 penalty on the 40 balls for not having the name of the manufacturer on it.

Q. Well, was this American twine ?

A. That was British twine.

Q. That was British twine in this case ? A. Yes.

Q. He paid you \$10 ?

A. He paid me \$10.

Q. Was the case taken before a police magistrate?

A. No. I said to Mr. Lunn, 'you are liable for this. Now, you had better go and consult your solicitor in connection with this matter, and if you wish, I will bring you before a magistrate and you can defend the case or take such action as you see fit.' He said he did not want any proceedings. He was not aware that he had violated the Act, but now that he knew he had, he was willing to pay the penalty and not have any costs added.

By Mr. Robinson:

Q. That was the question I was going to ask. Did any plead ignorance of the law ?

A. Oh, yes.

By Mr. Clancy:

Q. What was the next case ?

- A. The next case I think was at Virden. That of Blakeman and Scarth. There were I think 31 balls that were short, and I confiscated that and collected a dollar a ball.
 - .Q. Was there any trial in that case ?

A. No.

Q. They simply paid over the money to you ?

A. They simply paid over the money.

Q. Do you remember the next case ?

A.That was the case of a lot of twine belonging to the International Harvester Company in the same place, Virden, in possession of a man named Richard Langtry.

Q. Richard Langtry ?

- A. Yes. He claimed that he was selling on commission, and he asked me to wait until the general agent, Mr. Donaldson, of the McCormick Director of the International Harvester Company, could get there and see what could be done. I could not wait at that time, but I met him there a couple of weeks later. Some of this twine—it was a very uneven lot- it was marked 600 feet. It was made in New Bedford, Mass., and some of it would run 600 feet. Some of it was all right and some of the balls. were wrong. We measured a certain number of balls and took the percentage that ran short, as an index of the whole, and I fined him \$165, and confiscated that 165.000 balls of twine.
 - Q. You fined him how much ?
 - A. A dollar a ball as the Act provides.

2-37

- Q. A dollar a ball ?
- A. Yes.
- Q. Did he defend the case ?
- A. No, no.
- Q. He simply paid over the money, and there were no proceedings before the magistrate?
 - A. No proceedings before a magistrate?
 - Q. Do you remember the next case ?
- A. The next case was in Moosomin, a man by the name of Hawes. That was 123 balls of the Mexican twine.

 - Q. Yes? A. He paid 25 cents & ball.
 - Q. In that case?
 - A. Yes.
 - Q. Now, the next case.
 - A. The next case was a man by the name of-
- Q. Before you proceed with that, let me ask you if there were any proceedings before a magistrate in the case you told us of ?
- A. No. There were on proceedings in any of these cases, except in the case of the Chatham and Richelieu Cordage Company.
 - Q. Well, the next case ?
- A. The next case was in Regina. Mr. Rienecke, general agent of the Deering Div. of the International Harvester Company, had 200 balls of unmarked twine, of which I collected \$50.
 - Q. Was that American twine ?
 - A. That was American twine, that was flax.

By Mr. McEwen:

- Q. Was that a good twine ?
- A. They claim it is, it gives good satisfaction out there.

By Mr. Clancy:

- Q. The next case ?
- A. Mr. Norton, of Regina, 400 balls of Mexican twine. He paid me \$100.
- Q. There were on proceedings there ?
- A. No proceedings there. The next case was in Alameda. The name of the man I have forgotten.
 - Q. Heaslip ?
- A. Yes, Heaslip. There were 100 balls of unmarked twine there, and he paid me \$25.
 - Q. Was that American twine ?
- A. Well, I do not know. It was marked with the brand of the manufacturing company, but I have no trace of where it came from. He got it from the International Harvester Company, and therefore I concluded it was American twine.
 - Q. Yes, and he paid you?
 - A. \$25.
 - Q. \$25 ?
 - A. Yes.
 - Q. Now, what is the next case ?
- A. The next case was W. G. McMahon, of Winnpeg, 10 balls of twine that was not of the length marked. He paid me \$10 and I confiscated the twine.
 - Q. Now, were there any other cases aside from the Chatham case ?
 - A. Yes. Over here in By Ward market. I got, let me see-

By Mr. Ross:

Q. In Ottawa?

A. Yes.

Q. Right in the capital ?

A. I got 48 balls of unmarked twine.

By Mr. Clancy:

Q. When was that ?

A. That was on the day before I gave evidence last year.

Q. Yes, did you impose any fine in that case ?

A. Yes, 25 cents a ball for not theing properly marked. Q. Then was there a case in Winnipeg of Mr. Heath?

- A. Well, that is only—oh, yes there were 200 balls of twine I got in Arcola. That twine they told us was only selling on commission for Mr. Heath, and when I went to Winnipeg Mr. Heath paid me \$50 as penalty for the twine not being properly marked.
 - Q. I suppose there were no proceedings there other than you have stated ?

A. No.

Q. Now, the International Harvester Company ?

A. Well, there was no case against the International Harvester Company, excepting through their agents Mr. Heath and Mr. Reinecke, Mr. Norton and Mr. Donaldson, which I have alluded to.

Q. There was no case ?

A. There was no case against the International Harvester Company.

Q. There was no other case ?

A. There was no case directly against the International Harvester Company. You see, Mr. Heath represents them—represents the Deering division—Mr. Donaldson represents the McCormick division in Manitoba, Mr. Reinecke of Regina represents the Deering division in the North-west Territories, and Mr. Norton represents the Champion division of the International Harvester Company in the North-west Territories. There was no distinct case against the company apart from that.

Q. Now, let us see-

By Mr. Ross (Ontario):

Q. Do they run these different divisions under one management ?

A. They do now. There are five divisions, the Champion, the Plano, the Milwaukee, the McCormick and the Deering, combined and are known as the International Harvester Company of America. Up to this year they have had superintendents for each division, but I understand for this year they are amalgamating and have one man controlling them.

LIST OF HOLDERS AND FINES PAID.

By Mr. Clancy:

Q. Will you repeat the fines paid by each of these persons as representing-

A. The amount, you mean ?

- Q. Yes?
- A. Wilber Hutchinson paid \$25.

By Mr. Ross (Ontario):

Q. Are you sure of these facts without referring to your books ?

A. Yes. Little & Jickling, \$5; Naismith, \$5.

2-371

By Mr. Clancy :

- Q. Yes?
- A. Lunn was \$10.
- Q. Yes?
- A. Howes was 123 balls at 25 cents, I think; I would not be positive of that.
- Q. Yes?
- A. The amount was \$30.75, I think. I gave these people each a receipt for the amount—that would be \$30.75 for 123 balls.
 - Q. Yes, was that all ?
- A. No, then there was Donaldson, \$165, for 165 balls in Virden, which you got before.
 - Q. Yes?
 - A. Blakeman & Scarth was, I think, \$31.
 - Q. Yes?
- A. And Norton paid me \$100, Reincke paid me \$50, Heaslip paid me \$25, McMahon paid \$10, Heath paid \$50. Are there any others?
 - Q. Are you sure that as all the cases in connection with the act ?
 - A. No, there was a case over here; Breckenridge paid me \$12.
 - Q. But aside from that?
 - A. Well, I think so.
 - Q. Had you any case against the International Harvester Company direct?
- A. No direct case against the International Harvester Company at all. Then there was the case here, the Chatham case.
 - Q. Well, I am coming to that now.
 - A. Yes.
 - Q. Now, you made a seizure at Chatham ?
 - A. I did.
 - Q. What fine did you impose there ?
 - A. I did not impose any fine there ?
 - Q. What fine was imposed ?
- A. \$1.00 a ball for that that was short, and 25 cents a ball for not being properly marked.
 - Q. Up to that time you had collected the fines yourself ?
 - A. Yes.
 - Q. That is the only case in which the fine was imposed by the magistrate?
 - A. That is the only case.
 - Q. Had you instructions

By Mr. Ross (Ontario):

- Q. Was it a large seizure ?
- A. Yes.

By Mr. Clancy:

- Q. That was the first case in which you had a trial before a magistrate?
- A. Yes.
- Q. Had you instructions up to that time as to how you should proceed to collect the fine ?
- A. Nothing, sir. In the first place, I wrote to the department asking for instructions when I found this lot at Gretna. I went back to Winnipeg and I went to Messrs. Howell & Mathers & Howell, who were the government solicitors in Winnipeg, and I asked them to advise me what was the proper course to take and they advised me that under the instructions affecting Inland Revenue officers and Customs officers in such matters that they thought I would be warranted were the man to plead guilty in collecting the fine.

Q. Then you collected from time to time in that way up to the Chatham case?

A. Yes. I wrote immediately, I reported to the department what I had done. And then, gentlemen, you remember that when I came before the Committee last year the question was raised that I had no authority under the Act to do this, and as I did not want to assume any authority that I did not have in any case that I had, I thought it better to bring them before the magistrate.

Q. At that time the Chatham seizure had not been made?

A. No.

Q. When you made that seizure did you remove the twine ?

A. No.

Q. Did you follow the procedure of the previous cases ?

A. Yes.

Q. Take a receipt and leave the twine there ?

A. Yes.

Q. Did you make a complaint before the magistrate ?

A. This being a rather large matter, I decided that I should report to the department, which I did.

Q. To the department of what ?

A. The Department of Trade and Commerce. They referred the matter to the Department of Justice to take action. You will understand that this lot of twine was about 770 balls.

Q. Never mind that; we will get at the rest. Just state the procedure ?

A. I found a certain amount of twine here in Ottawa in possession of Pink Bros. that had no name of the manufacturer on it, marked 600 feet to the pound. I measured a ball and found it ran 480 feet instead of 600. I asked Pink Bros. where they got that twine and they informed me that they got it from the Richelieu Cordage Company. I asked for the invoice and he produced it on the letter head of the Richelieu Company. I asked if he had any other correspondence in connection with it and he showed a letter written and signed by John Connor on Richelieu paper asking him to accept a draft in favour of the Richelieu people for this twine. I asked him where the twine came from, whether we had the shipping bill. He produced that, which was from the M. J. Wilson Cordage Company of Chatham. Now, this twine-I had no knowledge of where it was made at that time, and as not only was the name not on the tag, but the name which it is customary to put on the bag was not on the outside. I afterwards ascertained that the name was inside the bag-the bag turned inside out. I found that this twine was very similar, and the bag the same as the 200 balls that I got in Arcola and for which Mr. Heath paid me \$50 penalty, the same make of twine. I then went to Chatham and found the same make of twine there. And Mr. Wilson and I went to the mill together and measured the twine. He was satisfied that it was short and gave me a receipt for the whole lot.

Q. They were making that kind of twine there ?

A. The mill was not running though they had made it.

An Hon. Member :

Q. You were satisfied they had made it ?

A. Yes.

By Mr. Ross (Ontario):

O. How much was there there ?

A. About 33 tons in the mill.

By Mr. Clancy:

Q. Now you reported the case to the Department of Trade and Commerce.

A. Yes, but before I had got back to report here, a Mr. Connor had been here

from Boston. Mr. Wilson informed me that he made a lot of twine under contract for the Boston people.

Q. We will deal with that matter.

A. I reported to the Department. In the meantime Mr. Wilson claimed that this twine was not made for binder twine, but for rope yarn, and that it had never been offered for sale as binder twine. I then went to Chatham and found that in both the Chatham papers there had been an advertisement running for some time offering to the farmers, binder twine. I then went to Blenheim and found 270 balls of that same twine that had been sold by Mr. Wilson as manager of the W. J. Wilson Cordage Company to a gentleman there in Blenheim-what is his name now-

Q. It does not make any difference.

A. Well, I measured that twine and found it short, and seized it.

Q. Now then, let us go back, you reported it to the Department of Trade and Commerce, and it was referred to the Justice Department.

A. It was not referred to the Justice Department, I do not think until afterwards.

Q. Well, never mind about the time.

A. Well, it was, yes, it was referred to the Justice Department.

Q. In the meantime you had Mr. Wilson's receipt for it, and it was really in your custody in a sense ?

A. Yes.

Q. When did you make that seizure ?

A. The 17th October, I think.

Q. That was in 1900 and—

A. 1903.

Q. Then what took place afterwards was in connection with the Justice Depart-

A. The Justice Department.

Q. What instructions did you get from the Trade and Commerce Department, or the Justice Department, or both ?

A. From the Trade and Commerce Department that the matter had been placed in the Department of Justice, and that I was to get instructions from that department.

Q. What instructions did you get ?

A. To proceed to Chatham and lay an information, which I did.

Q. When did you do that ?

A. Some time in February.

Q. Not until February ? A. Not until February.

Q. Was the twine held in the meantime, all that twine ?

A. Yes.

Q. It was held from October until February following ?

A. Yes.

Q. And you laid the information before what magistrate? A. The police magistrate.

Q. In Chatham ?

A. In Chatham.

Q. Did Mr. Wilson defend ?

A. No, he pleaded guilty.

Q. And what followed?

A. The magistrate imposed the lowest penalty.

Q. How much was that ?

A. I think it was-\$1 and 25 cents per ball for the part of it not properly marked, all the Blenheim lot. Understand in the meantime Mr. Wilson had put in half a dozen affidavits claiming that this twine I got in the mill was not for binder twine at all, but was manufactured for rope yarn, and that particular lot had never been offered for sale.

Q. You put no person in possession of the twine ?

A. Except Mr. Wilson.

Q. He was not employed by you, you simply took his receipt ?

A. Simply took his receipt.

Q.And Mr. Wilson, on behalf of the M. J. Wilson Cordage Company, pleaded guilty, I suppose ?

A. He pleaded guilty. Q. And paid the fine ?

A. Yes, paid the fine—into the court, he did not pay it to me.

Q. And there was really no trial, I suppose, at all about it, there was merely a statement of the case by you?

Q. And there was really no trial I suppose at all about it, there was merely a

statement of the case by you?

A. Well, there was the information, and he appeared before the magistrate in the town hall, or wherever the police court is held.

Q. Mr. Wilson did?

A. Yes.

Q. And you ?

A. Yes, and the solicitors.

Q. You had no solicitor, I suppose ?

A. There was a solicitor there on behalf of the department of Justice.

Q. At your request ?

A. He was sent by the Department of Justice.

Q. Did you make any statement as to Mr. Wilson's attitude about it to either the Justice Department or the Department of Trade and Commerce ?

A. Did I make any statement ?

Q. As to what Mr. Wilson told you, that they did not intend to sell that as binder twine ?

A. He made that statement himself.

Q. To you?

A. No, to the department; he put it in the form of an affidavit. Q. Did he ever state to you that he was willing to pay the fines ?

A. I do not think I ever discussed that with Mr. Wilson, I am not sure; he may have said that to me, but I immediately placed this in the hands of the department, and I took my instructions from the department. Therefore I had nothing more to do.

Q. Nothing more to do ?

A. Except to act under instructions.

Q. Are you paid a salary ?

A. Yes, sir.

Q. And you are allowed travelling expenses ?

A. Yes, sir.

Q. All your travelling expenses are paid ?

A. Yes, sir.

Q. Were there any costs paid by any of these parties you mention, up to the time you came to the M. J. Wilson Cordage Company? For instance, I will take the first case, that of Wilbur Hutchinson, was there any costs paid by him ?

A. No.

Q. He simply paid you the money, \$5, stated here?

A. \$25.

Q. The sum stated here, whatever it is ? Did you have any costs in the M. J. Wilson Cordage Company case ?

A. Not a dollar.

Q. There was not a dollar paid to you ?

A. No, not a cent.

Q. So far as you know there were no costs other than the fine imposed, and whatever the magistrate's fees would be ?

A. That is all I know anything about.

Q. You have absolutely no knowledge?

A. Absolutely no knowledge-well, I think you know there was some costs paid by Mr. Wilson to the solicitor; I do not know how much.

Q. He paid none to you?

A. Not a dollar, good, bad or indifferent.

Q. Did you make a return of that case to the department ?

A. I did.

Q. To the Department of Justice ?

A. To the Department of Trade and Commerce.

Q. Have you a copy of that return ?

A. I have not— it is in the department.

Q. Did you keep a copy ?

A. I did not.

Q. Did you have any solicitor in any of the other cases, Mr. Haycock ?

Q. Other than the conference you had with the government agents or solicitors at Winnipeg?

A. No.

Q. Other than that you had no other?

A. No.

Q. And it was at your request that a solicitor should appear in the case of the M. J. Wilson Cordage Company ?

A. No, I simply acted under instructions.

Q. You had absolutely nothing to do with it?

A. Nothing more than you had. The Department of Justice conducted the case, I had nothing to do with it beyond laying the information and following the instructions given to me.

Q. Do you know who the solicitor was ?

A. Mr. Alexander Smith was the solicitor on behalf of the Department of Justice, and Mr. Walker prepared the information-Mr. Walker of Chatham.

Q. You laid the information?

- A. Yes, but he prepared the subpœnas and summonses or whatever it was. It was the first time I ever had occasion to do so in my life, and I did not know much about it.
- Q. He simply prepared the necessary papers to enable you to take proceedings; did he do it under your instructions ?

A. He did it I think under instructions by telegram from the solicitor here.

Q. From the solicitor here?

A. I think so; I do not know. I was told to go up to Chatham and lay the information, and I was told to go before Mr. Walker and he would advise me what to do, that he would prepare the necessary information and papers.

Q. Is Mr. Smith a Chatham solicitor ?

A. No.

Q. Where does he reside?

A. In Ottawa, I believe, at the present time.

Q. He was recently the organizer of the Liberal party?

A. He was, yes.

Q. Of course, you do not know whether he is in that position now or not? A. I do not.

Mr. CLANCY.—I have nothing more to ask.

By Mr. Blain:

Q. What was your impression regarding that twine that was seized. Did you look upon it as twine in the market—as binder twine?

- A. When I found 700 balls here in Ottawa that had actually been sold, and found a ton actually sold in Blenheim I was forced to the conclusion that some of it was right there in the market.
 - Q. Did you refer to newspaper advertising ?
 - A. Yes.
 - Q. Did they seem to bear out advertising that special twine ?
 - A. It advertised all the different lengths of twine they had in the mill.

By Mr. McEwen:

- Q. Did they have any of the proper length in the mill?
- A. They had some that was made the year before that was properly marked. That I did not confiscate.
 - Q. It was the proper length?
 - A. Yes.

By Mr. Blain:

- Q. You seem to have had some little trouble finding out where twine is manufactured, do you not—that is, as to whether it is made in Canada or the United States. You seem to have some trouble?
 - A. I have been always able to ascertain it. It has taken some little time.
 - Q. Can't you make a suggestion as to how that may be overcome?
- A. You could only provide that the name of the manufacturer, importer or dealer shall be placed on every tag, and when it is not done, impose a penalty, and the Act now requires that.
 - Q. Will that trace the manufacture absolutely ?
- A. Not always. A man may get twine made at a mill and have his own name put on it.
- Q. Don't you think it would be better to have the Act amended so that every manufacturer in Canada would put on every tag, 'Made in Canada,' it would probably be to his interest.
 - Q. Would it be in your interest? You could tell immediately?
- A. Just to illustrate that: here is a sample of twine I received by mail recently from Manitoba (sample of twine produced).
 - Q. Is that twine ?
 - A. That is a sample of it.

By Mr. Clancy:

- Q. It was not all like that.
- A. No.

By Mr. Blain:

- Q. That is not binder twine ?
- A. Yes. Here is the letter I received from the man who sent the sample: 'I have been reading your evidence that was written Wakeham, Man., April 12, before the Committee of the House of Commons re binder twine. I thought you would likely forgive me if I sent you a sample of binding twine sold here last year. I also enclose the tag. Of course I don't mean to imply that the whole balls were like this, but you would find pieces about this length, and it would then be drawn out extra fine. The balls on the outside layer were a fairly good sample, and we were charged 15 cents per pound for it.'
 - Q. Where was it made?
- A. That was just the point; that is where I am investigating now. The tag attached to that—
 - Q. Pardon me, where was it sent to you from ?
 - A. Wakeham.

Q. Did you ever make any inspection of twine like that in the west ?

A. I found some that was not much better, but I may say to the Committee that there was a lot of twine carried over in Manitoba last year, and during the winter they have been very busy going over it. Some of the firms have inspectors out there the past year going over it, retagging it and marking the 600 feet balls down to 525, the 550 feet balls to 475, and the 500 feet balls to 450, to make it within the Act, so that there will be no confiscation next year. A large quantity was bought, for instance—between 50 and 100 tons, and sold for the purpose of manufacturing into rope, and thus taken out of the market altogether.

By Mr. Clancy:

Q. Was that American twine ?

A. I think that twine was made in Canada. Here is the tag that was on that twine (tag produced), 'Standard Manila twine, Ontario. Draw from this end.' There is no name from the manufacturer.

Q. Is that the twine that you first got track of ?

A. That is this sample here.

By Mr. McEwen:

Q. The tag is all right.

A. The manufacturer's name is not on it. This word 'Outario' is more definite than if it said 'Made in Canada.' And yet it will take perhaps some little time to locate it. This word 'Ontario' is even more definite than to state 'made in Canada.'

By Mr. Blain:

Q. How would you explain that ?

A. That would lead you to suppose it was 'made in Canada.'

Q. It would lead you to suppose it was either made or sold by a dealer in Ontario?

A. Yes, that is as definite as 'made in Canada' would be.

Q. To save difficulty, wouldn't it be possible to have a tag stating that the twine was imported?

A. Yes.

- Q. Imported from the United States, made in the United States. The inscription on this tag, 'Standard Manila Twine, Ontario,' that does not indicate that it was made in Ontario?
 - A. No.

Q. But if the law was that every manufacturer had to put a tag on stating where

the twine was made, either in Canada or the United States-

A. You would have great difficulty in connection with a law of that kind, I will tell you that. There is a great deal of twine made in Canada under contract for American firms and sold in Canada. Now, these mills would not be able to get these contracts from these American firms to make this twine if they were required to put 'made in Canada' on the tags.

Q. Why not ?

A. They have an idea that they don't want it that way. Q. Have we the right to foster that idea in this country?

A. There is not a mill running—supposing an American firm said they wanted a 1,000 tons of twine made to be sold in Canada and you wanted the contract to make it. They would say that we have an Act requiring 'made in Canada' to be printed on it and that that would not do.

Q. What impression would they want to leave ?

A. That it is made by the American firm.

Q. The law should be changed to compel them to use 'made in Canada ?'

A. You would have great opposition from Canadian manufacturers.

By Mr McEwen:

- Q. The Americans compel us to do that with flax manufactured in Canada.
- A. They don't do that with binder twine. However, it is a matter for the House.

By Mr. Hazard:

- Q. Supposing the American manufacturers refuse to give orders in Canada to make the twine, isn't the Canadian factories' capacity enough to make it up. I understood that last year the factories in Canada were not engaged to their full capacity?
- A. The question was asked me last year, and I gave an estimate of what the amount produced last year, and I find that my estimate was very close to correct, but I did not give an estimate of the entire capacity of the mills. I said I would get that and embody it in my report at the end of the year, that is, the capacity of these mills. I think the mills have a greater capacity—I understand there are two mills in Canada not running now at all.

By Mr. Blain:

- Q. What two?
- A. Brandon and Walkerton.
- Q. Why are they not running ?
- A. It is lack of capital, I understand, but I do not think that ought to go into the evidence.

By Mr. Clancy:

- Q. Did I understand you to say that there are manufacturers manufacturing twine in Canada to be exported to the United States?
 - A. Yes.
 - Q. What factories ?
 - A. Chatham, for instance.
 - Q. Any others ?
 - A. Yes. I do not know that it is a matter that should really go into the evidence.
 - Q. Why not ? That is not, I suppose, a trade secret ?
- A. Do you know there are no classes of people in the world who are so very particular about keeping their business to themselves as the binder twine people.
- Q. But that is a matter which is no secret, it goes through the custom house, therefore, there is no secret about it. What others do you know of?
 - A. Well, I do not know, I think the Peterboro people made some.
- Q. Yes, I am not asking what quantity and so on, you probably would not know that, do you know of any other?
 - A. I do not know of any other mill that made any for export.
- Q. There was a question I forgot to ask you. You spoke of the seizure you made in Ottawa with which Mr. Connor was connected?
 - A. Yes.
 - Q. What became of that twine ?
 - A. What became of it?
 - Q. What was done with it, was any further action taken?
- A. We proceeded against the Richelieu Cordage Company. As I explained to you, we found the invoice of the Richelieu Cordage Company and also a letter from Mr. Connor asking the Pink Bros. to accept a draft on the Richelieu Cordage Company, and also a letter claiming the twine from Mr. Henderson Black, president of the Richelieu Cordage Company, and in support of that he put in an affidavit by John Connor in which he swore that he sold that twine to Pink Bros. on behalf of the Richelieu Cordage Company. On the strength of that we supposed that the twine belonged to the Richelieu Cordage Company and proceeded against them. But Hen-

derson Black put up a defence, and his defence was that the only interest he had in this twine was as Henderson Black personally, not as Henderson Black, president of the Richelieu Cordage Company.

Q. Was there a trial conducted before the magistrate?

A. Yes.

Q. Where ?

A. At Ottawa.

Q. Who was the presiding magistrate ?

A. Mr. O'Keefe.

Q. Was that done at your instance?

A. At the instance of the Department of Justice.

Q. What became of it in the end ?

A. The case was dismissed.

Q. There was no case against the company ?

A. There was no case against the Richelieu Cordage Company. He swore that he only had a personal interest in it, and John Connor gave evidence and although he ad sworn that he had sold that twine on behalf on the Richelieu Cordage Company, as I have told you, and his affidavit was placed in his hand and he read it and acknowledged that he had made affidavit, but he swore that affidavit was not correct.

Q. When did that trial take place ?

A. I think it was in April.

Q. In April last ?

A. Yes.

Q. What counsel was engaged there ?

A. Mr. Smith and Mr. Henderson.

Q. The same Mr. Smith that was at Chatham?

A. Yes.

Q. And the case against the parties, the Richelieu Cordage Company, do you call it?

A. The Richelieu Cordage Company at St. Johns, Quebec.

Q. And that case was dismissed?

A. Dismissed.

By Mr. McEwen:

Q. You did not take action against the other man?

A. I could not, the time limit had expired. The Act requires that all proceedings must be taken within six months from the date of sale.

By Mr. Blain:

Q. How do you find the twine manufactured at Kingston Penitentiary as to

quality ?

A. They are making very nice twine this year. I was out there the day before yesterday when I received the telegram to appear before this Committee, and I picked up a sample and brought it with me.

Q. Have you ever found any of their twine short in length at the penitentiary ?

A. I have not, and I have tested it time and again; I have been there very frequently and I tested it every time. I have got them to run off several balls in order to measure it.

Q. You rather think they are improving in their manufacture then ?

A. There is no doubt about that. In fact all the manufacturers are improving in their manufacturing.

By Mr. McGowan:

Q. Do you examine any Central Prison twine ?

A. Yes. What brand do they sell there ?

A. They have several brands, here is a selection of the brands of Central Prison twine (samples produced).

By Mr. Hazard:

- Q. I understood you to say a while ago that there was a considerable quantity of binder twine carried over, and that the inspectors were at work upon it out there?
 - A. Yes.

Q. Is it not a fact that twine should be used in the year in which it is made, that

it deteriorates very quickly?

A. Some twine does, but Manila twine does not deteriorate nearly as quickly as the New Zealand twine. You recollect when I was here last year I made the statement that there was as many different grades of Manila hemp as there was of hay. Now, I happen to have a sample of the two extremes here. This (sample produced) is a very fine sample of Manila hemp. That is a very good sample, that is a sample that would grade very fine and nice.

By Mr. Heyd:

Q. That is the kind from which you could make 650 feet of twine ?

A. You would make 650 feet of twine out of that. Now, here is another grade of Manila hemp (sample produced). You see the difference in the quality, and yet they are both 'pure Manila,' so that as I mentioned before, it does not follow because a twine is marked 'pure Manila,' that it is good fibre by any means.

By Mr. Sproule:

Q. Are they both from the same country ?

A. The only country that produces Manila fibre is the Phillipine islands.

By Mr. McGowan:

Q. What is this one ?

A. That is 'pure Manila.' That shows the difference in the grade. Now here is Sisal. That, as I have explained to you, is taken from a plant very similar to the century plant. Here is a leaf of the plant with the fibre partly taken out. You see that it is dried up like the leaf of a century plant before it is taken out. That is Sisal.

By Mr. Blain:

Q. Which of these kinds is the Central Prison make?

A. I have them all marked. That is the Central Prison mark (pointing to book).

Q. What is the 'Independent Cordage Company.' Where are they ?

A. Toronto, they only deal in twine.

Now, there is the New Zealand fibre, and these are the three principal fibres used in the manufacture of binder twine, Manila, New Zealand and Sisal. That is the New Zealand hemp. All fibres come under the name of 'hemp,' just the same as all cereals come under the name of 'grain.' All kinds of fibres are called hemp in the trade, just the same as 'grain' covers all kinds of cereals, or as in England 'corn' covers all kinds of grain. But in hemp there is a distinct variety of fibre called 'hemp,' but flax and jute and pineapple and Sisal and Manila and everything of that kind comes under the name of 'hemp.'

By Mr. Blain:

Q. What is the difference between the cost of New Zealand and raisal?

A. New Zealand is the cheapest fibre.

By Mr. Robinson (Elgin):

Q. Is the cactus a kind of hemp, too ?

A. The Sisal hemp resembles the cactus family.

By Mr. Blain:

- Q. What advancement are they making in respect to making twine out of flax in the west?
- A. They are making a very good twine in Chicago. You know, the difficulty in connection with manufacturing flax twine is to get the flax retted—Mr. McEwen will understand what that means—rotted. There are three different systems of retting. There is the river retting, and tank retting and dew retting. In Manitoba they cannot use the dew retting as they have no dews there, but they have recently invented machinery to extract it.

By Mr. Heyd:

Q. What is retting?

A. Rotting.

By Mr. Hazard:

Q. You gave us—you answered the question I asked by producing a sample. Don't you think it would be an advantage to the farmers that the date should be added to the tags? We require the farmers when they make cheese to have the date of the manufacture described on the tag.

A. It is an easy matter to retag it another year.

Q. That may be. At the same time, I am satisfied from the experience of a

number of years that the date is needed?

- A. For instance, you take Manila. It does not deteriorate nearly so much as some other kinds. The one that would deteriorate the most rapidly would be New Zealand. The Manila would last a long, long time.
 - Q. The deterioration is not in the Manila, it is just in the oiling of the twine.
- A. Immediately the season of the harvest is over the mill starts to manufacture twine. It will not be used until the next harvest. Then if carried over again it will not be so good.
- Q. That is the reason I think the farmer's interest should be protected by having the dates in the tags—the years at any rate.

(No answer).

By Mr. McEwen:

- Q. Where was that flax grown (referring to sample)?
- A. In Minnesota. I understand that they have invented a machine that will take it out all right.

By Mr. Blain:

- Q. Where in this book is the tag from the penitentiary of Kingston?
- A. Here (tags indicated).

By Mr. Robinson (Elgin):

Q. Where did you get all that stuff? (Referring to samples of raw Manila)?

A. I got some of it at the penitentiary.

By Mr. Blain:

- Q. The Government Twine Factory at Kingston is putting on their twine where it is made in every case. Here are four tags, 550 feet, 600 feet, and 650 feet, in every case it says 'Kingston Penitentiary.'
 - A. Yes.
 - Q. That seems to be how the law should be carried out?

A. Well, you will understand the most of the others do the same thing. For instance, here there is the Canadian Cordage Company and Manufacturing Company at Peterboro.

Q. Yes.

A. There is the Independent Cordage Company, the Ontario Binder Twine Compary of Toronto (referring to tags in book).

Q. There is no such company, is there ?

A. Oh, yes.

Q. The Independent Company.

By Mr. Heyd:

Q. They handle the prison twine.

A. Yes. Now, the Massey-Harris people have their own name put on the twine. They had 800 tons made for them last year. They furnished the hemp and paid the company so much for making it, but they had their own name put on. There is Patterson, a hardware merchant in Chatham, who had his name put on, and there are many dealers have their name put on.

By Mr. Blain:

Q. I would not object to that, to allowing the sellers to put on the tag his own name as seller, but on every tag I think it should show who made it, so that the farmer would be able to know where it is manufactured. That is a point where the law should be altered so that the farmer could take the tag from the ball and if he found it was good twine he would know where it was made and the inspector would be assisted very much in his duties and not be put to the trouble and expense of hunting it up.

A. I would be very glad.

THE CHAIRMAN.—There is a bill now before the House, and any change that is wanted could be made.

By Mr. McEwen:

Q. You saw the flax twine in Manitoba, was it the same colour as that made out of that fibre (referring to sample).

A. It was darker on account of the mixture of creosote, or something of that kind. I will tell you it was pure flax but they have to use in connection with it, something that will prevent the insects, the grasshoppers, the crickets, and gophers, and mice cutting the bands they put on the sheaves. Flax fibre makes a beautiful mouse's nest, and when you come to draw in the grain you find it is all loose. They have to dress it with something that is obnoxious to insects to prevent them eating it. Therefore it is darker in colour than this.

By Mr. Ross (Ontario):

Q. The Manila has too much weight in it?

A. The Manila?

Q. Yes.

A. Some grades of Manila. Talking about Manila, here is a sample (sample produced). There are a great many different grades of Manila. There is a Manila that they make cloth out of (sample of cloth produced), and that is taken from the same plant.

Q. Is that made from Manila fibre?

A. Yes, by hand in the Philippine Islands.. There are many different varieties of the Manila plant growing.

By Mr. Robinson (Elgin):

Q. That is very strong stuff?

A. Yes.

By Mr. Ross (Ontario):

Q. Where is that made?

A. In the Philippine Islands.

Q. On a hand loom?

A. Yes.

Q. It looks like boulting cloth?

A. Yes.

By Mr. Blain:

Q. What is it used for?

A. It is used by the natives there for trimming, It is made from the centre leaves. You understand the Manila plant is of the banana family. It grows from the centre like an onion. Its outside leaves grow 10 to 14 feet long. The outside leaves are coarser, the inside leaves are finer and this is taken from the very finest of the inside leaves. The young plants make a beautiful fibre, as expensive as silk.

By Mr. Ross:

Q. What does that sell for?

A. About 75 cents a yard in the Philippine Islands.

Q. That width?

A. That was brought out by Mr. Detzer, agent of the International Harvester Company.

By Mr. Blain:

Q. A considerable amount of twine was in your possession last year awaiting instructions from the department what you were to do with it. What did you do with it?

A. Well, on the representation of Mr. Wilson that he had-

Q. You misunderstand me. I mean what you had last year?

A. I sold it back to the parties in whose possession I found it at one half the price, in order that it would be remarked and tagged in accordance with the act. All the parties have taken advantage of the offer on behalf of the government except one man, who had 31 balls, at Virden. I have not heard from him.

Q. These are special instructions not found in the Act?

A. No. This is something that we had to work out the best we could.

By Mr. Sproule:

Q. How could you carry that out, because if I understood you, you said that the different balls were of different lengths. Would not that necessitate the testing of the length of each ball?

A. No, before they would do that, they would take a certain number of balls, and I am very glad to say that I have them now so educated that they can pretty nearly tell how the balls are running without unravelling; you can tell pretty nearly, at all events within 5 per cent, what the twine is running if you have a little experience and practice.

By Mr. Blain:

Q. What is the total amount of penalties collected to date, and paid over to the government?

A. Something in the neighbourhood of \$1,000; I do not know the exact amount.

Q. It was about \$500 you said last year?

A. Yes. \$518, I think it was when I was here last year.

Q. And it is about the same amount this year?

A. Yes, but I do not expect so much in the future, because there never was, I do not think there has ever been as good twine turned out as there will be this year.

The manufacturers have all been buying a higher grade fibre. Now there is one thing I would like to explain in connection with it. There are a great many people who do not understand the object a manufacturer can have in marking a 500 foot twine as 600 feet. They say he has to put in 5 pounds of Manila and why should he not make 650 as well as 500 feet. The explanation is that in order to make 650 feet of twine to the pound, they have to buy a grade of hemp of very fine quality. That (sample produced) is 'very good current' and that hemp will cost them in the present state of the market 11 cents a lb. Now they can buy a fibre that will make 500 feet of twine, Manila fibre, for about 9 cents a lb. Now if the manufacturer can buy fibre at 9 cents per lb. which will make 500 feet of twine, and make it up into 500 feet twine, and mark it 650 feet he has the advantage of 2 cents a lb. over the dealer or manufacturer who buys fibre that will make 650 feet of twine. He has the further advantage that it requires more time and labour to manufacture 650 feet twine than it does to manufacture 500 feet. An operator will turn out 100 lbs. of 500 feet twine while he can only turn out 75 lbs. of 650 feet twine. So that the dealer has not only the advantage of 2 cents per lb. in the quality of the fibre that he uses in the manufacture of the 500 feet twine, but he also saves about 25 per cent on the cost of manufacture, labour, and manufacture; so that you see that the farmers knowing what is going on, they now say that this inspection is just what they need. At one factory they told me on April 1, this year, when I visited the factory, they informed me that they had orders on their books at that time for 850 tons of twine, and their total output last year was only 600 tons. They told me they had put in 20 new jennies and were running until 9 o'clock every night in order to supply the demand, and the President was kind enough to say that their agents reported that the demand for Canadian twine was never better than it was this year, and they attribute it very largely to the fact of report before the Committee last year, that owing to the inspection of the twine, Canadian twine was found to be of better quality than the American, and that the reputation of Canadian twine had been enhanced by my report. They reported that they had less difficulty in selling Canadian twine this year than ever before. That was very satisfactory to me.

By Mr. Clancy:

Q. How many factories are there in operation?

A. Eight.

Q. That is outside of the two that are not running? A. That makes six.

Q. What factories are not running now?

A. Walkerton and Brandon.

By Mr. Sproule:

Q. What is the aggregate capacity of these factories?

A. That is pretty hard to tell. I was trying to figure that out, as I was saying, lase year I did try to make an estimate of it. The capacity of the mill depends upon the number of jennies in operation, the machinery consisting usually of seven or eight preparation machines to thirty double jennies, which are equal to a three-ton plant. That is thirty double jennies are supposed to turn out three tons in ten hours. If we know the number of jennies, which I know very nearly, then I am able to tell you what the capacity is. But when you come to consider that in four of these mills they do not manufacture twine but rope, and they use some of the jennies for spinning rope yarn, that they would use for spinning twine, and it is impossible for me to tell what length of time any number of jennies is employed in these mills spinning rope yarn, and what proportion of time they are making binder twine, at all seasons of the year, you will see that it is a little di cult to get it down to exact figures. I think possibly the mills of Canada this year will produce about 1,000 tons more than they did last year, notwithstanding the fact that two of them are closed.

Q. How much did they produce last year ?

A. As nearly as I could ascertain 6,500 tons.

By Mr. Blain:

Q. What was the total consumption in Canada last year ?

A. The total consumption in Canada last year was about 14,000 tons.

Q. And we made in Canada about 6,500 tons ?

A. About 6,500 tons.

Q. There was a larger quantity imported than was manufactured ?

A. I think there was last year, but I think this year that the Canadian made twine will be greater than the imported. Of course you will understand this, it all depends upon the crop, and it is one of the most difficult businesses to deal with and to tell, for instance, what price the twine is going to be. The price of twine, like everything else, depends upon the law of supply and demand. They have to purchase that fibre a year ahead and some of it six months for the next harvest. When the harvest comes on, if there happens to have been a favourable season, and a big crop, the demand will grow up for it; and if it becomes a light crop like it was last year in the North-west, the price declines towards the end of the season, so that twine manufacturers are largely at the mercy of the elements.

By Mr. Sproule:

Q. I understood you to say there was a good deal of twine manufactured in Canada, that is, to supply the American implement firms?

A. Well, I did not say the American implement firms, because you know-

Q. Well, I understood you to say ?

A. I did not say the American implement firms. I say there is twine made in Canada for export to the United States, but I do not think it will be fair to these firms—in fact they have asked me not to use any information of that kind for publication. I do not think it will be fair to them to say that it was made for them.

Q. You have stated that we will probably manufacture this year 7,500 tons, and

that we will use up about 15,000 tons?

A. We will use 14,000 tons.

Q. That will mean that we will manufacture a little more than one-half of what is consumed. Now, then if the percentage of what is manufactured is not counted in as manufactured in Canada, but imported, because these firms are supposed to import theirs, it will not enable us to determine what percentage of the whole that is used is manufactured in the country.

A. I could not tell you the amount.

Q. Have you an approximate idea ?

A. No.

By Mr. Ross (Ontario):

Q. Do not the factories report their output to the department.

A. No.

Q. Could that not be obtained.

(No answer).

By Mr. Blain:

Q. Are we to understand you do not know how much twine was manufactured in Canada last year?

By Mr. Rosss

Q. Don't the factories report their output to the department?

A. No.

Q. Can't that be done? (No answer).

By Mr. Blain:

- Q. Are we to understand that you do not know how much was manufactured in Canada last year?
 - A. I do not know how much was exported.
 - Q. A portion of that was exported?
 - A. Yes.
 - Q. You cannot say how much was used for home consumption ?
 - A. No.
 - Q. It was not a very large amount that was exported ?
 - A. No.
 - Q. You do not know?
- A. No. Any way as far as that was concerned, some years we might export more than others. For instance, last year I think we exported more than we would this year, for the reason that just at the beginning of harvest last year in the Southern States there was a very extensive strike in the mills of the McCormick and Deering people, and they were at their wits end to get twine to supply the Southern States. They brought it in from wherever they could get it.
 - Q. What evidence have you for that?
- A. I have the statement of Mr. Daniels, manager of the International Harvester Company.
 - Q. He is one of the gentlemen you fined ?
 - A. Through his agents.

By Mr. Sproule:

Q. I understood you to say that the output in Canada was about 7,500 tons?

The Committee then adjourned.

Having read over the above transcript of my evidence, I find the same to be correct

J. L. HAYCOCK,

Dominion Inspector of Binder Twine.

SEEDING GRAIN IN WESTERN CANADA

House of Commons, Committee Room 34,

April 20, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, Chairman, presiding.

Honourable Senator W. D. Perley requested the privilege of making a statement that he thought would be beneficial in the interests of Manitoba and the North-west, with reference to the frost last year. The request was accorded by the Committee, and the Hon. Senator submitted the following statement:—

Gentlemen,—It was remarked by my friend here when giving evidence about the frost in the Peace river country, and I think several members of the Committee remarked also, that last year there were very serious frosts which did a great deal of damage in Manitoba and the North-west Territories that would convey the impression that we are subject to these frosts in the summer time.

LENGTH OF RESIDENCE IN THE TERRITORIES.

I have been for 21 years in the North-west Territory, and I have an experience and observation of practical agriculture there, and I do not hesitate to say that we have learned by actual experience by testing this way and the other way in regard to the growing of wheat, which is the staple crop of the west and in which we have the greatest interests. After careful observation, as I said during a long period, my experience is that although last year was a very severe year as regards frost, almost every farmer who had his grain more or less frozen need not have suffered from that cause if he had been willing to study the conditions and to profit by his observations. The conditions of the country are such that this need not be a cause of loss at all if the farmer takes advantage of his position, and of the knowledge which he may obtain as to conditions and sows his seed in proper time. I was a farmer for a number of years in New Brunswick, and there we had six weeks in which we could sow our wheat and get it ripe.

PROMPT, EARLY SOWING OF WHEAT A GUARANTEE OF A GOOD CROP.

I have found from actual experience in the North-west Territories where I live, and I think the same conditions prevail in Manitoba, I have not any experience in the Saskatchewan nor in Alberta, but in Assinaboia and Manitoba this condition of things prevails, viz.:—that if the farmer has his ground ready and everything in ample order, so that he can commence on the first day of seeding and sows wheat for two weeks, whether it be an early spring or late, he will get a ripe crop. Then, if he sows the next week oats and barley, they will ripen, while wheat would most likely be frosted if sown the third week. You cannot prepare any more land from the previous year than you can sow in that time. At all events, the result of close observation I have

made has been that there were two weeks in which I could sow wheat on our farm with perfect security that it would ripen. In consequence of this I said to my sons, 'Now boys, you must get ready and sow your wheat for two weeks, but do not sow any longer unless you want to take chances of having poor wheat, but if you sow oats you can get good oats.'

Last year, which was most unfavourable in our country in regard to frost, because we had had more frost than any other three years, the season for seeding opened unusually early, and few farmers were ready at the time they ought to be seeding, and a good many of them were getting ready for one week, and that delayed seeding in consequence. On my farm, with a large area in crop, we had 16,000 bushels of wheat, for which we got the highest market price, it is of general farming principles I am speaking, one of my sons sowed his wheat two weeks and shut down, and he had no frosted wheat. A second son sowed three weeks, the first week he sowed with all his teams and then he took off two seeders and one seeder finished because he only had two breaking plows, and let one team seed, and it took that team three weeks to seed. The result was that the wheat sowed during the first two weeks ripened and that sowed in the third week did not ripen and it was frosted wheat. The wheat we sold that was sown during the first two weeks was all graded No. 1 hard, and No. 1 Northern, grades which admit of no frozen wheat, and it was so graded by Mr. Horn, of Winnipeg, who is known to be a very hard inspector. The wheat which was sown in the third week was frosted, and we sold it at a reduced price. I hold this,—that if every farmer in Manitoba and the North-west Territories prepares himself and is ready to seed the first two weeks of the seeding season, he need not have any frozen wheat, because what can be done on our farm can be done on other farms.

SPRING FROST NOT INJURIOUS TO THE WHEAT CROP.

By Mr. Broder:

Q. Do you ever suffer from spring frosts which puts the wheat back ?

A. We do not consider that spring frosts are any impediment, but rather that they even up the crop and make it stool out more and give a better crop. I have seen wheat four inches high killed at the top by frost, and then it comes up more evenly and gives a fine crop. It would spoil oats and barley to a large extent to have them frozen in the spring, but we do not sow the oats and barley until the very last so that they will not be hurt by the spring frost. If the wind blows hard from the north or north-west all day there will be frost no matter how far it is on in the year, even in the middle of July. At that period our grain is not formed, and a less degree of frost when it is in that condition will destroy the crop.

Later on in the season my friend Dr. Douglas made the statement that six degrees of frost did not hurt the wheat. It might not where he lives, but it does where I live, when it is getting towards the ripening period, slight frost does no damage. I must say that the frost, within three or four days of maturity, the frost would not do much damage, because it would only affect the skin apparently, but if it is within five or six days of being ripe, six degrees of frost would materially hurt the grain for the market. But if the farmers are ready as they should be every year to commence seeding at the proper time so that they can sow their wheat for two weeks they may do so with perfect safety. That was our experience last year and all our neighbours around us had frozen wheat because the first week when we were seeding they were getting ready to seed.

DEPTHS FOR SOWING, METHOD AND IMPLEMENTS.

By Mr. Maclaren (Huntingdon):

Q. They are all good farmers that get better crops than their neighbours, that is the case everywhere?

A. Yes, but there is the point, we sow with disc drill seeders, or shoe drill or hoe drill, we do not use broad cast seeders at all. In the first place we used broad cast seeders and harrowed the land so as to cover the seed from one to two inches, that was at the beginning of seed time, say the middle of May or earlier. From May 1 to June 1 is the dry period with us, but now we cultivate wheat and sow deep and the grain will be put on our farm over four inches, and if you sow it deep it gets down into the moist seed bed, and escapes the drought so that it germinates, and when the June rain comes it comes on all right. That is our experience, and if other people will follow that example the same results will be obtained; a man does not require to be a very great farmer to do that, it requires no scientific knowledge at all.

By Mr. Robinson (Elgin):

Q. How do you determine the proper time for seeding? When are the first two weeks?

A. The first two weeks I refer to date from the beginning of seed time, whether it is early or whether it is late.

By Mr. Henderson:

Q. How do you determine when to begin ?

A. When the frost is out four inches and the ground is dry enough to work on.

Q. I put a question to a professor from Indian Head when he was here a few days ago, as to what depth he would recommend the farmers in that part of the country to sow their grain, and he certainly does not agree with you in regard to the depth of planting. You recommend four inches and he recommends half of that.

A. Will you allow me to explain that. I am speaking from personal experiencs and that is the best teacher on the farm in the North-west. The year 1900 was a very dry year. During the spring of that year my son was driving a seeder over a particularly nice mellow field, which he had prepared the year before. If you want a safe crop, you should prepare the year before—I mean the year before the summer before. If we don't plow the summer before, we take chances on our crop. If wo plow in the fall or spring, if it is rainy weather in the summer, we would have a good crop. If it is a dry season, we have an inferior crop. This land was prepared the year before. My son—he was the youngest boy, Ernest, just starting—sowed a field four inches deep unwittingly, hardly knowing the depth he was putting it in. He had sown nearly the whole field, 20 or 30 acres, when his brother, a practical farmer, cams along and said: 'You have spoiled the whole thing, sowing or rather covering it so deep.' The field was all in but three or four acres, so he put it all in at that depth, and said that if there was a failure, he could sow it again later on with oats. sowed the other field that we had to sow, on the oldest boy's instructions, and sowed it only about two inches deep. In that field we had no crop to speak of, just barely worth cutting, and in the other field that was sown deep, we had a first rate good crop. This is particularly the case in a dry season, and no bad results in a wet season.

By Mr. Stewart:

Q. That is suitable for a dry season especially?

A. Yes, it makes no difference in a wet season. We have had the two classes in the wet season and they are equally good.

Q. What is your sub-soil?

A. Clay sub-soil, impervious to water, perfectly so. Ever since that, sir, we have sowed at four inches and even more. My son told me last fall that in the field he had disc-harrowed in the ridges some of the grain went in five or six inches and there we had the best wheat. Ever since that we have sown four inches deep every year. Last year we sowed four inches deep, and the neighbours driving along said it was too deep. As a matter of fact, when you only sow two inches deep, the rays of the sun will penetrate the soil in two days and go to the roots. At four inches it is in that

moist earth and the grain grows there until the June rain comes, and after that it is all right. Last year among our neighbours, Mr. Robinson and our German neighbours, Mr. Berko, sowed at two inches deep, which is their usual custom there. The first crops did not come up until long after ours had commenced to grow, and we had a tip top crop.

By Mr. McEwen:

Q. How deep do you plow ?

A. First we break the prairie about 4 inches deep, and after that we cultivate with disc-harrows, and sow next spring. The next spring we burn the stubble and sow again. We do this for two years and we plow deeper every year. We commence with four inches and get down to five or six, and on our farm we have got down to 8 inches.

By Mr. Henderson:

Q. Sow early and sow deep ?

A. Yes.

By Mr. McEwen:

Q. Where do you live ?

A. Three hundred miles west of Winnipeg at Wolseley on the Canadian Pacific Railway.

Q. When do you expect to start seeding this year ?

A. I cannot tell yet. We sow for two weeks and then quit, whether it is early or late. I find the frost in the fall comes correspondingly. The first year I was in the North-west, 1883, you could not sow until May. My wife and family came out on April 4. There was good sleighing long after that. The Methodist colonists came in then, and in the fall we had no frost until Sepember 7.

Mr. Maclaren (Perth):

Q. When did you sow last year ?

A. Early in April—two weeks earlier than usual.

By Mr. Erb:

Q. You give it as a maxim to sow early and sow deep, and a splendid crop you are bound to reap?

A. That is our experience. It is the experience of those who have followed that method for years.

ACREAGE YIELD AND TOTAL YIELD OF CEREALS ON ONE FARM, IN 1900 AND 1901.

By an Hon. Member:

Q. What was your yield last year ?

A. In 1900 we raised 1,400 bushels of wheat and 600 bushels of oats. We had to buy oats, but we had enough wheat to sow next year. We had 700 bushels for seed. In 1901 we had 38 bushels to the acre. We had 14,000 bushels, compared with 1,400 bushels the year before, and 7,000 bushels of oats, compared with 6,700 bushels the year before. Our oats ran 85 or 90 bushels to the acre. In 1902, we had 30 bushels of wheat to the acre, and last year we had 25; although the straw was large the crop was not so good.

By Mr. Maclaren (Perth):

- Q. What is the value of land up there ?
- A. That depends on who is selling it.
- Q. Can't you give us some idea ?
- A. At Indian Head about \$25 to \$30 an acre, and it is worth about \$40 (laughter). If you go further south the raw prairie is not so dear, but cultivated farms are selling very well at Indian Head and the Wolseley district.

By Mr. Robinson (Elgin):

- Q. Do you sow the oats as deep as the wheat ?
- A. I think they do.

Having read over the foregoing transcript of my statement before the Committee on Agriculture, I find it correct.

W. D. PERLEY, Senator, Parliament of Canada.

THE PEACE RIVER DISTRICT

House of Commons, Committee Room 34, Thursday, April 14, 1904.

The Select Standing Committee on Agriculture and Colonization met here this morning at 10 o'clock, a.m., Mr. Douglas, chairman, presiding.

The Chairman.—We have with us this morning at your request Mr. James M. Macoun, Naturalist, who will speak to us in reference to the Peace River district in the North-west.

Mr. Macoun.—Mr. Chairman and Gentlemen, I do not know what form you wish my remarks to take this morning, whether you desire me to give you a brief account of what I saw of the country, and what I think of the country, or whether you desire me simply to answer questions. My report, as you know, has been very recently published, only two weeks ago, and perhaps it is unnecessary to go over anything like the whole ground covered by the report. I am ready to take whatever view of the matter you wish, either to give a brief account of the climate and soil of the country, or simply to answer whatever questions you may see fit to put to me.

The CHAIRMAN.—I suppose you had better go on and give us all the information you can about the climate, soil and prospects for agriculture, and I dare say the members of the committee will have questions to ask.

Mr. Macoun.—Very well, Sir, but before doing so I would like to ask whether Mr. Ingram is present or not?

Mr. INGRAM.—I am.

Mr. Macoun.—The reason I ask is that I had the satisfaction of reading over my father's evidence the other day, and I found that two quotations by Mr. Ingram from my report would have rather a misleading effect. I would just like to correct that before I begin my statement.

By Mr. Ingram:

Q. On what page ?

A. I will give you the page. One is a quotation from page 12, reading as follows: 'To conclude on this subject, I would not advise any one seeking a home in our great North-west to think of the Peace river. There is but a limited area in the valley which is the only place success can be reasonably expected, and even there success is merely an assurance of a living, as there is no market at present * * * I regret that I have to present such an unfavourable account of a region of which much has been said and written. That the soil is excellent and much of it available for immediate use can not be denied, but the occurrence of severe frosts on the plateau when the grain is not far enough advanced to resist its effects may be, as far as our experience goes, considered a certainty in the majority of seasons. It may be that, when the necessities of settlement require it, early seeding and early varieties of grain may materially alter conditions, but at present I would advise no one to think of farming there, except in the river bottom in which there are flats extensive enough to

locate a few score homes.' That is a quotation from Mr. William Ogilvie's report. He made a special report of the Peace river district in 1891, and I have marked it with quotation marks and given the citation. The reason why I make the correction is not that I object to the quotation, because I agree with every word of it, but Mr. Ogilvie did a very fine work. He explored all that country for many years and made a full report and I would not like Mr. Ogilvie to lose any of the credit to which he is entitled for the work which he did in that country.

By Mr. Ross (Ontario):

Q. Have not the conditions changed in thirteen years ?

A. Not at all; I do not think so. As I say, this quotation is on page 12. It is in quotation marks and the citation is given at the bottom of the page.

Q. You do not give the committee to understand that the Peace river district is

not fit for agricultural purposes? Mr. Ogilvie apparently does there?

A. As far as that quotation is concerned, I agree entirely with every bit of it, and I think there is probably no misunderstanding in the committee now after my father's remarks. I agree with the whole of what Mr. Ogilvie says.

By Mr. Chairman:

Q. So do we all agree with the whole of it. It is a question of transportation?

A. Well, Mr. Ogilvie did not mean the transportation question. He means it is unfitted for settlement, that even in the valley it is not suited at present for settlement. He means that the Peace river country is a country that is not suited for settlement. That is his idea. When I spoke of it I did not mean the lower or northern country, or as my father calls it, the Vermilion country; that is quite a different country. Mr. Ogilvie was referring at the time to the country that people have in their minds when they speak of the Peace river country.

By Mr. Ross (Ontario):

Q. Up in the mountains ?

A. Not up in the mountains, near Dunvegan. The other reference I was about to make is to another quotation by Mr. Ingram, which is to be found on page 25 of my report. He asked my father whether Mr. Ogilvie had kept any thermometer readings at the time he was out there, and my father said he had, and Mr. Ingram then quoted from page 25 of my report these words: 'No thermometer readings of which we have any knowledge, were ever taken there before 1903, except those by Dr. Dawson in 1879.' Now, that is under the head of Grande Prairie. I was then writing about Grande Prairie alone. That is shown by the headings and side references as well.

By Mr. Ingram:

Q. Then you did not state anything about the Peace river district?

A. Not at all, it was the Grande Prairie country. The reason I am making these corrections, is that these matters go on record, and it is well to have them straightened at the beginning.

By Mr. Hughes (Victoria):

Q. Before we leave that, can you say whether there has been any thermometer

readings for the whole of that district, except Grande Prairie?

A. No, the only other thermometer readings of which we have records have been taken at Dunvegan by the Hudson Bay Company, and Mr. Ogilvie himself in 1883. My father said in 1885 when he was here, but it is not a matter of any importance whatever. I brought these readings with me on a small slip.

Q. So then as a matter of fact there have only been readings in 1879, 1883 and in

1903 ?

A. That is thermometer readings. Of course there are many records of actual ice and frost that have been found, but of thermometer readings only those of Dr. Dawson and of the Hudson Bay Company in 1879 and 1883, and by Mr. Ogilvie. In addition to that of course we have the records of grain frozen and people reporting ice and frost. The thermometer readings are only for those years mentioned.

By the Chairman:

Q. Would you condemn the country because you have readings that frost and ice occur in the summer?

A. No.

Q. Would you condemn the Peace river country because the same readings are to be found in connection with Manitoba and the Territories?

A. Not the same readings by any means, but similar readings, something of the

same kind of readings.

Q. They have frost and ice almost at any month during the year and still it is a success for settlers.

A. What I try to do in my report and what I am trying to do this morning is to tell what we actually know about the country in the matter of farming principally, an I I would very much prefer that each of you would draw his own conclusions. I have drawn my own conclusions in my report and will tell you what I think this morning, but it is preferable that you should form your own conclusions. I do not know whether you consider it necessary that I should point out upon the map the places to which I am going to refer. Perhaps you are already sufficiently familiar with the country so as to render that unnecessary. I went to the Peace river country—

By Mr. Ross (Ontario):

Q. You had better point out on the map here?

A. I may say, gentlemen, that I went to the Peace river country by the usual route, that is, from Edmonton to Athabaska landing here, and then up the Athabaska river to the mouth of Little Slave river or Lesser Slave river and thence to Lesser Slave lake, which I reached on May 30. I remained there two days on account of the ice not having broken up on the lake, and then went to the Hudson's Bay post. From this point I went to the Peace river landing or Peace river crossing on the Peace river.

By Mr. Ingram:

Q. How far is that from the lake ?

A. It is variously estimated at from 70 to 90 miles; about 70 miles would be the distance. Dr. Dawson in 1879 made an estimate of the land suitable for agriculture, as he thought in the Peace river country, and what he called the Peace river country at that time began at the Peace river landing and ran in this (witness pointed towards the west) direction extending to the foot hills of the Rocky mountains, and includes this region down to Lesser Slave lake and a short distance north of the Peace river. He estimated that at that time that there was something like 23,000,000 acres of land altogether, of which about 15,000,000 acres were suitable for agriculture. When I reached the Peace river landing I found the opportunity of going to Vermilion on a small steamer owned by the Roman Catholic mission in that region. I went there and was in this region till about June 30, when I made my return trip to Peace river landing.

By Mr. Hughes (Victoria):

Q. To the Peace river what route did you take ?

A. From Edmonton to Athabaska landing by horses. There is a regular mail to Athabaska landing and then by boat to Lesser Slave lake and then by wagon to the Peace river. There is a fairly good wagon road.

Q. From the head of Lesser Slave lake ?

A. To Peace river landing.

Q. Were you on the Grande Prairie at all?

A. Yes, sir. In fact I might say that I visited every portion of the Peace river country from near Fort St. John to the north of Vermilion. Where there has been the slightest visit of any of our government explorers or where any white man has been, there I have been. Then last year in addition I visited every breaking for settlement, there is in the country. There is not, as far as I know, a single acre of cultivated ground in the Peace river district that I did not see during the past year.

Q. Will you tell us please how to get to Grande Prairie and from what point you went ?

A. In my description so far I have reached the Peace river landing. I went to Vermilion and came back again on July 1, to Peace river landing. From there I went north into this country on towards the Battle river and explored this whole region north of Dunvegan during the month of July and on August 1 reached Dunvegan. Dunvegan is here. From Dunvegan there is a good wagon road by which you can travel to the Grande Prairie—I used pack horses. Grande Prairie is not marked on this map, but it is just here.

By Mr. Ingram:

Q. South?

A. About 50 miles south of Dunvegan by the trail. I reached Grande Prairie here and then went back to Spirit river and across the country to Lesser Slave lake. So that my observations last year covered the whole of this region which is usually designated the Peace river country, and also the region between here and Vermilion, and the country 40 miles north of Vermilion, and the open country south. There is open country south of Vermilion. To take up the matter in sequence so as not to get mixed up too much, I will refer to the country north of Dunvegan, the country north of the Peace river, but before daling with that, I might say that of Dr. Dawson's 15,000,000 acres suitable for agriculture, there is only 700,000 acres of prairie land. Th popular idea, of course, as many of you know, is that the Peace river country is prairie or bluffy country, and that it will practically, the whole of it, be found immediately suitable for settlement. As a matter of fact 700,000 acres is the outside, perhaps even 100,000 acres is the outside of the actual number of acres of prairie land which is of the very best quality and suitable for settlement now. Of that, 400,000 acres, according to my estimate, and between 300,000 and 350,000, according to other estimates, lies between Dunvegan and Peace river landing. That strip of country is between 5 and 15 miles wide and about 70 miles from one point to the other. This is the region which Mr. Ogilvie, in 1883, surveyed in the townships and spent a whole summer in that region. The soil, I might say, in general terms, is excellent. It varies somewhat, but is good. Although not very deep in some places, it is very good. It is to this part that Mr. Ogilvie referred in his report as regards climate. My own observations as regards the climate during the past season for the whole country would not have shown the frost to be of very much importance. At Peace river landing, on June 14, we had four degrees of frost. On June 30, while I was at Vermilion, they had frost in the valley at the Smoky river mission which cut potato tops and buckwheat and a few things of that kind; and on July 10, when I was 15 miles north from the Smoky river mission, we had 5 degrees of frost on a little lake called Bear lake. and next day the thermometer went down to freezing. Then on August 27, when I was at Burnt river, we had two degrees of frost. Those were the only records of frost I had during that month.

By Mr. Hughes:

Q. Can you give us the elevation?

A. 2,300 feet.

By the Chairman:

Q. Can you tell us how many degrees of frost are required to injure wheat?

A. That is a matter of course

Q. Do you not know that the frost would not injure wheat?

A. I do not know.

Q. That it requires six degrees of frost?

A. I did not know that. I am only giving you the result of my observations. I might say, however, that at Bear lake, when we reached there on the 9th, I looked at a small potato patch there and found that the potatoes had been twice frozen before that date. The frosts were not very heavy, however, 3 inches of stalk frozen the first time and in the lower places 5 or 6 inches. So that there had been three frosts at this little Bear lake at that period. Now that covers entirely my observations of the climate of that region. If there were no other observations, no other records, there would be quite insufficient to condemn or even to find very much fault with the country, but in 1883 Mr. Ogilvie made observations in that region and he found that in June the lowest thermometer reading was 16 degrees of frost. In the month of July he found the lowest reading 3½ degrees of frost, and in the month of August 10 degrees of frost. Now 16 degrees of frost would destroy grain in the month of June and 10 degrees in August, if it would not destroy the wheat, would injure it very greatly.

By Mr. Hughes (Victoria):

Q. Was this near Dunvegan ?

A. Between Dunvegan and Peace river landing. Now, in 1882, the previous year, Mr. Thompson also surveyed the country and ran this north and south line here and he, without giving any meteorological observations, records in his report that he had frost during the summer. There were several frosts during the summer according to what he says. But better than any is the fact that 9 miles from Dunvegan the Hudson Bay Company attempted for three years to cultivate grain at a place called 'the Water Hole,' a very suitable place, and the grain was frozen every one of the three years Between the years 1884 and 1889 at Old Wives' lake, which is near the Smoky river mission, at a beautiful place as regards soil, situation and everything else, agricultural operations were carried on by the Rev. Mr. Brick, whose report you will find in the evidence given before the Mackenzie Basin Committee in 1888. He planted grain of several kinds. He cultivated three acres and in three years he secured a crop. One year he records it as fair, another year as good, and the third year as excellent. Then three years were total failures. He reports everything was absolutely destroyed by frost.

By Mr. Hughes (Victoria):

Q. Before you leave the subject of that clergyman do you know anything about

how he planted the grain, how he ploughed the ground and seeded it ?

A. Nothing at all. Mr. Brick was a careful agriculturist and to him is due a good deal of the success of the agriculture of the Peace river valley. He farmed there and his sons are now farming there, and they have the best farms and raise the best crops in the country. As I said, Mr. Brick's evidence will be found in the report on the Mackenzie Basin Committee. The result was that although the land in the valley now is all taken up—that is about 10,000 acres that are in the Peace river valley—no attempt has been made at agriculture on this plateau since that time. We have no evidence of any man in regard to agriculture on the plateau since Mr. Ogilvie's report was published in 1891. Now, as a set-off against that, I did not find a single bit of evidence in any public report or from any people who lived in the country that this plateau was suitable for agriculture. Except perhaps three or four men who were out of the country at that time, I talked with every man who had gone into the Peace river country and is farming there. I visited all the farms and talked with every person

I met and did not find a single man in the season who thought this plateau was suitable for agriculture. Although there was occasional items in the newspapers to say that this, that and the other part of this upper country is suitable for agriculture, these reports have come from people who are directly interested in a settlement going to the country. They were interested in transport or were traders or in some way expected to make money out of the people who might come in. But as I say, I never had a single man who thought that region was a good region to settle in or farm in. These are the reasons why I thought and have reported that this is not a good country to settle in.

By Mr. Ingram:

Q. What is the extent of it ?

A. 400,000 acres. Mr. Thompson, who surveyed the country, said in his report he thought there would be 300,000 acres, but I reported that I thought the area was larger, 400,000 acres, and I might say that in every instance—

By Mr. Hughes (Victoria):

Q. Where did Mr. Thompson survey?

A. These north and south lines. He travelled across country.

Q. Just north of the Peace river?

A. Just north of the Peace river, not away north, because this prairie land gives out and none of it is very good 15 miles north of the Peace river.

By-Mr. Sherritt:

Q. Is this plateau suitable for grazing?

A. I say in my report that I never saw finer.

Q. How is it watered?

A. There is plenty of grazing land in the summer, and horses run out during the whole winter. The horses of the settlers in the valley used to run out during the whole winter in the northern country.

By Mr. Ross:

Q. How long is the Peace river?

A. The whole length?

Q. Yes.

A. I could not answer that from memory. The part I dealt with in my report, I think is about 450 miles. Beginning here it runs in this direction north to this point—this is Vermilion here—and then into Lake Athabaska.

Q. Does it lose itself there?

A. It runs down to Great Slave lake and then into the Arctic.

By Mr. Sproule:

Q. What is the nature of the country outside of the 15-mile belt?

A. There is supposed to be a great prairie up there called White Mud prairie. I went across that in various directions, and I did not find any prairie at all fit for a single homestead. The general character in the north is the same as country that is not prairie. It is a wooded country, wooded with poplar and spruce, and there are a certain number of muskegs and swamps. The bulk of the country outside of the prairie country is poplar and spruce forest. Most of it is burned, and there is practically no timber left in the country.

By Mr. Hughes (Victoria):

Q. Black poplar?

A. No, white poplar. The general character of the country is that it is covered with poplar and spruce.

By the Chairman:

Q. Might I ask, Professor, whether, in reaching your conclusions, you took into consideration the aversion of early settlers to new settlers coming in to interfere with their ranging work? They are very sure to give a bad report instead of a good one, that is my experience.

A. I certainly took that into consideration, but what I was looking for was information. I have been accused by several people, since I came home, of trying to make the country out as bad as I could. I say that I consider that during the whole summer I was to learn the truth about the country and to tell the truth. I can tell you far worse about the country than I have published in my report. I did not think it was necessary to minimize the report or to include what every Tom, Dick or Harry told me about the country. I have only put in what I saw myself, or what the officials of the country have published in their reports. What the men out there told me about it would not influence me at all.

By Mr. Hughes (Victoria):

- Q. You called to see those farms way down towards Vermilion?
- A. I have not referred to that at Vermilion.
- Q. Where do you find those settlers?
- A. Just west of the Peace river landing.
- Q. Between Peace river landing and Dunvegan?
- A. Between Peace river landing and Dunvegan.
- Q. Any farming outside the valley ?
- A. None, but by Mr. Brick.
- Q. The clergyman ?
- A. He is called a clergyman, but he was a farmer as a matter of fact.
- Q. We know what the early farmers in Manitoba were ?
- A. I am not finding any fault with farming. I say in my report that country is bad for farming. It is only the climate I am speaking about. If you do not agree with me in my conclusion about it that it is not my affair of course.
 - Q. I agree with everything you say except about the possibility of farming ?
- A. I am very emphatic about that. Another record we have of the climate north of the Peace river. That is immediately along the Peace river is bad, except that three years described by Rev. Mr. Brick on his farm. He lost his crops and the impression left on the Peace river country by Mr. Brick's experience and those of the Hudson Bay officials was such that since 1889 no attempt has been made at agriculture on that plateau.

By Mr. Oliver :

- Q. What is the nature of the soil ?
- A. The soil is clay loam.
- Q. Is it mould ?
- A. No, I would not call it mould, it is very much in the nature of the soil around Regina, it is hard during the summer, and as I mentioned in my report we could not drive the tent pins in most places, we had to work holes to get the tent pins down in the soil.
 - Q. Does grass grow on it ?
 - A. Oh, yes.
 - Q. There is no grass on the prairie round Regina ?
 - A. I am speaking of the soil, of these 400,000 acres.
 - Q. Which 400,000 acres ?
- A. Between the Peace river landing and Dunvegan in the valley and on the north side of the river. There are 10,000 acres suitable for agriculture.
 - 2-39

By Mr. Hughes:

- Q. How far north did you go, north of the river, on Thompson's survey line ?
- A. Not very far, about 25 miles; north of this there are no real mountains.

Q. Are there none running east and west ?

A. There are hills known as the Clear Hills, but they are west of that.

By Mr. Oliver :

Q. How do you account, or what are your reasons for the frosts in that locality?

A. My personal opinion is that it is not confined to that particular locality, but that similar frosts occur throughout the whole country.

Q. And your reason is the altitude?

A. Chiefly the altitude, and the nature of the country. Owing to the dry atmosphere the radiation is very great; my meterological observations extended from Jung 12 to September 5, and during that time there were forty nights in which the thermometer went below 40, on a very clear night it would go to 35 sometimes, and sometimes lower. I venture to say there is no part of the North-west in which we can get a record of three months that we don't have to relate frost. When I speak of the North-west I mean Alberta, Assiniboia and that region. I do not think there is any part of the country in which the thermometer would show so low records as that on forty nights the thermometer went within 8 degrees of freezing during the warm summer months.

Q. There are years in which there is a great difference throughout the whole territory, some years are frosty and some are not.

A. Well, there is a great difference, of course, I say now, from my point of view, this year was a good year in the Peace river country, because I did not find the frosts as bad as other people who have observed and recorded them. The frosts I found in August were not very severe. I did not find it ever more than 5 degrees of frost

during the summer.

Q. How did the frost you found in the Peace river country compare with those throughout the territory?

A. I do not know.

Q. You are aware that there were frosts throughout Manitoba and the Northwest last year which damaged the grain?

A. Yes.

By Mr. Hughes (Victoria):

Q. Have you no records from which to make a comparison of this country with the county of York, in the province of Ontario, or Hastings, in which I was born and brought up? Have you any records to make comparison between these two places? We have frosts there in June.

A. We all know that in the unsettled parts of Ontario, before the country was cleared, frost often came where they do not now, but we also recognize that the conditions are very different now from what they are in the Territories, where there are no forests. Those conditions do not apply to the Territories, because there are no forests to take away there, and no water to drain, as there was in the portions of Ontario to which you allude.

By Mr. Oliver:

Q. Mr. Macoun has based certain conclusions on facts that he found in the Peace river country last year.

A. No, sir, I base them on the reports I had from other people, if there were no other observations than my own, I would willingly have said this was an exceptional year, but the reports of Mr. Ogilvie and others condemn the country more than I do.

Q. Pardon me, but are we getting your report or Mr. Ogilvie's report?

A. You are getting mine.

Q. That is what we want. We can get Mr. Ogilvie's report, because it is in print, but my idea is that we want your report of what you know and what you found.

A. That is all right, I am certainly going to give my reasons.

By Mr. Ingram:

Q. On page 24 you say 'I had been told that hail storms were unknown in the Peace river country, but on August 19 we had two thunder storms accompanied by hail, either of which would have done damage to standing grain.'

A. I said 'I am told' they are unknown.

By Mr. Hughes (Victoria):

Q. What percentage of that country is covered with scrub timber, as you say in

your report?

A. I may say that I saw practically the whole country, I did not see every acre of it, but I saw practically the whole of this upper Peace river country, and there is very little green timber growing now. The country has been repeatedly burned over, so that there is very little green standing timber in the country. Included in it is a lot of marsh and scrub or muskeg.

Q. I believe that the bluff country, the small poplar country is much worse for

frost than the high timber country?

A. Of course, we all know that the wooded country is the worst.

By Mr. Oliver:

Q. Prof. Macoun said that a great deal of that country is muskeg, and surely if the clearing up and draining in Ontario has improved the climate, so the clearing up and the draining of the muskeg will improve it in that country?

A. Certainly it would, it would improve very much by the clearing and the

draining of the muskeg.

Q. Then as far as the small area of prairie coutry surrounded by muskeg is concerned, the clearing up must affect the climate and improve it in that country.

. A. I beg pardon, these 400,000 acres are protected on the north by forest country, but they are entirely open towards the south, it is entirely open prairie country and slopes towards the south.

Q. But it must have the prairie as a limit on the south somewhere ?

A. No, the Peace river valley is the limit, and it is a wide valley, and open country and slopes up towards the north so that the 400,000 acres are not surrounded by forest; they are protected by the forest country to the north.

Q. It is bordered by the forest and muskeg on the north?

A. Yes.

Q. Then I presume that the muskeg and forest will have a certain amount of effect on the climate?

A. Yes, it might have locally.

Q. A few minutes ago you indicated that the presence of forest had a bad effect upon the climate in Ontario which improved when the forests were removed, now you indicate that the presence of forests is a protection away up in the Peace river?

A. We know that all over our North-west country we are planting trees to protect areas to the south of the forest belt, because there are no trees there; when we are speaking of Ontario we are speaking of a country that was wooded, and in the wooded country there they had frost; but in the North-west it freezes on the open prairie, and they protect it to the north by forest belts.

By the Chairman:

Q. I would like to call your attention to this point, the fact that it is protected on the north increases the difficulty in grain raising. A slope to the south is the poorest slope you can have in the country. If you want good grain land you must slope to the north, because wherever there is a prevailing wind it is from the south-east or from the north-west. And if there is any air at all the grain will not freeze—if the grain is moving it will not freeze—so that you will see that there is protection in the northern slope in that way.

Mr. Cochrane.-We came here to hear Professor Macoun.

The CHAIRMAN.—We don't want statements to go abroad that are detrimental to this country.

The WITNESS.—I think I can answer the whole of this question.

The frosts that I found, so far as my observation went, were not local frosts but general frosts, and one of the principal reasons I have for thinking that is this, on August 20, 1879, Dr. Dawson was on the Grande Prairie and he found there recorded six degrees of frost. His assistant on that same night was at Battle river in this wooded country north of Dunvegan, and north of the 400,000 acres of prairie, and his thermometer registred 12 degrees of frost that same night. These observations were 150 miles apart. It was twice as cold where Mr. McConnell was as where Dr. Dawson was.

By Mr. Oliver:

Q. This report and evidence of Mr. Macoun is very important, and I want in the first place, when I speak to the Professor, to draw the distinction between a report and an opinion. We are all able to give opinions, but in his case what I want is his report, and I would like, if I may be pardoned for saying so, that in the evidence, we draw the distinction between evidence and opinion. Now, he has given a certain amount of evidence of what he has seen and he has drawn an opinion from what he has heard. I take the liberty of asking, I want to know if the frost in the Peace river district iast year was so and so, what were the frosts throughout the rest of the Territories, because the Territories are the grain-growing countries. There was frost throughout the Territories last year; as far as I understand it, it was higher than in the Peace river. I have come to the conclusion that the inference he intends to have drawn from his report is that the Peace river is especially frosty, and that where there is frost there can be no grain raised. Long experience shows that it is not impossible to grow grain where there is frost, otherwise the Territories and Manitoba would not be a grain-growing country. I would like to ask what are his reasons for believing that grain cannot grow there. Is it because of the altitude or the latitude?

There is grain grown successfully in southern Alberta at an altitude of 3,000 feet and very close to the Rocky mountains, and there is grain grown successfully at Vermilion, 150 or 200 miles further north than the Peace river country. Therefore it cannot be either latitude or altitude that injuriously affects the climate of the Peace

river country, and I want to know what it is.

A. If I understand I am to confine myself entirely to my own observations of last year, I am very sorry to say I cannot answer your question. If I tell you what I saw you must form your own conclusions. I will tell you exactly what I saw last summer. On August 1——

Q. I asked the gentleman if he would give us what he believes to be reasons for the climate of Peace river?

A. I will with pleasure.

Q. We have been getting opinions. I said we want to draw the distinction between opinions and evidence.

A. Shall I answer the gentleman's question or not? The Charman.—I think you had better answer it.

THE WITNESS.—The reasons, for my view, apart entirely from any opinions that I have heard, but based on my own observations,—the reason I think this country is not as well suitable for agriculture as Southern Alberta is that it is 6 or 8 degrees farther north. Another reason is that the altitude here is 2,300 feet, and at Vermilion 950 feet above the sea.

By Mr. Oliver:

- Q. That is your reason ?
- A. Yes.
- Q. Then in the one case, it is bad because it is too high ?
- A. As compared with a lower country.
- Q. And in that other case it was too far north.

 A. As compared with the southern country, yes.
- Q. He knows that grain grows successfully both higher and farther north than that region? I submit that the reasons are not good. It grows a thousand feet higher. (No answer).

By Mr. Hughes (Victoria):

Q. Mr. Macoun has drawn attention to the fact that grain grows in the southern areas. Has he ever taken cognizance of the high passes into southern Montana, Dakota and other regions through which the Pacific winds have to pass?

A. The wind comes from the south-west from Mexico and California.

Q. I dispute that statement very emphatically. I want to point out that the winds come up through the valleys of the Columbia river into the western states, not from Mexico, because the tendency is in the other direction?

A. I think that under the circumstances I will repeat again the reason that 1 consider this country poor as compared with the southern country. For instance, as compared with southern Alberta, it is too far north. As compared with Vermilion, it is too high to be entirely free of frost or anything else.

The first of August we crossed the Peace river at Dunvegan into the Spirit river country, the Grande Prairie and the Pouce Coupe prairie. At Spirit river, there is the largest settlement in any part of the country. Now, I will ask whether I am to confine myself to what I actually saw, or what the settlers told me?

The CHAIRMAN.—Give us your own evidence.

By Mr. Heyd:

Q. Tell us something so that when we get through we will know something about this thing.

A. I am perfectly willing to answer questions. J think I could have covered the whole ground in an address of twenty minutes. That is what I told the clerk yesterday when he asked me how long I would take. I crossed the Spirit river, 15 miles south of Dunvegan. It had the same altitude as this country north of Dunvegan, which is broken. There are about 40,000 acres of prairie there, and the rest of country is wooded and bluffy. I estimated that there were 40,000 acres of prairie, although it is very difficult to estimate it, as it is very bluffy, rather a half and half country, so that the areas of prairie are in blocks of 1,000 acres or 400 or 500 acres. At Spirit river we found a settlement of fourteen people. During the last three years they had been planting grain.

By Mr. Hughes (Victoria):

Q. Where is the Spirit river?

A. Fifteen miles south of Dunvegan; about ten miles in a straight line.

By Mr. Ingram:

Q. It is called the Spirit or Ghost river ?

A. Yes. It is about ten miles in a straight line, or fifteen miles as you travel south of Dunvegan. It is marked 'Ghost river' on the map, but people in the country universally call it 'Spirit' river. At Spirit river there are about fourteen people, I think, engaged in agriculture, but it is only for about three years they have been planting grain, or doing anything more than raise a few cattle. When I was there th's year, I reached Spirit river on August 2, and after making my trip around the west and south, I came back again towards the end of August and decided to stav there, as it is an important point, until the first frost came, no matter how late that might be in the season, even if it were late in September I was going to stay there until it came. But I found that if I stayed so late I could not get out of the country, I would not be able to cross the country to Lesser Slave lake later in the season, so I left on August 27. At that time the wheat was turning yellow, and the barley was almost ripe on one man's farm, Mr. Bremner's, and on all the others, most of it was on new land, most of it would not ripen, it was not far enough advanced; I know what became of all the grain because I have letters from each of these men, but if I am only to tell you what I saw I must stop there.

By Mr. Hughes (Victoria):

Q. If you can show us all the conditions under which it was cultivated, and how the grain was sown and when, it is all right, but if you cannot give us that information that makes a material difference?

A. If I tell you the grain was frozen on August 27.

By Mr. Heyd:

Q. That is good evidence that it was frozen on August 27.

A. All this evidence is in my report, gentlemen, and it does not make a bit of difference whether I answer it now or not, because it is all published in my report.

By Mr. McEwen:

Q. You do not know what time they sowed that grain?

A. Yes, in the second week of May, the reason that it was not sown earlier was that ground cannot e ploughed in that country before that.

By Mr. Sproule:

Q. Was the land prepared the summer before, or was it new land?

A. In Bremner's place it had been cultivated a number of years, but on the other places some of the land had been broken the year before and some of it that spring.

Q. I am not asking that, I am asking how long was it broken?

A. Mr. Bremner's was put in on fall ploughing, and some of the others too, but the remarkable thing about it was that the best grain was found on the spring breaking; the best wheat and the best barley, both as regards ripeness and the size of kernel and everything else, was on new land broken in the spring. It just happens that such was the case in that place.

By Mr. Wilson:

Q. That is not usually the case?

A. I do not know why it was so there, but all I know is that it was.

At Spirit river, as I say, I remained until August 27, I left on that date because I found I had to get out then in order to get across the Smoky river; I had to get my outfit across that river. On August 30, when I was a few miles east of Spirit river on a small lake named Egg lake, we had on that evening, I think it was 6 degrees of

frost. It began to freeze at seven o'clock in the evening and next morning at seven o'o'clock, when the sun was shining brightly, the thermometer still read below freezing point beside my tent. I had an opportunity of viewing the whole country for more than 100 miles in the west, it was a beautiful clear night, with the northern lights showing brightly, and I said to myself this is a general frost, and there will be a frost up at Spirit river, as I pointed out in my report, the crops were frozen, there was frost there.

By Mr. Hughes (Victoria):

Q. Were those crops that were frozen close to the shore of the lake?

A. There is no lake at Spirit river.

By Mr. Oliver:

Q. Was that the first frost that season?

A. That was the first frost that did any harm, there was no other frost as far as I know; I was there only eight days altogether.

Q. Was there any sign of frost on the crop there?

A. No sign of frost on the crop, except that it had been a very late spring.

Q. I suppose you are aware that throughout Manitoba and the Territories there was damaging frost considerably before that date last year?

A. Yes, sir.

Q. But you did not state that in your report?

A. I did not, for the reason that I was only reporting on the Peace river country. From the Spirit river country I went west to Pouce Coupe prairie, which is just on the British Columbia boundary. I heard a great deal of talk about that region and although it was in British Columbia I thought it well to go and see it. I found that there are 25,000 acres of prairie, but there had been no attempt at agriculture made. It is a fine prairie, that is about all I can say about it. There is no way of getting there except by cutting a road through the woods as I did myself, but when I got there I found it to be a very fine piece of prairie.

Q. That is above Spirit river ?

A. Yes, it is exactly on the British Columbia boundary. I came out again through the woods, there being no trail; there was formerly an old Indian trail there, but the fires have made so much brule that I had to cut my way through the woods.

Q. Going through a country like that, were you able to ascertain all the condi-

tions during a brief trip ?

A I might say that for the last 23 years I have been doing this work. If I had gone to the country as a beginner, of course my opinions might have been more open to criticism than they are, but I have been with my father all my life, and I have been doing exploring since 1881, and I think I know the whole northern country pretty well.

I reached Grande Prairie about August 15, I think it was; it is immaterial as to the date anyway, and there I spent a little over one week, and I made a complete survey, in a sense, of the prairie, going backwards and forwards and all around the Grande Prairie region. The reason I was so particular was that many people intended going in there, and I wanted to find out the extent of the country and to learn what it was worth. Dr. Dawson when there in 1879 reported that it had 230,000 acres of prairie land suitable for settlement, but the forest has encroached some on the prairie, and I estimated it at about 200,000 acres of prairie land. As regards temperature, the week I was there we had only one light frost, two or three degrees, at Saskatoon lake.

By Mr. Hughes (Victoria):

Q. What month was that?
A. August; 16th August about. At Saskatoon lake on Grande Prairie there are two small breakings of about three acres each, and these are the only attempts at

4 EDWARD VII., A. 1904

agriculture that have been made in that region. At the date I was there the barley on Mr. Callihows place was already turned yellow and I formed the conclusion that the barley would ripen. Mr. Monkman, who keeps a small trading post there, had planted some grain, and I did not think that either his barley or wheat would ripen; that is what I have to say about it.

By Mr. Oliver:

Q. What kind of soil is it on the Grande Prairie?

A. The soil as a rule is fine, but I might say here as regards Grande Prairie, and the whole prairie belt of the Peace river country that the soil although good is very shallow. I say in my report that it goes to four or five inches in depth. As a matter of fact, I did not find five inches of loam soil anywhere in the Grande Prairie country. I would much prefer not to say that, but it is true, that nowhere did I find more than five inches of soil; four inches was the most I found, as a rule.

By Mr. Oliver:

Q. It was a black soil such as we get on the Saskatchewan?

A. A fine mixed soil.

- Q. What was underneath?
- A. An absolutely impervious blue clay. They could not plough on the Grande Prairie before the last of June.
 - Q. Is the subsoil the same in the country north of the Peace river ?

A. Yes.

Q. Also on the Vermilion river?

A. No.

Q. That is the character of the soil of the country ?

A. The whole of the upper country. I was walking with Mr. Monkman and looked at his grain, and he asked me what was the matter with it. I said I guessed the ground was too wet. He said they had had no rain for two weeks, and then only a very light rain. I was wearing moccasins and my feet were getting damp. I took a clasp knife and sticking it into the soil, took off a piece of sod. I found the subsoil was shining with moisture. The soil there was three inches deep. The roots of the grain were lying on the sub-soil at Spirit river. Another settler took me through his place and he asked what I thought was the matter with his vegetables. · He showed me turnips, beets, and so on, that appeared to be full grown or matured, but were only about the size of radishes. He said they had been that way for a long time. I was going to ask what was the matter with these vegetables, when I took my knife out again and found there was no soil at all, not an inch really, that they were lying on top of the subsoil, and that the roots of the radishes were on the bottom pressed against the subsoil. He said what he had done was what he had seen done at Wetaskiwin. He ran the sod breaker over the land and turned the sod off on one side and thus saving himself breaking the sod.

By Mr. Hughes 7 Victoria):

Q. Are there coulees in the valleys?

A. There are none that I saw.

Q. You crossed the country and all the branches of the rivers. What is the depth of the ordinary river valley?

A. The Smoky river is only about 300 feet. The Spirit river is called a river, but is only four feet deep. The river dried up in the fall—the frost dries its source. In the Grande Prairie there are two or three small streams running in valleys 30 or 40 feet deep.

Q. This blue clay must have been worn away at some places ?

A. Certainly.

By Mr. Oliver:

Q. Are you satisfied that blue clay is underlying the whole country?

A. Yes, I am, because it has been my custom to always walk through the country. I walked last year except two or three short distances that I went on horseback. Part of my work was to dig botanical specimens, so that whether I wanted to or not I saw the soil.

Dr. Dawson mentioned in his report that the whole country is underlaid by this silt.

Q. How far east does it come ?

A. There is no way of determining that. It underlies the whole country as far as the Athabaska river.

Q. After you got to the Vermilion valley?

A. Yes.

Q. Where is the border ?

A. I can't tell you that exactly. I went north nearly to Battle river last year, travelled 280 miles on the river, or 180 miles in a straight line, and did not see the end.

Q. You are a botanist, or your father is. He says that the flora and fauna there

are identical with the western peninsula of Ontario?

- A. He does not say quite that. I may say that I am not a geologist, I am a botanist. My father noted, when he went through that country in 1875, the remarkable number of plants that were identical with those in Ontario—he did not say Western Ontario. He noted that there were I think 154 species that were identical with the flora of Ontario. That would attract the notice of any person who went through the country. There is not one of them that is a characteristic plant of the good part of Ontario. The flora are the plants of the sub-Arctic forests that begins at Ottawa and runs straight to the Mackenzie river. These 154 plants are found north of all that, north of Ottawa. There are 800 of the Ottawa plants that we do not get at the Peace river. What my father said is true. I found 150 plants there which are also found in Ontario, but you would find them all the way from Eastern Labrador westward.
- Q. That is not the impression from your father's report. He is a very honest man.
- A. Yes, and I can repeat the statement in the way in which I am sure he intended to make it. I found 150 species of plants which were also found in Ontario; but I found none of the plants of south-western Ontario there.

Q. How do these plants compare with the plants of Ontario ?

A. Practically the same.

Q. The climate is the same ?

A. Not at all. The plants of the warm part of Quebec are not found there. But just to finish on the wild plants characteristics of that country, I would say that I found soil only four inches deep. I said in my report four or five inches deep.

Q. The whole of the North-west Territories is underlaid by the same blue clay?

A. Not the same. I found that it was not the same.

Q. There is an intervening soil between the top soil and the blue clay in the Territories?

A. Certainly.

Q. There is not in the Peace river?

A. I know there is not. From my visits to Mr. Monkman and Mr. Callihow, who have nice looking places, I found that this clay subsoil prevented the wheat ripening. The water laid there longer than it would on a slope.

Q. Did you examine the high ground for the soil, or did you find it about the

same depth on the high ground and the low ground ?

A. I examined it on the high ground. In a few places I found there was a few inches of gravel between the top soil and the clay.

Q. On the high ground ?

A. Yes. It is only in some cases otherwise the soil is very much the same as on the low ground, only shallower.

Q. Shallower on the high lands ?

A. Yes, the loamy soil was. In the Saskatchewan loamy country it is deeper on the hills than in the valleys. The soil is not deep anywhere. Then in the Spirit river country, in a great part of the 40,000 acres of prairie the soil is only two inches deep, as we found when the horse slipped and threw up the sod, and we saw that it was thin enough to cut with a knife.

Q. Low ground or high ground ?

A. Level ground.

Q. Flat country ?

A. Yes.

By Mr. Hughes (Victoria):

Q. In that Smoky river valley did you find the creeks cut into the bank ?

A. I went down the trail into the Smoky river country.

Q. Were you in that country traversed by the headwaters of the Little Smoky river?

A. Not the headwaters.

Q. Were you on the Little Smoky river ?

A. No, I was on the branches. The branches I was on run through a wooded country.

Q. Did you find a coulee which had cut 100 to 150 feet deep ?

A. There is a cut of 700 feet where the Peace river comes through the Rockies.

By Mr. Oliver:

Q. Were you in the Wapitae valley ?

A. I was in the valley.

Q. What depth is that?

A. About 250 feet.

Q. Is there prairie south of Wapitae ?

A. No, I did not hear of any.

Q. Did the roots of the trees and grasses penetrate that blue clay?

- A. No, it is a remarkable thing they do not, and in that forest country that has been burned, an individual tree never went down as they do with us; they come down great masses of them together with their roots all interwoven; instead of a single tree coming down and leaving a hole as they do in the eastern country, they come down in a mass, and when the trees come down they take every bit of soil with them; the roots do not penetrate the clay; they spread out on top of the clay as though they were on rock.
 - Q. Do the grass roots go down ?

A. No.

Q. Is it short grass or long grass grows there ?

A. The grasses are of two kinds in that country, one of them which to me as a botanist, even if I had no other evidence, would tell me the nature of the country. One of them grows in a level country, that is the high grass which is not any use for fedder at all. It is a grass which grows on the Sumas prairie in British Columbia, and that grass always grows with its roots in water, or in moist soil near the water, and the greater part of that level country is covered with it, and this is a sure sign of dampness.

But in the Great prairie and Spirit river country there is a short prairie grass very like that around Calgary, but not so long as that, and it is only in a very few places that there is any attempt to cut it for hay and that only in the wet seasons

when they cannot get it in the marshes.

Q. Is it a good grass for cattle ?

A. Oh, yes, it is a good grazing country, the whole country, in summer.

Q. What is there in the way of slough grass? Are there any slough lands there,

or does not the grass grow there ?

A. There are very few sloughs in the northern prairie. Near the Old Wives' lake is the only slough that can be called a slough in those 400,000 acres, that you could get five tons of hay from.

By the Chairman:

Q. May I ask if the vetch grass is found there, and the blue joint, such as we find in the North-west Territories?

A. There is a good deal of it in and around the thickets and wooded country very

often and in some places there are five acres perhaps.

Q. We would naturally expect that these vetch grasses would be found, also the blue joint, and these are the two kinds of grass that are used everywhere for making

hay ?

A. Yes. I know it is a very fine grass for making hay, and especially down in the North-west Territory, but in the Peace river country that grass is of the nature of a meadow grass, and it grows only in little patches of a quarter of an acre perhaps, where it cannot be cut; it is very good for grazing, but it cannot be found in large quantities for hay.

By Mr. Oliver:

Q. Is there any pea vine?

A. Yes, there is the pea vine.

Q. In the open prairie?

A. Yes, on the open prairie; that is one of the things that makes it a fine grazing country; also the vetch.

Q. Would that be suitable for hay?

A. Yes, in the Spirit river region, it grows around the marshes and they are cutting the pea vine for grass. In that country what the people of the country call pea vine is generally the vetch, of course, we know that the pea vine has a yellow flower and the vetch a reddish blue flower, but generally the people of the country do not make any distinction between them.

By Mr. Kendall:

Q. Do the roots of the vetches and pea vine penetrate the blue clay?

A. I could not say, I never found the roots of anything in the blue clay. I might say that the luxuriant vegetation which my father noticed up there in the Pence river country he records vetches 8 feet high, and Dr. Dawson and others speak of the luxuriant vegetation of the country, and when I investigated the matter I found that the luxuriance was due chiefly to the moisture and coolness and not to the fertility of the soil, although the soil is fertile what there is of it. But in two years cropping, three years cropping in this Spirit river country, at Bremner's took out of it all the available matter in the soil. Where there was a crop on land that had been in crop for three years alongside a similar crop on newly broken land, the pig weed was only growing 9 inches high on the land that had been used three years, whereas on the newly broken land it was three feet just as you see it along on a railway embankment.

By Mr. Hughes (Victoria):

Q. In ploughing this blue clay sub-soil did any of it ever turn up with the mould?

A. I looked at it and in a very few places was the mould discoloured by it, the ploughing that I saw in most cases did not even discolour the soil.

By Mr. Oliver:

Q. When you speak of that grass, what proportion do you say is worthless grass?

A. I said practically worthless. Q. Well, is it good for grazing?

Q. When I said worthless I said for hay. The reason I said it was worthless for hay is it is a grass that grows with a round rosette at the bottom and a single stalk, so that for grazing purposes in the summer the cattle eat the whole of it. When you come to cut it you get nothing for hay, as the stems are thin and wiry.

Q. Do the cattle eat it ?

A. I never saw them eating it, because there is very much better grass there.

Q. What proportion of the prairie grass does that constitute ?

A. Not a very great proportion of it, none at all in this 400,000 acres, nearly one half of the Spirit country is that kind.

Q. And the Grande Prairie?

A. I could not say what proportion of that.

Q. Then the grass of the country is good ?

A. Quite good in a general way. You can speak of the whole of that 700,000 as good summer grazing country.

Q. I think you draw the inference in your report that it is not a good country for cattle on account of the long winter; have you any evidence about it?

A. Not of my own observation, the only evidence I have is what I saw there when they were making hay for the winter?

Q. How long is the winter ?

A. Five months.

By Mr. Oliver:

- Q. What does your report say as to the length of the winter ?
- A. In order to be on the safe side I said at least four months.

Q. Do you consider that is a long winter?

A. Oh, I do not know; I have never raised cattle; possibly some would think so.

Q. How long do they feed here in the Ottawa valley?

A. Six months. That does not affect the question. I saw people going in, one man with 150 head of cattle, and he had not made an ounce of hay, and no doubt he had not thought of it.

Q. Who was the man?

A. I do not know his name. There is no doubt about what he thought of it.

By Mr. Oliver:

Q. Who is the man?

A. I don't know what his name was. I may say about the cattle: Mr. Ingram has been remarking that the ranch men made objections to the people going in. There is no ranching in the Peace river district. People make hay to carry them through the winter. Some people let their cattle out to other people to carry them over the winter. There is no ordinary ranching.

Q. Do we understand that you make your report indicate that the winter in the Peace river country is too extremely long for the favourable rearing of cattle, and that you are creating the impression that people cannot run cattle out all winter?

A. I gave no reason, I made a statement of facts.

Q. Is it not a statement of facts, giving that what you say now ?

A. What's that ?

Q. That a four months' winter is a long one.

A. I said in my report-

Q. You said in your report that the time for keeping cattle outside was so long that it made it a difficult question to get hay enough to last the winter.

A. I very likely said that.

Q. You said what was not a fact.

A. Oh, I don't think so; I am sure that I met 30 men who would not have gone there if they had known that it was necessary to make hay for 4 months.

Q. I never heard anybody suggest that you could winter cattle in the Peace river without putting up hay enough.

(No answer).

By Mr. Hughes (Victoria):

Q. Have you any data to show how far-this subsoil, this clay belt, goes before you come to the end?

A. I have not. Dr. Dawson mentioned it in 1879 when he made a thorough examination of the country between Grande Prairie and Arthabaska. He gives the geological view.

Q. When you passed down the river did you observe the banks ?

A. Except in the upper valley there are no cut banks.

Q. Worn down?

A. They are covered with grass and trees.

Q. You did not examine to find where the subsoil ended ?

A. No.

Q. Perhaps it ended before you got to the Vermilion ?

A. Yes, it was sandy there.

To recapitulate, there are 400,000 acres north of Dunvegan, 40,000 acres on the Spirit river, two hundred old thousand on the Grande Prairie. That includes the whole of the prairie in the Upper Peace river country. If I were asked to give my opinion in a few words I would say that the Upper Peace river country consists of seven hundred thousand acres of prairie land not suited for the growth of wheat.

Q. Would'nt it be better to label it the Upper Peace river country ?

A. Yes.

By Mr. Oliver:

Q. What about the cattle ?

A. If people consider that four or five months is not too long to winter cattle, it would not matter, unless you wish to put up very little hay. But it is almost impossible to make hay in that country even for the few cattle that are there now.

By Mr. Lefurgey:

Q. The first idea that people had of that country is exploded?

A. I have not been able to discover any basis whatever for the good reports always prevalent about the Peace River.

By Mr. Hughes (Victoria):

Q. The Peace river country is about 2,000 miles long ?

A. I am talking of the Upper Peace river country. I don't think any of you gentlemen can point to a single settler of that upper country that will say that that country is good.

Q. Did you go by way of Athabaska landing or Fort Assiniboine ?

A. I had been down the Athabaska in 1888. I met a man that was there-

By Mr. Gilmour:

Q. How soon did you go into the country last year ?

A. About the first of June.

By Mr. Oliver:

Q. You made a definite statement about this country that it is not good. Would you make it definite as drawing the distinction between cattle and grain raising. Isn't it good for either cattle or grain?

A. That is what I say. I don't think it necessary to make it any plainer. If you want it definite it is less suited for cattle as an industry than for grain raising. It is not only difficult to get hay for the winter, but it is difficult to get water.

By Mr. Hughes (Victoria):

- Q. Might I ask you, Professor, to tell the relative areas? Take Edmonton and point out how far to the east of the Peace river country pass that he is describing. Explain and show how much farther Edmonton is away from the country he described. Is Edmonton farther away from the Rocky mountains than the country the Professor described?
 - A. Not very much farther.
 - Q. Farther than the Spirit river country ?
 - A. The Spirit river country is 200 miles.
 - Q. Edmonton is 250 miles?
- A. What we designate as the Upper Peace river country is included in Dr. Dawson's estimate of twenty-one million acres which comes as far south as Athabaska, and includes the region that is commonly described as the Peace river country. So far I have been talking about that, except that I was not in the southern part near the Athabaska river.
- Q. How far is Fort Assiniboia from Edmonton? It is about the same distance as to the Rocky mountains, isn't it?
 - A. About the same.
- Q. Take Dunvegan. From Dunvegan to the mountains is a little shorter than from Edmonton.
- A. Yes, a little shorter. The mountains are not so high there as they are farther south.

By Mr. Sherritt:

Q. I suppose you consider it part of your duty to report on such as this in the most favourable shape?

-A. I have done so. I have said every good thing I could about this country. (Laughter.)

By Mr. Stewart:

- Q. How long were you there ?
- A. During the summer for three months.
- Q. You think you know all about it?
- A. I don't say anything of the kind. What I wish to say is that if any of you gentlemen know a good thing about the Peace river country that any man has told you I would be glad to know it.

By Mr. Hughes:

- Q. The Upper Peace river ?
- A. Yes.

By an Hon. Member:

- Q. How far is that from Edmonton ?
- A. 250 miles north-west.

By Mr. Oliver:

- Q. I would like to tell him on his own evidence that the climate of the upper Peace river is certainly no worse than that of the greater part of Manitoba and the Territories.
 - A. I don't believe that.
- Q. You stated what the climate was last year, and we know what the climate of the Territories was last year, and we know that the Peace river was more favourable than that of Manitoba last year.
 - A. I wish to say
- Q. Do you know what is to be said in favour of the Peace river country; I am telling you—
- A. That is speaking badly about Manitoba; that is not saying a good thing about the Peace river.
 - Q. Not at all, I am stating the facts. All we ask from you is the facts.
 - A. What I said was, I would like to hear something good of the Peace river.
 - Q. I am telling you.
 - A. You have told me something bad about Manitoba.
- Q. I am telling you that Manitoba and the North-west are the greatest wheat producers in the world, and that their climate is worse than the Peace river.
 - A. I am sorry to hear it.
 - Q. That is the fact; you don't deny it. We all know it.
- A. For fear I go on record, I wish to say that I don't believe the climate of Manitoba is as bad as that of the Peace river country.

By Mr. Hughes (Victoria):

- Q. Have you taken any observations as to whether the warm Japanese current affects the climatic conditions of the country when it strikes the colder air ?
 - A. I took thermometer readings.
- Q. Wouldn't they have an effect in crossing that narrow mountain ridge into the Peace river country?
 - A. They might have.
 - Mr. OLIVER.—I want the facts and only the facts.

By Mr. Hughes (Victoria):

Q. I have asked the Professor a question.

- A. That is going into an entirely different question. But any person with any knowledge of the wind knows that the wind, no matter how warm it may be when it leaves the Pacific ocean, gets cold when it crosses the mountains. The Chinook wind is popularly believed to come from the Pacific ocean, but it does not, no wind can come over the top of the mountains covered with snow and remain warm.
 - Q. But it is warm when it reaches the prairie ?
- A. That is because it is in motion; it is well known that wind is warmed by its own motion, but it does not stay warm when settled. The small atoms of which it is composed which are not visible become warm by the motion.

By Mr. Ross (Ontario):

Q. On what do the people depend up there ?

A. The people there are getting a good part of their living from the ground. They are growing potatoes and other foods and have stock, and then people like myself and settlers who come in leave a little money there with them. But in the Peace river valley there is good farming, but outside the Peace river valley, in this part of the country to which I have been referring, there was no one else but Mr. Bremner until the last year who carried on any farming operations.

By Mr. Lefurgey:

Q. Could you recommend this country as a health resort ? (No answer).

By Mr. Oliver:

- Q. I would just like to offer in opposition to what the Professor has said, that when he says the climate of the Peace river is unfavourable for the growth of grain, because it is too high and too far north, that statement is absolutely disproved by the fact that grain has been successfully grown at a higher altitude; and at a more northern latitude?
- A. I have already stated to the Committee that the reason I consider the Peace river country, the Upper Peace river country, unsuited for the growth of wheat is that the altitude of the country, 2,300 feet, is too high to grow wheat in that latitude. When you say that wheat is grown farther north I know that is correct, because I have seen wheat at Vermilion and these other places, and I say that I consider that country is too high as compared with Vermilion, which is only 900 feet.

. By Mr. Hughes (Victoria):

- Q. As I understand it, the Professor has pointed out that wheat does not grow there on account of the thinness of the soil on top of the blue clay.
 - A. I did not point that out.
 - Q. I think so ?
 - A. No. no.
- Q. Then it is entirely beyond my comprehension what he did say. I certainly understood the Professor to say that he saw grain growing there, but that the roots ran along the top of the blue clay, which was wet on the top. Now what I want to know is whether the Professor has seen any land within 250 miles of the Rocky mountains, that is about the same distance at which the section he is now talking of is situated, fit for growing grain. That is what I want to know. It was said here this morning that he has not seen it.
- A. Just so; I would just say that this remark should not go as a general remark. I said that at Grande Prairie, where Mr. Monkman was planting his wheat, the soil was too thin, and that I pointed out in my report.
 - Q. How thick is this mould on top of the blue clay ?
 - A. About five inches.
- Q. Well, if the Professor did not find it, I can tell him there is lots of deeper soil than that on Grande Prairie. Did he observe the clay soil from Smoky river to Athabaska landing. He stated that the soil in southern Alberta grows grain, although it was a higher altitude than the Peace river; yet he condemns this country on account of its latitude But the inference from your evidence is that you condemn the country on account of the blue clay and the thin surface soil.
- A. To sum it all up, there are three reasons why I consider this country is not suited for agriculture. I say first it is too cold. Another is that it is too far north. Another is that it is too high.

By Mr. Davis:

- Q. Do you allude to the winter or summer months as being too cold ?
- A. Summer months.

By Mr. Oliver:

Q. I think we can accept the Professor's statements. He has given us reasons for believing the Peace river country is not suitable for agriculture or for grazing, that is the Upper Peace river country. Now, we take him at his word on the evidence

he has given. On the statement he has made he stands alone, I believe in, the Dominion of Canada, in that opinion, and we are quite willing to accept him in that way. He has set his opinion against that of every other man I have ever met that has ever been in the Peace river, and I have met a great many of them. If the evidence that he has given bears out that statement, it is certainly not according to my judgment and my understanding.

Mr. INGRAM.—We are going too far as members of this committee.

By Mr. Oliver:

Q. It does not agree with other opinions that we have in this country on that district. I have compared them with his report and I believe that he has deliberately and purposely caused inferences to be drawn which are absolutely and utterly misleading and injurious to the last degree to the best interests of this country?

A. You will allow me to take a few minutes. I do not know this gentleman's

name-

Mr. OLIVER.—My name is Oliver. I represent Alberta.

A. I am glad to know you, I have heard of you before. In all of what Mr. Oliver has said he is talking to the gallery, as you all know.

Mr. OLIVER.—I ask the chairman if that is a proper thing for an officer of the government to say?

The CHAIRMAN.—He must withdraw that.

The Witness.—I withdraw that. Now, if you will allow me to give a few minutes' explanation. Mr. Oliver begins by saying I stand alone. I tell you there is not a single word from a reputable man—and I have read everything on the subject—contradicting what I have said. If he says there is, he must produce it. That is one point. I may tell you another thing. I do not care from whom he gets his opinion. I have worked for twenty-three years for the Canadian government.

Mr. Davis.—Too long. (Cries of 'No,' 'shame.' 'contemptible.')

The Witness.—In 1888 I was sent to that northern country to make a report on it. I was sent to the Mackenzie basin. When I got back to Winnipeg, Mr. Schultz asked me to go up to his house, and I met Mr. Greenway and himself there. I told him what I thought of that northern country. Was I asked to make a report? Since that date there has never been a report of what I saw in that country, what I saw in the Mackenzie country. When in London a few years ago I was talking with Lord Strathcona. I told him what I found in that country. I said, 'I am getting \$900 a year—and do you know the reason why—because I would not make an untrue report about that country.' Lord Strathcona said, 'We all know what that country is like. If you had reported as the government wanted you to report, you would not be here as commissioner in the Behring Sea fur case.'

Mr. OLIVER.—This is the way the Conservative government did business?

A. I have no politics. I have never voted. When I went to the Peace river country last year my work as an explorer and naturalist had been overshadowed by my honourable father's work, and I am glad to have it so. When I went to the Peace river country last year, I said to myself, here is your chance now.' This is a fine country, and the rest of your life when in Ottawa you can tell people what a fine country it is.' I expected to find the whole of the country was good. There was no more disappointed man in Canada than James Macoun, and when Mr. Oliver says I set out to make out a bad case, he forgets that I said when I started out to-day that I endeavoured to make the report as good as possible. You will not find a good word of the Peace river country that is not in that report. I have read every line ever written about it, and Mr. Ogilvie who spent four years in that country—my report does not compare with his in condemning the country.

Q. The upper country ?

A. I made only two quotations in my report which are injurious to the country, out of many that I could have made, but the reason I made them was to prevent such 2-40

men as Mr. Oliver saying, 'you stand alone.' I wish to say that there are only three people competent to report on the Upper Peace river country.

Q. By what reason do these three persons become the only people competent

to speak of it?

A. From having taken observations and living in the country. You know the people and I know the people that are booming that country. We all pay our good money in going into the country. Every poor settler who goes there has to go down in his pocket for them, whether going in or coming out.

Q. Where do the people come from who go into that country ?

A. They come from the North-west. Q. From the Edmonton country?

A. They are all coming back—all that can get back. I saw every man.

A. Allow me to contradict that statement. I travelled from Athabacka landing this winter with five men from Spirit river. They were coming out with teams to take in their supplies and their families and stock. They were not leaving the Peace river.

By an Hon. Member:

Q. What part of the Peace river ?

Mr. OLIVER.—The Spirit river and Vermilion—both upper and lower.

The Witness.—Mr. Oliver can not stay on record either here or outside this room, mind you, in stating that I set out to make a bad report, or that I stand alone. It is absolutely untrue. I do not stand alone.

By Mr. Ingram:

Q. This witness has been charged with stating a deliberately bad report.

Mr. OLIVER.—That is what I charge.

Mr. Ingram.—I understand he is a government officer. If he is guilty of making a deliberate bad report of any portion of this country, then he is unworthy of being a government officer.

Mr. OLIVER.—That is exactly the charge I make.

Mr. Ingram.—If a charge of that kind is made this is not the place to make it, but in the House of Commons, and Mr. Oliver is not doing his duty if he does not bring it there. It is an unworthy act.

Mr. OLIVER.—Just to save the gentleman's wind, I will make the charge in the

House of Commons the same as I make it here, that is what I am here for.

Mr. Ingram,—The gentleman is not here to defend himself.
Mr. Oliver.—He has the opportunity to defend himself here.

Mr. Ingram.—You refuse to give him a chance to defend himself. If he is an

unworthy officer I will join you in having an investigation.

The Witness.—I have been working twenty-three years for the government. Mr. Oliver says it is too long. I expect to work the rest of my life for the government. If an ordinary man makes a statement that the Peace river country is not fit for settlement he gives it for what it is worth. If I make an untrue statement about any part of Canada I take my job in my own hands. I have done that with regard to this Peace river country to this extent that if one single word of my report is untrue you will find Macoun will resign the next day, and unless you can prove it is untrue, I think you should apologize to the members of this committee. Just one further word with regard to the investigation. Mr. Oliver as a member has the advantage of me to the extent that he can talk in places that I cannot talk in.

Mr. OLIVER.—I am talking to you right here.

A. I will tell you, Mr. Chairman, why I am not liked in the far North-west.

Bu Mr. Davis:

Q. Nobody ever heard of you.

A. I went to the Peace river country last year; I went to the Lesser Slave lake and found drunkenness there that was a scandal to the Dominion. When I came home I wrote out an interview which I gave to the newspapers here. I went to the Indian Department here and laid the information. I had sent the interview to the papers and the result was the permit system has been abolished there in that northern country; the liquor selling there—that was a curse to the country—by every little petty trader trading in essences, ginger and florida water—that has been stopped and the people have been fined right and left in that country. A man who had come from that country said to me the other day, 'if you go to that country again they will kill you.' Is it any wonder that Mr. Oliver, who represents the people of that country, should be down on Mr. Macoun. (Laughter).

Mr. Oliver.—Mr. Chairman, I appeal to this Committee on what Mr. Macoun said the moment he sat down, as to his reliability and fair-play in making a report on anything. Any suggestion that I have any interest in any way, shape or manner in defending or supporting the selling of intoxicating liquors in any part of this nation, this world, is so utterly absurd that the man who makes it hurts himself in any responsible statement that he makes. I leave that to any member of this House who has known me for seven years. He made the insinuation before this Committee.

I made a statement which I repeat, it is absurd and untrue.

The Committee then adjourned.

Having read over the proceedings and transcript of my evidence I find it to be correct.

JAMES M. MACOUN.

House of Commons, Committee Room 62,

FRIDAY, April 22, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, Chairman, presiding.

Mr. Oliver.—I wish to ask if certain remarks I made yesterday have been taken down. I wish them taken down, otherwise I shall have to repeat them. As long as the statement such as that which appears on the Minutes of this Committee is allowed to go, I claim the right to contradict that statement, and to have my contradiction placed upon record.

Mr. INGRAM.—I understand the committee are going to decide what the report

is to contain. I suppose all that matter will be considered later on.

Mr. OLIVER.—Mr. Chairman, I claim the right of a member of this committee to have my contradiction of a false accusation, placed upon the records of the Committee.

Mr. Bell.—I thought that what was to be taken down was settled by Mr. Sproule's

resolution being voted down yesterday. I understood that settled the question.

Mr. Davis.—I understood, Mr. Chairman, as just stated, that the resolution of Dr. Sproule being defeated, everything was to be taken down, and that upon the conclusion of the evidence given by Mr. Macoun, the Committee would decide what was to be published or not published. In the meantime I understood that everything was to be taken down.

2-401

Mr. Robinson (Elgin).-Mr. Chairman, I think that if Mr. Oliver feels aggrieved at anything that has been said by the person who gave evidence on the Peace river district, he has a right to be heard some time, and should be called before this Committee to give evidence on that country so that we should know all about it. He has as much right, perhaps, as Mr. Macoun to come here and give evidence, but to contradict and fight backwards and forwards, I do not think that is the proper thing to do. Now, I think the better way for us to do would be to hear Mr. Grisdale, who has been here for two or three days, and let the Peace river stand. Perhaps it will quiet down.

Mr. OLIVER .- I have asked several times if the denial which I made of this charge was taken in the Minutes yesterday.

The CHARMAN.—I have to state that the Minutes were not taken yesterday, and that if the hon. member wishes to have this on record he will require to repeat his statement.

Mr. Wilson.—I think it is very fortunate.

The CHAIRMAN.—As an actual fact, nothing was taken down yesterday.

Mr. CLANCY.—It does seem to me that it is only renewing the old fight. I think it was understood yesterday that everything on both sides was to be eliminated of the character to which Mr. Oliver refers.

Mr. WADE-No.

Mr. CLANCY.—Quite so, I understood, true, not by resolution, but I think the good taste and the good sense of this Committee would suggest anything of this kind.

Mr. Davis.--Hear, hear.

Mr. CLANCY.- Now, my hon. friend seems to be very much amused. Surely I have not accused him of having that good taste, and he need not be amused.

Mr. WADE.—That is sarcastic.

Mr. CLANCY.—It was not intended as such. Now, Mr. Oliver has stated, and perhaps he is able to make it good to the Committee: 'I will prove out of Mr. Macoun's own mouth that every word of this is untrue.' Is that not the dignified way to proceed this morning?

Mr. Bell.—Are we not out of order entirely? What is before us?

The CHAIRMAN.—The Peace river country business is before us, unfinished busi-

Mr. Davis.—I would suggest, following out what Mr. Robinson has said, that it would probably lead to the Peace river country matter settling down if you go on with the other business before us. Is there not any other gentleman to be examined?

Mr. McLennan.—No, let this thing be disposed of.

The CHAIRMAN.—It is for the committee to say. The unfinished business before us, unless it is otherwise disposed of, is to hear the evidence of Mr. Macoun.

Mr. W|.: *&. - Well, if there is nothing else but the evidence of Mr. Macoun now, let us go on with the unfinished business. Why not let Mr. Macoun be called to go on with his evidence.

Mr. Gilmour.—I think Mr. Oliver will understand there is no objection to his being allowed to give his reasons at the proper time. I understand that what he objects to is the statement made by Mr. Macoun that he represented those parties that were in the habit of trafficking up through the Peace river country. Mr. Oliver, as I understand, wants merely a contradiction of that statement taken down and placed in the minutes. There is no objection to doing that.

Mr. CLANCY.—But suppose Mr. Macoun does not recede from that position, and still says the statement he made was true. Let us have the evidence rather than

denial.

Mr. GILMOUR.—There would be nothing wrong about that. Still he need not be refused the opportunity of saying that he does not represent those people, and then let it end at that. I would suggest this because I think we ought to acknowledge that we all like sheep have gone astray, and I think that even if the chairman would

acknowledge that with us, and say with the sincerity of countenance that he would say it if he were in another place, it would do us all good and we would begin de novo.

Mr. Wilson.—I do not think there is any unfinished business before us, nothing but to hear Mr. Macoun's evidence. Now, I think we have disposed of everything else that we are discussing.

The CHAIRMAN.—I rule that Mr. Macoun goes on with his evidence.

Mr. Wade.—I want to say something on this matter if the chairman will permit me?

Mr. Wilson.—Do you raise the point of order ?

Mr. WADE. No, I want to know whether the chairman permits me to speak?

Mr. Wilson.—If you are not raising a point of order, I don't see what right you have to speak now.

Mr. WADR.—I will make a motion if necessary in order to put myself right, and I think that the statements made by Mr. Oliver yesterday which were not taken down by the reporter should be repeated and be taken down by the reporter now. That is a motion I make, and I wish to speak to it and state my reasons for making it.

Mr. Wilson.—How could you do that when the chairman has ruled?

Mr. Wade.—The chairman has not ruled anything contrary to that resolution. The resolution before this committee yesterday has been disposed of, and it was that the duties of the reporter were confined to the taking of evidence—

Mr. Ingram.—I rise to a point of order. Mr. Chairman, you have ruled upon this question, and it is no more trouble for Mr. Wade to observe the ruling than the rest of us. The dignity of the chair must be retained and observed, and Mr. Wade wants to observe that as much as any other member of this committee. My point of order is that you have ruled that we proceed with the evidence of Mr. Maoun. That is your ruling as I understand it, Mr. Chairman.

The CHAIRMAN.—Yes.

Mr. Ingram.—If Mr. Wade objects to that ruling he has the alternative of moving that the ruling of the Chair be not sustained and that must be decided without debate.

Mr. Ross (Victoria).—Would it not be better to hear this evidence and after we

have heard it, Mr. Oliver may be in a position to make a statement.

Mr. Wade.—I want to say that I am not out of order, and I have not any idea of being out of order. I am not in conflict with the ruling of the Chair in the slightest; there is no one that has more respect for the ruling of the Chair, on any occasion, than I have, or that is more ready to yield obedience to the Chair. I say that the resolution I propose has nothing to do with the ruling of the Chair, which is that we should go on with the evidence of Mr. Macoun. That is perfectly right, but my resolution is that we shall put on record what has already been stated to the Committee. If Mr. Oliver is content to have that wait until Mr. Macoun has given his evidence, it is a matter of indifference to me, but it is a matter of interest on his part, that is all there is about it.

Mr. OLIVER.—Speaking to the motion of Mr. Wade, I would like to ask the Committee—

Mr. Wilson.—What is the motion ?

Mr. Wade.—I have stated the motion and will state it again; I will put it in writing if required: that what has taken place in this committee previous to this meeting shall be reported as other things have been reported, in full; they failed to report it yesterday for some reason or other. I do not know why. I simply want that to go upon the record.

Mr. INGRAM.—I understand you have given your ruling.

The CHAIRMAN.—I still think that my ruling is wise. I am sure that the Committee will do justice to Mr. Oliver, and that he will have an opportunity to put on record such statement as he wishes to make. But it will simplify matters very much to go on with the evidence, and I bespeak on behalf of the Chairman and the party giving evidence, that there be as little interruption as possible so that we can get through with it. We can discuss the whole matter afterwards.

4 EDWARD VII., A. 1904

Mr. OLIVER.—Why should I not have the chance now, Mr. Chairman. Permit me to say that an unjustifiable insinuation, and an absolute falsehood, in order to make

that insinuation stick, was levelled at me at the previous meeting.

Mr. Wilson.—I rise to a point of order. You have ruled that Mr. Macoun's evidence shall go on. Nobody wants to shut Mr. Oliver out, I do not, and I am willing to satisfy Mr. Oliver after Mr. Macoun is through; he can then make such statements as he wishes. But you have ruled that Mr. Macoun shall go on.

Mr. OLIVER.—I do not propose to lie for one moment under the blackguardly in-

sinuation made by Mr. Macoun-

Some Hon. MEMBERS.—Order.

Mr. OLIVER.—Without the most emphatic protest, and I want the words taken down, Mr. Chairman.

Some Hon. Members.—Withdraw.

Mr. Bell (Pictou).—I rise to a point of order. Mr. Oliver must know, and every one in this Committee must know, that the same rules which govern in the House of Commons prevail here. He knows that we could not use that expression in the House of Commons and he cannot use it here.

Mr. OLIVER.—Because the insinuation made by this man would not have been permitted in the House of Commons; that is my answer.

Mr. Bell.—That is no answer; you would not have been permitted to make that statement in the House of Commons.

Mr. OLIVER.—Every man knows that this man would have been compelled immediately to withdraw his statement in the House of Commons.

Mr. Bell.—The language of Mr. Oliver is out of order and he must apologize and withdraw.

Mr. Ross (Victoria).—I say again that Mr. Oliver will get his opportunity of saying all that he has to say after we have heard this evidence. In the name of all that is good let us not be making such an exhibition of ourselves; let us act like gentlemen; let us hear this man, whatever he has to say on the subject, and I give my word for it that Mr. Oliver will get all the opportunity he wants to make his statement.

Mr. Davis.—What is the rule with reference to taking down evidence anyway.

Mr. OLIVER.—All I wish to say is that I have made my protest as a member of this Committee, and that I submit to the ruling of the Chair.

Mr. SPROULE .- Withdraw.

Mr. OLIVER.—I will withdraw nothing; I have nothing to withdraw.

Mr. Sproule.—You have not?

Mr. OLIVER.—I wish to say—

Some Hon. Members.—Order, order.

The CHAIRMAN.—I certainly think the language which the hon. member made use of was unparliamentary, and cannot be justified, no matter how affronted he may be; we are not sitting in judgment upon its truth or its falsity; the point is that the language is unparliamentary, and I think he should not use the word.

Mr. OLIVER.—I will retire from the Committee rather than withdraw the language

unless the Committee will give me justice.

An Hon. MEMBER.—Order.

Mr. Bell.—I am sure Mr. Oliver will withdraw the unparliamentary expression. Is it not plain to every man on this committee that it is his duty to see that the Chair is sustained and that the proper rules are observed. No matter whether it is Mr. Oliver or anybody else, he must abide by parliamentary rules and obey the decision of the Chairman. Why does Mr. Oliver insist on rights that nobody contends we have?

Mr. OLIVER.—Because Mr. Oliver was insulted yesterday in the Committee by a man who was not called to order; because he was insulted the day before by this man, too. He will not submit, nor will anyman submit.

Some Hon. MEMBERS.—Order.

Mr. OLIVER.—Order, yourself.

Mr. Bell.-Sit down.

Mr. WADE.—That is out of order; you have no business to address a member

personally, you must address him through the Chair.

The CHAIRMAN.—I hope the members will observe the rule; I have given my decision, and if it is wrong, I leave it to the Committee. I think we should hear the evidence of Mr. Macoun without further remark.

Mr. WADE.—Is that resolution in order.

The CHAIRMAN.—Not now.

Mr. INGRAM.—Mr. Oliver has insulted the members of this Committee, and he has refused to withdraw; he cannot expect that we will respect any rights he may have if he does not respect the rights of other members.

Mr. OLIVER.—I do not seem to have any rights here.

Mr. Ingram.—Such language does not become any member of this Committee, and I think Mr. Oliver will withdraw. I say that when a man violates the rules he should withdraw.

Mr. Davis.—I want to ask a question. I understand there is a rule by which all the evidence and everything else is supposed to be taken down in the Committee. How

was it that rule was not carried out.

The CHAIRMAN.—The business yesterday was solely the consideration of that motion in reference to the instructions to be given to the reporter. That motion was lost, and consequently by the very recording of the motion, there was nothing to be recorded. The stenographer is employed, or we have the privilege of engaging one by The discussion yesterday was the authority of the House, to take down evidence. not taking evidence, and virtually there was nothing to record, but the Secretary recorded the motion, and the discussion on the motion, and the result, and that is all that has gone on record yesterday. I think we are in order to proceed to the evidence

Mr. WADE.—In order to make things go smoothly, and to smooth down the ruffled tempers, with the consent of the Committee and the seconder of this resolution, I ask permission to withdraw it.

An Hon. MEMBER. -- Granted.

Mr. Wade.—I am perfectly contented that my resolution is in order, but as it seems to be the disposition of the Committee, we can have the statement of Mr. Macoun now and the fullest opportunity will be given not only for the statements of Mr. Oliver, but of everybody we can get hold of in order to destroy the bad impression that this evidence has given. We have only a little while here before we have to go to another Committee.

The CHAIRMAN.—We will now hear Mr. Macoun.

Mr. Macoun.—Mr. Chairman and Gentlemen, I think for the benefit of the mem bers of the Committee who were not here on the first occasion when I addressed you, I had better point out on the map the four or five different localities, the particular parts of the country, that were described in my report. I have pinned on the map a few coloured pieces of paper to denote particular localities. This green one is Edmonton, the blue one Peace river landing, the point from which every one going into the Peace river country, no matter where he is going, must start—the reddish coloured one is Dunvegan, the white one covers Grande Prairie, and this pink paper covers the Vermilion district. I might say further for the information of those who were not here the other day, that my evidence on that occasion covered this region of the country—the part between the blue and the white paper and that alone. I said that the Peace river valley, as we all know, is a good region—that is the valley itself and reported in rather different terms about the rest of the country. These remarks are simply for the benefit of those who were not present at the first meeting. Now,

4 EDWARD VII., A. 1904

if it is the wish of the committee that I should go on from the point I left off towards the Vermilion country, I will do so.

Mr. Davis.-I am sorry to say I had not the opportunity of listening to Mr. Macoun at the last meeting of the Committee at which he was examined. I have taken the trouble to read the evidence that was taken down by the stenographer, and I would like to get a little more information from Mr. Macoun about that portion of the Peace river district to which he referred, before he concludes his reference in that part of the country. I have taken the trouble to go through his report, and while there are some parts to which nobody can take exception, there are other parts which I think ere a little extreme. I have also gone through the evidence submitted before the Committee, and I find his report does not bear it out, and I would like an explanation

The CHAIRMAN.—I think we had better hear Mr. Macoun's evidence. You will

have an opportunity later of putting any questions.

Mr. Davis.—I would like to know what we are here for if we have not the right to question the witnesses. If I have not the right to question the witnesses of this Committee, then I do not want to stay.

Several Hon. MEMBERS.—Order, order.

Mr. Davis.—I am perfectly in order. Have I the right or not ?

The CHAIRMAN.—The witness has not made a statement to-day yet. Ample opportunity will be given to any gentleman who wishes to ask questions, but perhaps the witness had better go on in his own way and conclude what information he wishes to

give and then any discussion that is desired can take place.

Mr. Davis.—The witness has asked whether it is the wish of the Committee he should go on with that northern part of the Peace river, and discuss what we call the upper Peace river district. He has asked that himself. Now, before he goes on to the northward I wish to ask a question about that part of the country of which he has been talking. This is a portion of Mr. Macoun's evidence that I take exception to. In answer to a question by Mr. Oliver, who was asking about the cattle, the witness said: 'If people consider that four or five months is not too long to winter cattle it would not matter, unless you wish to put up very little hay. But it is almost impossible to make hay in that country even for the few cattle that are there now.' He goes on further and in reply to a question by Mr. Oliver states, 'That is what I say. I don't think it necessary to make it any plainer. If you want it definite it is less suited for cattle as an industry than for grain raising. It is not only difficult to get hay Now, that is the statement that for the winter, but it is difficult to get water.' appears in that gentleman's evidence. Now, I want to take the gentleman's report.

Mr. Sproule.—Ask him any question you want to.

Several Hon. Members.—Order.

The CHAIRMAN.—He is perfectly in order.

Mr. Davis.—I want to show there is a discrepancy between the report of this gentleman and the evidence that he has given here. There is a contradiction between

it and I want him to explain.

Mr. MACOUN.—I would much prefer you would ask the question as to whether there is any discrepancy or not. I am sure there is none at all, but I wish the Committee would allow Mr. Davis to make his point and I will answer it. There is no discrepancy between my evidence and the report; I told the truth on both occa-

By Mr. Davis :

Q. I find here on page 15 'E' of your report with reference to Mr. Bremner 'most of the settlers at Spirit river have a few head of cattle and horses-Mr. Bremner more than a hundred, I was told.' Now, in reference to their being no hay in that part of the country, to feed cattle, I do not know if that was the case, how he would raise cattle and get sufficient hay to keep 100 head on. And the statement in the evidence

is, that he cannot raise cattle because they cannot put up hay at all. 'Sufficient hay must be cut to feed these cattle for more than four months.' How could he get sufficient hay for more than four months if there is no hay to be got?

By Mr. Clancy:

Q. I would suggest that if Mr. Davis points out the discrepancies he do not answer them himself, but that he ask Mr. Macoun to do so ?

A. To answer Mr. Davis's question I would say that when giving evidence before the Committee that the country was less suited for cattle raising than for grain growing; I think I said, if I did not, I say it now, that I meant it was not suited for cattle raising as an industry; that country is spoken of in two ways, as a grazing country, and as a wheat growing country, and when I said it was less suited for cattle raising, than for wheat growing, I meant cattle raising and ranching as an industry, which the people are going there to engage in. I repeat it, it is not fitted for cattle raising as an industry. I say it over and over again that the people can make hay for a few head of cattle anywhere in that country, not only in places which Mr. Davis has quoted, but anywhere. Ordinarily for the few head of cattle that are necessary for mixed farming hay can be made anywhere, but for cattle raising as an industry, it is unsuited for two reasons: First, on account of the difficulty in making hay, and secondly because water is very scarce. As regards Mr. Bremner's place, Mr. Bremner is the only man who is making any attempt at wintering cattle this winter. And the Spirit river is reported to be, and I believe it is, the best district for cattle raising in that region, but not one of the fourteen settlers there, except Mr. Bremner, made any hay; they are paying \$5 apiece to Mr. Bremner to winter their cattle, and they are working for him helping him to make hay with which to winter their own cattle. The reason that Mr. Bremner has hay is that he has a slough, a marsh, where he can make hay. I wish to make it very clear when I speak of the country being unsuited for cattle raising, I mean as an industry, and I say in my report, and I say it again, that anywhere in the Peace river country a farmer may keep a few cattle, and may make hay to feed them.

By Mr. Davis:

Q. I want to ask Mr. Macoun this question: when he refers to it as an industry, what he means? Is it that it is not a range country as we know it in southern Alberta; is it that you canot run catle on the range 12 months in the year, as we do in Alberta?

A. That is right; that is what I say.

Q. I would like to ask whether he does not consider it is a first-class mixed farming country?

A. I do, and I say so in my report.

Q. Well, a moment ago, if I understood Mr. Macoun rightly, he said that no person but Mr. Bremner could make any hay there?

A. That was this year.

Q. But you must not take one year alone into consideration; one swallow does not make a summer and one bad year does not make the true record of the country. I find on page 16 'E' of this report with reference to hay making, here is what the report says: 'When I was at Spirit river, towards the end of August, every one was engaged in hay making: some of the settlers were cutting hay.' That would be on the prairie, 'while others were cutting pea vine, which grows very luxuriantly in open spots between thickets. There are few hay marshes within reach.' Then he goes on: 'In most years upland hay may be obtained anywhere, but this sort of grass cannot be cut to advantage more than two years in succession on the same ground.' I understand from the making of this report there is any amount of hay in this country, so I say this statement made to Mr. Oliver is not warranted by your own report.

Some Hon. Members.—Order.

Mr. Davis.—Very well, this is a very serious matter, it may not be a serious matter for the member for North Grey, but it its a very serious matter for other parties, who are interested in the Peace river country. There have been very serious reductions cast upon the capabilities of the Peace river country, and I want to establish that the gentleman who made them is either mistaken, or else there is something wrong.

By Mr. Oliver:

Q. Might I point out that Mr. Davis asked this question, Mr. Macoun answered it, and Mr. Davis has shown that Mr. Macoun did not answer it correctly. Some Hon. Members.—Order.

By Mr. Davis:

Q. That is what I want to show if you will just allow me a moment.

By Mr. Ingram:

Q. Are we to debate this question ?

Mr. Wilson.—I understand that the questions are to be asked the witness who is to answer; he has answered this question.

The CHAIRMAN.—Quite so.

Mr. Wilson.—He has answered the question—we cannot compel him to answer it as we want.

Mr. Davis.—Well, we will take another way.

Mr. WADE.—It seems to me we must have order, Mr. Chairman.

The CHAIRMAN.—I must request the members to keep order.

Mr. Kidd.—Did we come here to hear Mr. Wade, Mr. Davis or Mr. Macoun ?

The CHAIRMAN.—Mr. Wade professes to speak to a point of order. Let him state it.

Mr. Wade.—I think it would be desirable to ask the witness questions from time to time by any member of the committee who may see fit, and it would be better probably if there would be no discussion until the examination has been taken. But at the same time we must bear this in mind that any member of this committee has a perfect right to make any statement during this examination, or any comment that he sees fit, as a matter of right. I think it would be desirable, notwithstanding that matter of right, that we should go on.

Mr. Robinson (Elgin).—Is the point of order disposed of ?

The CHAIRMAN.—There is no point of order.

Mr. Robinson (Elgin).—I would like to insist upon the witness being examined.

Mr. Clancy.—I want to point out, and I think the Committee will assent to this, how unfortunate it would be to examine the witness here to-day and to make any contradiction of him. Let it be worked out in evidence, and let the Committee be the judges. My contradictions, for instance, or any remarks I may make, it seems to me they would not be in any sense pertinent. Let us draw it out from the mouth of the witness by a series of questions. My opinion may not be worth a fig. I may simply make statements in giving evidence, and I hope the Committee will adhere to health? rules and ask the witness questions.

The CHAIRMAN.—If the gentlemen will refrain from making comments.

Mr. Wilson.—I want to know if the shorthand reporters are taking down this discussion to-day. I see they are working.

The CHARMAN.—Yes. This evidence must go down.

Mr. Wilson.—It was decided by the motion that the discussion was not to go that way.

The CHAIRMAN.—Mr. Davis will kindly not make a speech.

Mr. Davis.—It is not a speech at all; I am merely asking a question. I have pointed out, now I will read this statement in Mr. Macoun's report, and then I will read one of the selections from his evidence and get him to answer the questions.

An Hon. MEMBER.—What page ?

Mr. Davis.—This is page 16 of his report. It is marked on the margin 'hay making.' Now, I don't know whether I understand this report or not. He will set me right if I am wrong. This is what he says:—

'When I was at Spirit river towards the end of August every one was engaged in hay making. Some of the settlers were cutting upland hay while others were cutting

pea vine, which grows very luxuriantly in open spots between thickets.'

I find in the other statement here that he says it is impossible to make hay in that country. That is to be found in his evidence—it is impossible to make hay—and I submit, Mr. Chairman, I want an explanation. I find one thing in his report and another thing in his evidence.

WITNESS.—I will make the explanation—

Mr. Davis.—Which is right, your evidence or the report ?

A. I will make the whole thing clear in a few words, if you will allow me. I will repeat what I said. When I spoke the other day, I was speaking of hay making for grazing as an industry, but when I reported I said everywhere in my report that hay could be made for cattle for settlement. When I said a moment ago that everybody at Spirit river was making hay for Mr. Bremner and he was going to keep the cattle, although I told you in this report that the farmers were making hay for themselves and that is correct. Every one has two, four, six, eight, ten or twelve horses which he must feed in his own barn, and hay of some kind must be made for them. The farmers were running all over the country making hay for their horses.

By Mr. Ross (Victoria)!

Q. What do they keep so many horses for ?

A. They take them into the country, thinking they can use them. The most of the horses are dying. As for cattle, every man's cattle in that country was being wintered by Mr. Bremner, and there is no contradiction between any of these statements in the report and my evidence. I was talking the other day of grazing as an industry, which is very different from keeping a few head of cattle as mixed farming, and while I said that hay could not be made for cattle raising, I was talking of it as an industry.

By Mr. Wade:

- Q. You made a remark a moment ago that most of these horses were dying.
- A. Yes, sir, that is what I said, most of them are dying.
- Q. That most of them were dying? I would like to know if that is within your own knowledge.
 - A. Well, I was told so.
 - Q. You don't know it yourself that they are dying ?
 - A. No, sir, I never saw them die.
 - Q. Only you were told by some one they were dying ?
 - A. Yes.

By Mr. Kendall:

Q. Was it starvation or disease ?

A. It was found horses brought from the outside, from the prairie region, did not succeed well. Most of them I beieve died the first or second year. There is in that country—so the people tell me—practically no horses there brought from the outside that have managed to live for some reason or other. I don't know the reason. The horses on which they depend particularly are a mixed breed between

4 EDWARD VII., A. 1904

Indian horses—small horses—and the bronchos. The horses that the new settlers brought from the outside, from Edmonton, are, I am told, dying.

Q. Is that statement no true also, perhaps to a lesser extent, with regard to Manitoba?

A. It may be—I daresay it is true. I don't know anything about that; I was only answering the questions about the horses.

Q. The native horses do live there, do they ?

A. Yes, very well.

By Mr. Oliver:

Q. How did they happen to get there—to start there?

A. Native horses ?

Q. Yes. Did they germinate in that country? (No answer.)

By Mr. Wade:

- Q. I understand that the horses have to become acclimatized in order to live
- A. Yes, I might point out that although cattle do not run out there during the winter the native horses do. The snow fall is not very deep. As I stated in my report, the Indian horses—many of them—do run out all winter. The horses I used myself last year had been running out three years without any attention.

Q. I want some information. You have told us that the horses which have been

brought in from the outside, you understand, you heard, were dying ?

A. Yes, dying.

Q. That is, that the horses must be acclimatized, or they must be raised from horses that are already there. Is that right?

A. Well, that is what I would understand.

Q. It is true of Manitoba and other regions of the North-west, is it not ?

A. Oh, yes, that is true, certainly.

Q. Then, Mr. Macoun. why was it if that is true of the other sections of Manitoba and the North-west, why was it necessary that you should give prominence to that fact that the horses were dying?

A. I did not give prominence to it.

Q. You stated it in your evidence a moment ago. Do you not think that if that were published to the outside world it would leave the impression that you could not keep horses there?

A. I do not think so, no.

Q. You do not think that it would convey that meaning?

A. I do not think what I said would convey that meaning at all

- Q. How many horses do the settlers keep there on the average? The average settler.
- A. I may point out to Mr. Wade that in the part of the country I am speaking of, there have only been settlements there, except Charles Bremner, who has been there for a good many years, the other settlers have gone in there during the last three or four years only. The old settlement is in the valley. They have taken in whatever horses they could afford, it might be two, four, six, eight or ten, just whatever they could afford to take.
 - Q. How many horses does the average settler have there?

A. Whatever number he could afford.

Q. What had he when you were there last year ?

A. I saw two, four, six or eight.

Q. To what use was he putting those horses?

A. About the time I was there they were not putting them to any use at all, except putting in hay, and that they had done some ploughing in the spring.

Q. You say Mr. Bremner has been there for how long ?

A. I do not know; a great many years.

Q. What sort of farming is he engaged in ?

A. Well, he is hardly a farmer there at all. He is a trader, and married a half-breed woman, and has a large family, and he settled there. He is engaged in freighting and things of that kind, and has about two acres under cultivation.

Q. He is a freighter, and raises that hay for his horses and cattle?

A. Yes.

Q. How long were you in the upper Peace district ?

A. Only about six weeks.

Q. That is including the time you were travelling in and out?

A. No, in the country itself.

Q. What is the extent of this upper Peace country ?

A. It has been estimated by Dr. Dawson at about 23,000,000 acres.

Q. About how many acres of that country were you over ?

A. Well, the number of acres I went over myself would be only what was covered by the straight line I travelled, but I saw practically the whole country.

Q. You say you were on a straight line, from where ?

A. I am sorry, Mr. Wade, you were not here the other day, when I pointed out the route I travelled. I will point it out on the map.

Mr. BLAIN.—I object to this sort of thing; this was all gone over in the last few

days, and it is a repetition.

The CHAIRMAN.—The point is this, I have no rules as to the nature of questions which members of the Committee may ask; if they wish they may ask any question if they put it in a proper manner.

Mr. BLAIN.-I only have to say to Mr. Wade, then, that when he has done, we will

have the same right to ask the same question over again, if we wish.

Mr. WADE.—Certainly.

Mr. Blain .- Very well, I am satisfied if that is understood.

By Mr. Davis:

Q. Now, with reference to Mr. Bremner, Mr. Macoun ?

A. Yes, sir.

Q. Mr. Wade was asking you some questions just now, I understood, that in answer to Mr. Wade——

Mr. Cochrane.—Order; ask the question.

Mr. Davis.—This is the question; I want to ask Mr. Macoun what he meant by this; he says in answer to Mr. Wade a moment ago that Mr. Bremner's farm is two acres, that Mr. Bremner is cultivating two acres, while on page 14 (E) of this report of Mr. Macoun's I find, he says: 'Mr. Charles Bremner has been settled there for many years, but he has confined his farming operations principally to raising cattle, oats and vegetables, as there is no grist mill within reach, and such wheat as has been planted has only been by way of experiment. Part of his wheat was frozen in 1902, and I was told that in 1901 his small crop was harvested. In 1903 barley and wheat had headed on August 2.' And now he goes on to say: 'When I left Spirit river on August 27, Mr. Bremner's grain was riper than any other in the vicinity, barley sixrowed, two-rowed, and hulless, was fit to cut, and the wheat turning yellow; oats were nearly ripe on one or two farms.' Now, as I understand it, witness says in his report there were four different kinds of grain growing on Mr. Bremner's farm, wheat, barley and oats, and that it was on August 27, ripe and fit to cut. If that is the case, I would like to have an explanation how he accounts for the fact that in answering Mr. Wade to-day he stated that only two acres were cultivated?

A. I might explain that I have seen all these grains growing, and many others with them on a quarter of an acre. When I said two acres I wanted to be on the safe

side, but as a matter of fact he has not two acres, but close to two acres.

Q. How could be have all this on two acres? Is he conducting an experimental farm ?

A. Practically that; there is very little seed in this country and the people farming there are farming particularly by way of experiment to see what is to be grown. The difficulty I understand with Mr. Davis seems to be because I told Mr. Wade that Mr. Bremner is only cultivating two acres; he thinks that because I said all these things were grown on the two acres that my statements were not true. many people there grow all that on one quarter of an acre.

Q. I am asking this question for information.

A. You can see all these things growing on a quarter of an acre, just exactly the same.

By Mr. Wade:

Q. Is that the case, that on these two acres all these varieties of stuff are grown?

A. Yes, sir, that is the case.

- Q. From what point did you start to go in ?
- A. I think I had better go over the beginning of my evidence the other day again.

Q. Just tell where wou went in ?

A. From Edmonton to Peace river landing, I went from Peace river landing in this direction to Battle river to this point (indicating on map), I went to Dunvegan and from Dunvegan to Pouce Coupé prairie in British Columbia, and then to Grande Prairie and Spirit river along here, and so on to Lesser Slave lake. The territory covered by my hand is the country I travelled in.

Q. How many acres of ground do you suppose you were in ?

A. I could not tell you that exactly.

Q. Approximately ?

A. I will answer your question in another way, if you will allow me. I said I visited every piece of prairie in the Peace river country.

Q. I am not asking you that ?

A. I cannot tell you how many acres.

Q. Suppose that the country were laid off in squares along your route, how many acres would you have been on ?

A. I can't give you any idea.

Q. Can't you say, approximately ?

A. No. I cannot.

Q. Were you on a million acres?

A. With my feet, do you mean ?

Q. Yes?

A. Certainly not.

- Q. On 500,000 acres ?
- A. I have no idea.

Q. Would you say you were on as many as 500,000 acres ?

A. You know, Mr. Chairman, it is impossible to answer such a question as that;

it is practically impossible.

Q. Some of my friends behind me think this is not pertinent. I think it is to the point to ask exactly how much of this territory this gentleman has seen with his own eyes.

A. I saw practically it all. Of the 23,000,000 acres I saw twenty million acres;

I will put it that way.

Q. You put it that way that you saw twenty million acres. That is, in looking over the extent, taking in your whole range of vision. Do you think that your vision carried over twenty million out of the twenty-three million acres ?

A. I should be willing to put it that way.

Q. How many tests of the soil did you make in that district ?

A. I made tests many times every day.

Q. How many did you make ?

A. I explained to the Committee the other day, Mr. Wade.

Q. You see you are not explaining to the Committee the other day, you are explaining now.

A. That whole country is the same, it does not vary one part of it from the

other.

Mr. Bell.—That is police court work.

Mr. WADE.—I don't think the remarks made by the member for Pictou (Mr. Bell) are in order. I don't want him to stand behind me and say this is police court performance. He is not in a postion to judge whether it is police court performance or Supreme Court, because his experience has been confined to the police court.

Mr. Wilson.—A point of order. We come here from day to day to hear evidence, and another day a gentleman who only comes here occasionally wants to go over the

whole thing again. I think it is unfair to the rest of the Committee.

The CHAIRMAN.—I wish to say that members have a perfect latitude to ask any

question they desire of a witness.

Mr. INGRAM.—Mr. Wade has no more rights than any other member of this Committee. He is a big bully.

Several Hon. Members.—Order, order.

The CHAIRMAN.—Every member of this Committee—

Mr. OLIVER.—Sit down.

Mr. INGRAM.—I will not sit down. You can't put me down.

Mr. WADE.—If the chairman asks me to take my seat I will do so

The CHARMAN.—Every member of this Committee has a perfect right to ask any question in whatever form he pleases, with a view to securing information or evidence from the party giving such evidence. I have in my memory experiences in this Committee in past years when prominent members of the Committee insisted in asking almost the identical questions day after day for several days, and the only way of bringing them to time was to insist upon their standing on their feet and asking the questions until they got tired. Now, you see the latitude given members of this Committee. I do not wish to restrict the members of the Committee if they ask questions.

Mr. Davis.—I would like to go on.

Mr. Wilson.—I would like to say this. That these people who come here only occasionally with the purpose of making a row-

Mr. OLIVER.—Order.

Mr. Wilson.—They come here day after day to waste time.

Mr. OLIVER.—I must ask that the hon, member be compelled to withdraw that statement.

Mr. Wilson.—You will have a nice time in getting me to withdraw it.

Mr. OLIVER.—I must claim the same latitude.

The CHAIRMAN.—I must ask the hon, gentleman to withdraw that statement he has just made.

Mr. Wilson.—What statement ?

The CHAIRMAN.—The statement that hon, members come here to make a row.

Mr. Wilson.—I don't wish to be offensive. I have taken some part in this Committee for a good many years, and have tried always to conduct myself in a way not offensive, and if my hon. friend feels very much hurt-even if it were true-

Mr. WADE.—Very much.

Mr. Wilson.—at the statement, I will withdraw it.

Mr. McLennan.—One word. Mr. Wade has been asking questions, and I declare to you that I have gained more definite information from the statements of the witness, from the manner in which Mr. Wade was bringing out the evidence, than from his whole evidence of the other day.

Mr. OLIVER.—Hear, hear.

4 EDWARD VII., A. 1904

Mr. Davis.—I want to take up that matter and ask some questions with reference tc horses. Mr. Macoun, will you answer this question. A statement has been made with reference to horses which is a very serious question. You have made the statement that horses die out there, and I wish to ask you a question. You have made the statement that horses die in the upper Peace river country. Can you give any reason why horses taken into that country die ? Have you heard settlers explain why they die, or have you heard that they die in other parts of Manitoba and the Territories ?

- Q. You have made the statement that the horses die in the Peace river country. I want to know if you can give any reason why they die? Have you heard why they die, or what killed them-killed by fever, or club, or hail storms, or what was the
- A. No, I can give you no reason. The settlers asked me particularly if I could give them a reason. I am not a farmer, and don't know anything about horses. I simply made the statement as a statement of facts. It certainly not from want of
- Q. That is satisfactory. From your own personal knowledge do you knowhow many horses did you see die ?

A. Not one.

Mr. Oliver.—Ask him what proportion—he doesn't know as a matter of fact of his own knowledge of their dying.

A. That's right.

By Mr. Davis:

Q. It is merely rumour. I find on page 15 'E' of your report a statement which I do not understand and would like explained. In alluding to the fact that you received some letters from settlers you make this statement and conclude from the letter. Here is a quotation from the letter received: 'We are in a bad way here. Little hay and less grain. Hard frost on September 4. We were encamped at Saddle Mountain on our way to Grande Prairie. There was about an inch of ice in our teakettle. Rained on the 5th, snowed on the 6th and 7th. Rained every day until the 12th, then it snowed again. It was a terrible week. On the 14th (at Spirit river) we had twelve degrees of frost. All was over with the grain. The crop at Burnt river still stands or lies flat. The continued rain and the dilly-dallying of the halfbreeds has lost my crop for me.' I find that at the end of that: 'It was ripe before the spell of bad weather came on.'

A. That is right.

Q. I want to know the object of putting that in the report. If the country is capable of producing grain and the climate of ripening it, and a storm came along and flattened the grain down, I would like to know why that is embodied in the report ?

A: I embodied it in the report for the very reason that I embodied Mr. Bremner's report, which says that the whole area at Spirit river is destroyed. I wished to make the report as complete as I could. When I was there I asked every settler to write to me, and the letters I received I included in the report, every one of them. This letter was from Rev. Mr. Simpson, Presbyterian missionary, and tells me what his crop was like, and at the end of the report Mr. Bremner tells me exactly the same reason: 'The rainy weather which we were having when you left continued through September and October, giving the grain no opportunity to ripen. It was all frozen and useless for anything but green feed, with the exception of some of the barley which, though frozen, will do for seed.' Rev. Mr. Simpson, who wrote that letter, said his grain was ripe before the bad weather came on. We must take his statement as being true. Bremner, who was in the same place, however, and whose grain I thought was nearest ripe before I left, his grain was destroyed. My object in put-

ting all the correspondence in the report was that I did not want anybody to say that I had received the letter and had not made use of it.

By Mr Oliver:

Q. Did you get a letter from Mr. Brick ?

A. No.

Q. Did you ask for any ?

A. Yes, from both Allie and Fred.

By Mr. Davis:

Q. I find on page 24 'E' of this report, where it is marked 'hail' on the margin, that the witness said: 'I had been told that hailstorms were unknown in the Peace river country, but on August 19 we had two thunder storms accompanied by hail, either of which would have done damage to standing grain. One occurred at noon; the other about seven o'clock in the evening. The hail was small, but the wind which accompanied the evening storm could be described as nothing less than a tornado.' Now, mark you here. 'These storms were local and we saw no other hail during the summer.' Now, here's a fact I want you to explain more particularly. 'Burnt logs in various parts of the country were often seen spotted where hail had fallen upon them, so that such storms cannot be infrequent.'

I think the witness is a very observant gentleman. He observes spots on logs. I want an explanation of that, how he comes to use his judgment in that way, because he sees spots on logs, and therefore concludes that hailstorms are frequent in

that country?

Several Hon. Members.—Order.

A. The easiest way is to let the members ask the questions. I will answer every one of them. This point is one that everybody who has travelled through burnt country knows to be a fact. After a fire logs fall to the ground and lie there covered with charcoal, and it takes a very small thing in the way of hail or anything else to make a mark on the charcoal wherever it hits it. Every spot is marked on the log, and going through the country any one who has lived in the woods all his life as I have can tell the marks of last year, or the year before, or three or four years before. For this year I saw no hail, except or the storms at the points I have mentioned. But in all parts of the country going through the brule for hundreds of miles, I found logs plainly marked by the falling hail. If Mr. Davis has never made that observation I am sorry for him, but I have made it. I have travelled from Labrador on the east to Alaska on the west, and any one going through the burnt woods would find marks of hail-stones on the fallen logs.

Q. My object in bringing this up was the fact that you have been accused of making a biased report, and I want you to have an opportunity of clearing that away

if you can possibly do so.

A. Thank you.

Q. Now, the fact of your going through this country to report upon it, it appears to me, as I understand it, that you were sent to report, in the first place, on what you saw with reference to the soil and climate and conditions, &c. The fact of your going through that country and reporting that you had seen marks on the logs which would indicate that there were hailstorms in that country would have a tendency to lead gentlemen like the member for Alberta to come to the conclusion that it was wrong, in other words, that you had gone out of your way to make a bad report.

The CHAIRMAN.—No.

Mr. Sproule.—He says he was merely told that there were hailstorms, and gave his evidence.

Mr. Davis.—I suppose then that if this gentleman saw spots on a toad's back, he would come to the conclusion that it was hailstorms made them and put that in his report?

2-41

Several Hon. Members.—Order, order.

Q. Now, I would like to ask the witness another question with reference to the statement made a while ago by me, that the witness had been accused of making a biased report; I want to ask him this question: when he went to that country to examine it and to make a report upon it, was he supposed to report from his own observation, or was he to go through all the reports that had been made by every gentleman who had visited that country for the last twenty years; was he to report himself, or was he instructed to go and hunt up every report made by everybody else and eliminate everything that was detrimental to the country.

An Hon. MEMBER.—What is the question ?

Q. I am asking the witness whether he was to report himself, or was he requested to hunt up every report made by any one else and eliminate everything that was found detrimental.

A. For the benefit of the members who were not here the other day, as well as those who were here, I will tell them exactly what I went there to do and what the nature of the report I was asked to make on the Peace river country by Dr. Bell, who is director of the department, was.

By Mr. Wilson:

Q. The whole Peace river country or the upper.

A. The Peace river country. My work was intended to be confined to the upper part of the country, but when I found I could go on to Vermilion, it was too good a chance to miss to go and see that part of the country.

By Mr. Wade:

Q. What was it to cover ?

A. 'The agricultural and other resources of the Peace river country,' those were the words. In order to make that report—I will answer Mr. Davis' question specially -I first examined the country, and then I read every line I could find on the Peacs river country, and in this report I have published, as I said the other day, every single good word that I could find about the Peace river country. I have not omitted one single word of good that I could find about the Peace river country, and I put in no more bad than are found in these two statements about the northern plateau; that I found it necessary to put in. Mr. Ogilvie condemned that country absolutely in 1891, and when members of this Committee condemn me for making this bad report they should remember that I am simply corroborating everything that every one else has said about that country, Mr. Oliver, or anything else to the contrary notwithstanding, as they say in the Civil Service Act. No man can produce a single line about the Peace river country that I talked about the other day which is at variance with what I said in that report, nor can a witness be brought that can contradict it. I put in every good word that I could find about that country, and there are only these two quotations from Mr. Ogilvie and Sommers Somerset, and I used those because I felt that the statement of mine was too important to stand alone, and I wanted it to be seen that Mr. Ogilvie, who was asked by the government to make a special report in 1891, reported very much more strongly against it than I did, because he said it is unfit for settlement. I, on the contrary, say there are very few acres in that vast country that are not fit for settlement. I say that that whole country practically is well suited for settlement, but not for the growth of wheat or as a grazing country for commercial purposes. That is the whole thing, but these gentlemen are not satisfied with taking what good I say about the country; they say I am trying to belittle it, whereas the worst I put in that report was good compared with what has been said about it, and everything in the report is good except those two quotations.

Mr. OLIVER.—Before this goes out of the minds of the members of this Committee, will it be the privilege of members of the Committee to produce, at a future time, evidence to the contrary by men of equally good standing as Mr. Macoun?

The CHAIRMAN.—Certainly.

A. Mr. Oliver has said that he could prove out of my own mouth that this report is not correct, that he will prove out of my own mouth that I wrote deliberately a misleading report.

By Mr. Oliver :

Q. I would wish to have this kept in mind, all I ask from the Committee is the opportunity.

By Mr. Maclaren (Huntingdon):

Q. I have attended all these meetings and paid very strict attention to what Mr. Macoun has said. There is one point in connection with it-I don't know very much about farming, but I know a little, and he has stated here repeatedly to the Committee that he travelled over a large extent of country and that he found, I think, from two to four inches of vegetable soil on the top of an impervious blue clay. I am anxious to know to what extent of country that statement refers, because to my mind if there is only from two to four inches of vegetable soil on the top of an impervious blue clay, then we are losing our time discussing that country, because any person of common sense knows that the country that has only that small amount of soil on a bed of impervious blue clay is not fit for agricultural purposes. I would like to ask the witness to what extent of country that remark applies ?

A. I am very glad to answer that question, because the newspapers have not correctly understood my statement on that point. As a matter of fact, I was speaking of a part of the Spirit river country at that time. There are 40,000 acres in the Spirit river country, and I said that 10,000 of it was good, and that would leave about 30.000 acres with two to four inches of soil. I also said that Mr. Monkman, who farms on Grande Prairie, has a very shallow soil, and I pointed out in my report that it would not be fair to judge that country by this piece of land at Mr. Monkman's place, because he chose a place where the soil was shallow. On the great bulk of the Grande Prairie the soil is considerably deeper. I said that I had not seen any deeper than five inches, but the people told me that it was deeper. I frequently tried the depth of the soil, and I did not find a place where it was more than five inches.

Q. Of what extent of country are you speaking now? We do not want to injure that country, and I want to ask you what extent of country does your evidence so far cover ?

A. All the upper Peace river country ?

A. It is supposed to have covered 21,000,000 acres, although as I stated, that part of it south towards the Athabaska river that is wooded and brule country I did not examine at all, but it is supposed to have covered all that territory usually spoken of as the Peace river.

Q. Then it is only a small proportion of it that has only from two to four inches of soil ?

A. Certainly, a very small proportion.

By Mr. Oliver:

Q. Would Mr. Maclaren pardon me if I read what Mr. Macoun told the Committee; I have taken this extract from his evidence. In answer to me he said, not only was it an absolutely impervious blue clay-

Mr. MACLAREN.—What was previous to that ? I was asking him about the general prairie country—the 700,000 acres of prairie.

A. That is right.

By Mr. Oliver:

Q. You understand that refers to the whole 700,000, that is the understanding he gave me and he gave to the Committee: 'They could not plough on the Grande Prairie before June 1.' 'Q. Is the subsoil the same in that country and in the Peace river?' 'A. Yes.' 'Q. That is the character of the soil of that country?' and he says, 'the whole of the upper country.' On page 42, his answer is, 'Q. Are you satisfied that blue clay is underlying the whole country?' 'A. Yes, I am because it has been my custom to always to walk through the country' and farther down, 'It underlies the whole country as far as Athabaska river.' Also, 'I went north nearly to Battle river last year, I travelled 280 miles on the river, or 180 miles in a straight line and didn't see the end.' On page 44, I ask, 'There is an intervening soil between the top soil and the blue clay in the Territories?' and his answer is, 'Certainly.'

A. That is Manitoba and the Territories.

Q. Yes. Then I ask: 'There is not in the Peace river,' and he answers: 'I know

there is not.'

I ask him: 'Did you examine the high ground for the soil or did you find it about the same depth on the high ground and the low ground?' and he says, 'I examined it on the high ground.' This is speaking of the Grande Prairie: 'In a few places I found there was a few inches of gravel between the top soil and the clay; it is only in some cases, otherwise the soil is very much the same on the low ground, only shallower.' He is so very emphatic. My point is the same as Mr. Maclaren's, and I was wishing to bring out. He says in his answer on page 47 that the roots of the trees and grasses do not penetrate the blue clay; they spread out on the top of the clay as though they were on rock.

A. That is right, Mr. Oliver's explanation is exactly correct; that is what I said.

Q. I got the impression that there was a prairie of 700,000 acres or 750,000 acres, and that this peculiarity of soil spoken of by Mr. Macoun referred to the whole of that prairie. That is the impression I received; I may have been wrong. I have this to say for Mr. Macoun: He several times tried to get to the Vermilion country; he was asked several times about that country and seemed to be very anxious to get up there, but we would not let him get up there, because there was too much scrap about the Peace river country, and he did not have an opportunity, as I understood he was about to do, to say good things about the Peace river country. I certainly got the impression that he had examined the 700,000 acres, and that the soil was of that nature all over.

Q. I am not a lawyer, and if we pick out answers sometimes we get a very wrong

impression, and it is fair that you should make an explanation?

A. What Mr. Oliver read is exactly correct; I did not mention about the depth.

Q. The point in asking you the question to-day is, how much of that country is

referred to. You said 40,000 acres ?

A. You asked me how much of the soil was only two to four inches thick. I said it referred to part of that 40,000 acres at Spirit river, and a small part at Grande Prairie, that is all. But as you all know, I was answering many questions the other day; one gentleman would ask about a small part of the country and others asked about other parts, and I would answer about that small particular place and others might think I covered the whole country. The report itself covers that point and is correct. In the northern part the soil is of considerable depth—six inches to a foot or so. At Spirit river only a small part, 10,000 acres, is good soil. The other 30,000 acres is very shallow soil and Grande Prairie, although better, its soil is shallow. In my report I said that it is four to six inches, but I found at Saskatoon lake, the only point where farming has been attempted, soil only about three inches. I say it is a bad place to begin farming.

Q. Do you still insist that there is nothing intervening between the soil and the

blue clay on the Grande Prairie?

A. Yes. Dr. Dawson made a geological survey of it, especially the upper country, and examined the soil from a geological point of view, and he states in so many words that the whole 21,000,000 or 23,000,000 acres is underlaid by a fine silt, which is of the nature of boulder clay, absolutely impervious to moisture of any kind, and except on the knolls of the Grande Prairie I do not know that there is anything between the loam and the blue clay, nothing of the nature of soil, except on some of the knolls there was some gravel between the loam and the blue clay, and under the gravel there was always still the clay.

By Mr. Davis:

Q. You don't agree with Dr. Dawson with regard to the soil on the Grande

A. I do, except as regards the depth of it—in every other respect, except the

depth.

- Q. I find in your report here you make this statement with regard to the Grande Prairie, the soil of the Grand Prairie: 'The soil of Grand Prairie is almost everywhere exceedingly fertile'—that is one page 21 'E' of your report—'and is often, for miles together, of deep, rich loam, which it would be impossible to surpass in excellence.'
 - A. That is Dr. Dawson's view. I am quoting what Dr. Dawson said.

Q. I ask you the question, you do not agree with Dr. Dawson ?

- A. Except as regards the depth. I agree on everything else. I doubt if Dr. Dawson dug very many holes in the country. I talked with his assistant the other day and he said he did not dig anywhere..
 - Q. Other people might know that Dr. Dawson dug more holes than you did?

 A. They might have that opinion; they are quite welcome to it if they have it.
- Q. With reference to the statement you made a while ago, I would like to ask the question—I ask if it was necessary for you to go through all the reports made on that country for twenty years to eliminate everything you thought unnecessary. You said that you had taken everything that was good?

A. Everything I could find.

Q. Still on page 19 'E' I find you have in place of taking everything good, you put in a part of Dr. Dawson's report and comment on it, and claim that the country is not what Dr. Dawson would lead the public to think it was as far as the soil is con-

cerned. Why did you go out of your way to do that ?

A. I did not go out of my way. I traversed the same country and did everything that Dr. Dawson did. I followed his trail and camped on his camps, and although I am a quick traveller I could not travel as quickly as Dr. Dawson did. He did not walk over that country, he rode on horseback, and I have been perfectly fair. I have given his statement, and then I give my own statement. When Dr. Dawson covered the country, it was covered with forest. It is now brulé. I do not see anything unfair in that. I quoted his statement to be perfectly fair.

By Mr. Oliver :

Q. Then you contradict it ?

A. If I had not done that it would be open for you to say, 'this man contradicts your statement.' I much prefer if a man differs from me to put his statement side by side with mine.

Q. The witness said repeatedly that all the authorities agreed with him on this subject, and in his own report said that one of the highest authorities disagreed with him.

A. We do not disagree on this point.

Mr. Blain.—The witness must have some measure of fair-play. He says that: 'While I cannot agree with Dr. Dawson in saying that the soil is 'deep' or that it

cannot be surpassed in excellence, it is true that a very small proportion of the surface is unfavourable for cultivation. That it is not equally good will be seen from the description that follows, but if the climate proves satisfactory there is practically none of the Grande Prairie that is unsuited for agriculture.' This witness' statement, when compared with Dr. Dawson's, agrees with his in many respects, not altogether.

Mr. OLIVER.—Might I point out that on the statement which the witness gave to this Committee the other day there is no possibility of the climate of the Grande Prairie ever being suitable, because of the conditions which he stated pertain in re-

gard to the soil.

Mr. Ingram.—I have a report here of the North-west mounted police, and in this C. H. West, inspector of the Peace river sub-district, refers to the Grande Prairie country and this is what he says—

Mr. WADE.—You cannot read that now.

Mr. Ingram.—I am asking if this is true: 'A good deal of excitement seems to have existed about the Grande Prairie country last summer and winter, and several came in to look through the country, but as they did not find it the paradise they expected, most of them returned, and I hear, condemned it as being no good. It was much the same with the overland travellers to the Klondike a few years ago, only on a much smaller scale. They were not prepared to encounter hardships, to work hard for success or pay hard prices for the necessaries of life. It is no use anybody coming in here with the present difficulties of transport and high prices, without funds. The soil is fairly good and in places near Lesser Slave lake, very good, and it only awaits the hand of the hardy pioneer to turn it into a paying wheat-producing country.'

Mr. OLIVER.—Whose report is that ?

Mr. INGRAM.—Mr. C. H. West's. I want to draw your attention to another phase—

Mr. WADE.—Ask the witness what he says about that.

The Witness.—I agree entirely with what Mr. West has said. As I emphasized the other day, every single person who went to the Grande Prairie to farm, left it. Not a single one of them remained there.

By Mr. Wade:

Q. Do you want to make it clear that every one went out é

A. I am pleased to make it so.

By Mr. Oliver:

Q. Who were the people who went to the Grande Prairie; how many of them went there, and why did they leave?

By Mr. Ingram:

Q. Then I draw your attention to another thing. We were speaking awhile ago about the hay crops, frost and so on. 'Last winter was comparatively mild, with less snow than usual, the spring was cold and dry, and then we had almost continual rain, so that the hay crop was a poor one and several parties here are going to be completely out of hay long before next year's feeding time, but some of them are making the best of a bad job, and are now cutting hay on the ice.'

Mr. Davis.-I have done that on the Saskatchewan.

By Mr. Ingram:

Q. These things to us are very peculiar and probably an explanation would be quite in order and quite right. I understood you to say there was some difficulty about hay raising in that particular section of the country caused by wet or dry seasons or frost. Is that statement in keeping with this statement I have just read?

A. I do not know exactly to what part of the country Inspector West refers there ?

Q. He is speaking about the Peace river sub-district—whatever he means by that. I find here in comparing the two reports there are some much harder statements in this report than in any statement Mr. Macoun has made?

A. Oh, certainly there is in every report.

Mr. OLIVER.—You do not know to what part his report applies ?

Mr. INGRAM.—The Lesser Slave district.

Mr. OLIVER.—But that has nothing to do with the country that Mr. Macoun refers to ?

Mr. Ingram.—Did you not in your report give some explanation of the Lesser Slave district?

Mr. OLIVER.—Has your report on the Lesser Slave district any direct bearing on the Peace river district?

By Mr. Ingram:

Q. Did you not the other day mention the Lesser Slave lake ?

A. I did as having gone there on the way home. I mentioned what I found there in the way of grain.

By Mr. Oliver:

Q. Is the Lesser Slave district to be included in the Peace river district, either agriculturally or otherwise?

A. It is a matter entirely for each person to decide.

Q. Did you include it ?

A. I did, yes.

By Mr. Ingram :

Q. You have not read this report ?

A. No, I never saw it.

Q. Is there anything unreasonable in your judgment or detrimental to the country when you explain about frost having occurred in certain districts and not in other places?

A. I should not consider it so.

By Mr. Oliver:

Q. I asked him a direct question. How many people went to Grande Prairie

in your knowledge, who were they, and why did they leave ?

A. As regards the numbers who went there I can give no statement. There was a good many people went there, because all along the trail I saw reapers, mowers, harrows, ploughs, and all such implements as farmers would take in with them.

Q. What trail?

A. The trail between Spirit river and on Grande Prairie. I might say that I met a number of these people myself.

Q. Who were they?

- A. Mr. Grant from Edmonton, for one; his son-in-law—I think his name was Nutt; a man from Nebraska with nine children—I do not know what his name was—a man with a wife and nine children, living in a tent, getting out of the country as fast as they could. I do not think I met more myself than these three.
 - Q. Do you know of any others ?

A. No, I do not know of any others.

Q. Why were they leaving?

A. I said in my report the reasons. They did not tell me directly, except that they found the country different from what they thought it was.

4 EDWARD VII., A. 1904

Q. These were the reasons they left. Were they the right reasons?

A. I do not know the reasons definitely.

Q. I submit it is not fair that these gentlemen should be allowed to throw out slurs that these people left because the country was not good enough, when the reasons might have been private to themselves in regard to their business, which I know to be the case in regard to this man Grant.

By Mr. Blain:

Q. You made a statement about a man with 150 head of cattle?

A. The statement I made at that time was that I had met a gentleman going in from Edmonton, one man or two, with 150 head of cattle, and that no attempt had been made to prepare hay for these cattle, and it would be interesting to know how those cattle got through the winter, or something of that kind.

By Mr. Oliver:

Q. Do you know who the man was ?

A. No, I do not know.

Q. Was it Ward?

A. No, it might have been Ward's partner; I do not know his name.

The Committee then adjourned.

Having read over the above transcript of my evidence, I find the same to be correct.

JAMES M. MACOUN.

House of Commons, Committee Room 32, Tuesday, April 26, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, Chairman, presiding.

Mr. James Macoun, Naturalist of the Geological Survey, was present to continue his evidence.

The CHAIRMAN.—The first order of business is to hear the continuation of Mr. Macoun's evidence.

Mr. Maclaren (Huntingdon).—May I make a suggestion before Mr. Macoun resumes. It is some time since Mr. Macoun gave his original evidence, and the majority of the members of this Committee who are not especially interested in what he was saying have but a very hazy idea as to what he really did say. If it would not take up too much time, I would like to hear the original statement Mr. Macoun read—l do not mean the discussion—but the main part of his statement relating to the Peace river country. If that were done we would then have a better idea regarding the questions that may be asked by those who are more particularly interested in that region.

Mr. Wilson.—Every member of this Committee, I suppose, has had the opportunity I suppose to come to this room if he likes and hear the evidence. I do not see

why we should take up the time of the Committee by reading over the evidence for the benefit of those who were not here.

Mr. Maclaren.—My principal reason for making the request is that certain questions have been asked Mr. Macoun by those who were examining him. They say 'You said so and so,' and Mr. Macoun says: 'No, I did not say that at all, I said something else,' and then the row begins. I think it would be a good idea if Mr. Macoun's original statement were read over.

The CHAIRMAN.—There is no motion, therefore we must proceed.

Mr. Wade.—I think it would be well if we had a few typewritten copies of the evidence given by Mr. Macoun struck off so that the members can use them.

The CHAIRMAN.—Do you move to that effect ?

Mr. Wade.—I move that half a dozen typewritten copies of Mr. Macoun's evidence be made.

Motion carried.

Mr. OLIVER.—As there seems to be some question as to what Mr. Macoun did say, it would be very desirable that the shorthand notes of his evidence should be transcribed and laid on the table for ready reference at any stage of the proceedings. Are those notes available for to-day's proceedings?

The CHAIRMAN.—They are available.

By Mr. Wilson:

Q. I would like to ask Mr. Macoun if he has revised his evidence?

A. I have corrected it and made verbal changes; I am through with it.

Mr. Sproule.—It would be wise to leave this matter in abeyance until we have these typewritten copies suggested by Mr. Wade, struck off.

The CHAIRMAN.—You had better allow Mr. Macoun go on and finish his evidence.

Questions can then be put to him when he is through.

Mr. Macoun.—Mr. Chairman and Gentlemen, to repeat again for the benefit of the members of the Committee who were not here at the last meeting, I will point out the districts indicated by the coloured papers on the map. The green piece of paper covers Edmonton, the blue paper is at Peace river landing, the point at which you reach the Peace river in going to the north. The white paper is Dunvegan, and the reddish brown paper is on the Grande Prairie. Then the pink paper to the north covers Vermilion and the district about it. Do I understand, Mr. Chairman, that I am to go on now to describe my trip to the north.

Mr. Davis.—We have not got through with the other part yet.

The CHAIRMAN.—You had better go on.

Mr. Davis.—I want some further information.

The CHAIRMAN.—You will get it by and by.

Mr. Davis.—I want to ask some questions.

The CHAIRMAN.—You will have ample opportunity.

Mr. Ross (Ontario).-Mr. Macoun can go on with his evidence.

Mr. Davis.—I asked the witness the last day we were here about the selections that he had taken from the reports of other explorers and embodied in his report. If he had selected the best portions of those reports or the worst portions—that is, the portions that, to use a common expression, gave the country a black eye, and he replied that he had picked out everything good that he could find about the country. Now, I want to ask the witness some questions in regard to that. I have here a report made by Mr. Macoun, in 1875-76-77. I have also the report of Prof. Dawson, made in 1879-1880. I will hand the witness these reports and I will ask him if he cannot find something better in it.

Mr. MACOUN.-All right.

Mr. Davis,—This is Prof. Geo. M. Dawson's report on Buffalo creek. I suppose Mr. Macoun, Buffalo creek is in the territory you spoke of ?

A. I never heard of it before.

- Q. You never heard of it?
- A. No.
- Q. That is very strange.
- A. I don't know where it is, sir.
- Q. You apparently then did?
- A. Might I ask you where it is? It is reported here, is it not in British Columbia ?
 - Q. If the Committee will allow me, I am asking the question ?
 - A. Well, I don't know where it is, sir.
- Q. Then I want to ask you about some places that you do understand and know about. I suppose you know where 'Pouce Coupé' prairie is ?

 A. Yes, sir, I was there this summer.

 - Q. Now I find in Mr. Dawson's report:

'This is the first prairie country we have seen and it contrasts very pleasantly with the dense forest through which for the most part we had been groping our way. The grass in some places is as high as the horses' bellies and is already ripe and turning brown at the tops. The hillsides are gay with summer flowers, Castilleiga, Astor, and Solidago.' That is on August 12.

Mr. Blain.—I wish to object to this at the start. If this hon, gentleman is going to take up the time of the Committee by reading from Dr. Dawson's report, we had better have an early understanding on the question.

Mr. Macoun.—I think I could answer this question very quickly and save an awful lot of time.

Mr. Davis.-If Mr. Blain will allow me.

Mr. Blain.—I want the ruling of the Chair if it is to be the proceedings that each member can get up and read a report and ask Mr. Macoun questions ?

The CHAIRMAN.—Oh, yes, most assuredly. it is the privilege of any member of the Committee to ask information by way of questions from the witness. He might base his question on any report.

Mr. Blain.—Very well, then we have that as an understanding.

Mr. Davis.—I am basing my question on the fact, as I said before, that the last time we met here the witness said that he had said everything he possibly could that was good of the country, or at least had taken it out of other reports. Now, here is something I have not seen. It may be in the report, but I have not seen it.

Mr. WADE.—What is the page ?

Mr. Davis.—That is Dr. Dawson's report with reference to Pouce Coupé.

Mr. Macoun.—It is referred to at page 18 of my report.

Mr. Robinson.—I understood we came here to hear Mr. Macoun's report, not some one else's.

The CHAIRMAN.—I must say again that I think the hon, member is in order. If he will curtail his remarks and ask his questions pointedly, we would prefer it and perhaps it would expedite business. At the same time I cannot but see that he is in order, and if Mr. Macoun has the information I am sure he is prepared to give it.

Mr. Macoun.—Certainly, I will answer it very quickly. What Dr. Dawson states is this. He came from British Columbia through the Pine river pass, and when he came to the Pouce Goupé prairie he said it was the finest prairie he ever saw. As I said the other day the only reason I referred to Pouce Coupé in my report was that it was very much talked of. That prairie is in British Columbia, which did not properly come within the scope of my work, but so many people said that Pouce Coupé was a fine piece of country that I went to see it, although as I say it is in British Columbia.

By Mr. Wade:

Q. While it is in British Columbia, does it really not belong to the Dominion ? A. No, British Columbia has complete control of the lands there.

Q. Were not these lands given over by British Columbia to the Dominion ? I understand they were at the time of the building of the C.P.R. ?

Mr. Sproule.—Only the railway lands.

Mr. KENDALL.—I can throw some light upon that. If you go over to the Interior Department, you will find there are between three and four million acres from which the Dominion government have yet to choose.

Mr. WADE.—In that section? That is what I understood.

Mr. SPROULE.—But not elsewhere.

Mr. Wade.—But they have the power of selecting an area in this locality?

Mr. Sproule.—Yes.

Mr. WADE.—Then it is fairly lands of the Dominion ?

Mr. Macoun.—I want to comment on Mr. Davis' remarks by saying that I have included in my report the best that could be said of the country, and in regard to the Pouce Coupe country the words quoted are those of Dr. Dawson.

By Mr. Wade:

Q. Whereabouts is it?

A. At the bottom of page 18, dealing with climate, half-breeds, and old settlers living in the Peace river valley believe that the climate of the Peace Coupé prairis region is much warmer in both winter and summer than at either Spirit river or Grande Prairie, and so far as can be judged from one season there seems to be foundation for this belief.' I will go on and read my reasons if you wish, but as I said, is my opinion of the region that the Pouce Coupe prairie is a better piece of country than the Grande Prairie and the rest of the upper plateau. I think it entirely agrees with what Dr. Dawson has said.

By Mr. Oliver:

Q. Might I ask why you stated that the land in this Pouce Coupé prairie would

necessarily have to be purchased ?

A. Well, as I understand the British Columbia land laws, there is no homesteading there, and if you, I or anybody else wanted a piece of the Pouce Coupé prairie you would have to purchase from the authorities at Victoria. I was saying to the homesteaders who thought of homesteading that they could not go and squat on that land and think that they could get it when it was subdivided, because in British Columbia in order to get the land it must be purchased. I was afraid of the possibility that if the people went to the Pouce Coupé prairie and settled on the land they would have no claim whatever to it; it would need to be legally purchased from the British Columbia Government. Somebody might come along and buy in the Pouce Coupe prairie from the Government of British Columbia, and the poor squatter would be left out in the cold.

Q. In telling them that fact you wanted to 'guide' the settlers away ?

A. Not at all. I would 'guide' them to Victoria or to Regina or wherever they wanted to go, but if they wished to go to Pouce Coupé, it was to the British Columbia Government, and not the Dominon Government to whom they must apply.

Q. You understand from what Dr. Kendall says that you were mistaken, there-

fore your information was not correct and your guidance was not correct ?

A. It is correct as far as that piece of land is concerned. If you or I or any of us wished to get 1,000 acres of the Pouce Coupé prairie we would have to go to Victoria, not to Ottawa-that is correct, sir.

Q. Well, according to the statement of Dr. Kendall, who seems to have practical knowledge, I would point out to the Committee that the statement made by Mr. Macoun

in this connection is not correct ?

A. Not at all. That land may be yet taken by the Dominion Government, but at present, at this moment, it belongs to the British Columbia Government. The Dominion Government may later on, after surveys have been made, decide to take that land, but just now it belongs to British Columbia.

Mr. Broder.—I understand the Dominion Government have the right to choose so many million acres. They have not made their choice, consequently all this land is still under the control of the British Columbia Government.

Mr. Wade.—That is one of the misapprehensions created by this report. There are a great many things stated as facts which have led to a wrong impression, just as this has. The statement made in connection with Pouce Coupé would lead to the impression that the Dominion Government have nothing to do with the land, whereas they have the right to go and make a selection.

Mr. Broder.—They have not done it. If I have the right to go and select a hundred

acres of land, you say that it means I have it in my possession to-day?

Mr. Wade.—Not necessarily. Mr. Macoun, I started to ask you a few questions the other day, and I would like with the consent of the Committee to be allowed to follow them up. I want to find out from you on this map the exact route you took, and the distance which you travelled?

Mr. Sproule.—Is that not getting right back to what we are trying to avoid ?

Mr. WADE.—What is that ?

Mr. Sproule.—The portion of the country he has spoken of and about which you moved that several typewritten copies of his evidence be placed in our hands. It seems to me you are going to discredit your own motion.

Mr. WADE.—Not at all.

Mr. Sproule.—If we go on with this evidence now there will be no need of type-

written copies of the evidence he has already given.

Mr. Wade.—In reply to the hon, member I would say this, as I have said before: I do not think there has ever been anything before this Committee, certainly not sinc I have had the honour of a seat in this House, of such vast importance as the very matter we are considering now, because it means so very much to the country. Because the witness has travelled over certain ground and given his evidence about these matters, it does not mean that we have no right to question him. We have a right to take him again all over the ground he has travelled and change the character and complexion of his evidence and his conclusions, if we can. Now, that is what I purpose doing, and I daresay other hon, gentlemen will want to do the same thing on the same lines.

Mr. INGRAM.—Will we not do it better and quicker by taking his statement ?

Mr. Wade.—We would do it better and quicker if we would not argue so much. It is no use for me to get started on questions if hon, gentlemen persist in interrupting me.

Mr. Bell.—Should not the evidence in chief precede the cross examination?

Mr. Wade.—Not necessarily. We have the right to ask questions at any time. But I do not care as far as I am concerned. Understand me, I do not care a row of pins what procedure is adopted. Mr. Macoun can go on with his remarks until he has said all that he wants to. But when that is done and completed, I am going to take him up and question him.

The CHAIRMAN.—Mr. Macoun, you had better go on and finish what you have to

say.

Mr. Macoun.—Well, I think the Committee understood then that what these coloured pieces of paper on the map referred to, because I may have occasion to mention them. Although my work was supposed to cover only the upper Peace river country, as I stated the other day, I took passage by a mission boat going down to Vermilion in order to see that region.

By an Hon. Member:

Q. What is the distance ?

A. The distance by the river is about 283 miles. I left the Peace river landing on June 11, not counting the stoppages for wood and so on, it took us 23 hours of

steaming by this boat to reach Vermilion. The distance was 280 odd miles. The high valley of the Peace river that was spoken of the other day gradually becomes lower until when we were within about about 28 miles of Vermilion, at a place called Prairie Point, the valley almost disappears altogether and the region from that point, from Vermilion to Lake Athabaska, is almost on a level with the river, in fact the lower part of it is flooded. At Vermilion itself I spent ten days which allowed me to do as I had done in the upper part of the country, examine all the prairie lands I think I saw every bit of it at Vermilion as I did in the upper part of the country, and I also visited the farms of the different people who have settled there. There were at Vermilion about thirty-two people farming, some of them have quite large farms and some are just attempting to farm within the last year or two. The soil at Vermilion—I described the other day the soil in the upper country—

By Mr. Sproule:

Q. That is where the pink paper is ?

A. Where the pink paper is, in latitude 58 15 or something like that. The soil at Vermilion is very different from the soil of the upper country. Near the river, and that includes two or three miles from the river, it is a pure alluvial soil, very like that of the valley of the Red river in Manitoba. Farther back it becomes a rather lighter sandy soil. It is 12 to 18 inches deep or even deeper, and on a gravelly subsoil so far as I could examine. The area of prairie lands, and when I speak of prairie lands, I mean land immedately fit for settlement, fit for the plough, is estimated at 100,000 acres, but the quantity of land suitable for agriculture after it is cleared and drained is, of course, another question. As soon as I reached Vermilion I saw from the vegetation that the country was a warmer country, at least than the upper Peace river region, and the character of the vegetation also shows that the soil was richer; that is, the same plants grew very much more luxuriantly and to a greater height, and in every respect the country seemed a better one than that of the upper Peace river region. At Vermilion, as I have said, farming has been carried on for very many years. One farmer there has as many as 240 acres, principally in wheat, and others have 100, 140, and so on. Every man now in that region has taken up land and has gone into the cultivation of grain, the reason for this activity being that the Hudson Bay Company have erected there a roller mill, which although not very large, is a finely equipped mill, and turns out about a barrel of flour an hour-about twenty barrels a day. It is lit by electric light and when necessary runs the whole twenty-four hours.

By an Hon. Member:

Q. Is it driven by water power ?

A. No, by steam. Another reason for the impetus which has been given to farming in that region is that the Hudson Bay Company have brought in farming implement of all kinds, reapers and mowers and everything of that kind, which they sell to the settlers or the people who live there, because there are really no settlers at Vermilion, but old timers, many years settled. As I say, the company sell the implements to the settlers, as they need them at cost price, it is very likely, because the company are getting the entire output from those who are planting the grain.

By Mr. Ross (Ontario):

Q. What is the price of the reapers there?

A. Well, I asked them the price, but I did not make a note of it, I am sorry to say. But the price is the Edmonton price plus the cost of transport. At any rate the company supply farming implements which they furnish to those who desire to go into farming. The result has been that everybody in the rgion who is willing to work at all has taken up a piece of land, although there have been no surveys, and

is making some attempt at agriculture. The Committee will understand that I am speaking of what I saw myself at Vermillion. I might say that in June when I arrived there, June 13, it had been very dry and they were afraid the drought would affect their crops, but while I was there late in June, good rains came and the result was, except in a few cases, very successful crops. At least, so the reports say that have been sent to me since. Wheat and other grain was harvested about August 20. At Vermilion they have grown for a great many years, not only wheat, barley and oats, but all kinds of vegetables. Corn is raised, but it does not ripen, but sometimes matures fit for use in the ear. Tomatoes are grown, and practically all the garden vegetables that anybody cares to have are raised and used by the people. Now, I d; not think there is anything more unless you wish me to tell you what other people have seen in the country. I drove forty miles in order to see the country. I walked around the region south of Vermilion, because there is prairie fifteen miles from there, and I walked in different directions north, south, east and west. I drove with Mr. Brick from the upper Peace river country—I drove with him back from Vermillion for a considerable distance, about forty miles northward in a buckboard, and saw the country in that way. Mr. Oliver asked me if I had heard from Mr. Brick. It happens that I had a letter from him yesterday, and if the Committee so desire I shall be happy to communicate its contents.

Q. What is the total area of what is called the Peace river district?

A. Well, it would be impossible to state that for this reason. The upper Peace river country of which I talked the other day is estimated by Dr. Dawson at, I think, 21,000,000 acres, or 23,000,000 acres. This area between the blue piece of paper on the map and the pink piece has not been included in any estimate. This little part just north of the blue and white is included in Dr. Dawson's estimate, the rest between the blue and pink is quite unknown.

Q. Would it be 100,000,000 acres?
A. The whole of the Peace river region?

Q. Yes?

A. That would depend upon the extent of land taken on either side. It would be 100,000,000 acres if you went far enough east and west.

Q. We know what it is in the case of the St. Lawrence valley and the Ottawa

valley.

A. In the Peace river country certainly there is a 100,000,000 acres, because some of these northern branches run up towards the Klondike.

Q. About how much of that territory did you see ?

A. I saw all the upper Peace river country, I saw it practically all.

Q. That would be 21,000,000 acres?

A. Practically the whole of the 21,000,000 of the northern part of the country. I saw at Vermilion 100,000 acres of prairie, and of course certain sections of wooded country as well ..

Q. Well, the upper Peace river country is near the mountains, I suppose, is it not ?

A. Oh, not very near, about the same distance as Edmonton.

Q. Is it the same kind of country as you would find at Calgary ? . A. No, it is more like the country between Calgary and Edmonton.

Q. Between Calgary and Edmonton ?

A. It is more like that character of country. I might say for the information of the Committee that my judgment of the country both at Vermilion and the upper country was based chiefly on the vegetation. In my report I have given information about agriculture, forests, &c., but my estimate of the country is also from the vegetation. Of course, anybody else's report would be equal to mine when it comes to tell of frosts, or what the thermometer registers, or anything of that kind, but we who are trained for that purpose judge land by its vegetation. My estimate both of the upper Peace river and the Vermilion country is pramirily based on its vegetation, as

I mentioned in my report. It would be, perhaps, interesting to see how we do this. Some plants, as you all know, grow differently on good and bad soil. There is what the botanist and naturalist calls characteristic plants. Some are only found on alkali, some only on clay soil, some on sandy soil, others on dry soil, and others again on wet soil. For example, as you know, the cactus will grow only on dry soil and the tamarac on wet soil. These characteristic plants give us an idea of what the soil and tamarack on wet soil. When I went to the upper Peace river country out of 300 characteristic prairie plants, I found only thirteen of these plants, showing that to all but thirteen it was beyond the natural limit of growth, whereas, at Vermilion I found thirty-two of these characteristic prairie plants, which told me at once if there had not been a bit of agriculture in the country, that the Vermilion region was at any rate better than the upper Peace river region.

Q. How many varieties of plants did you find in the upper Peace river?

A. I found 238 varieties, but only 13 characteristic prairie plants.

Q. Only 13 characteristic prairie plants?

A. There were only 13 characteristic prairie plants.

Q. Still it would be a pretty good country where 238 varieties of plants grow ?

A. No, we noted more than that on the top of the Rocky mountains, and in Alaska there are three hundred or four hundred.

Q. There has been a more or less general—perhaps a hazy idea—that your report is not satisfactory for that country, that you give the idea that it is a poor country. Is that correct?

A. No, it is not correct. It was not my intention. I submit to the Committee that my report does not do that. I say it was a poor country for wheat and for cattle raising as an industry.

By Mr. Oliver:

Q. Might I read from some of his evidence what he stated with regard to the country? I find on page 5 'E' of his printed report, the very first sentence of his printed report, 'practically all the glowing reports on the Peace river region have been based on crops grown in the Peace river valley between Peace river landing and a point about 15 miles up stream on the north side of the river.' On page 18 of his evidence he says: 'I can tell you far worse about the country than I have published in my report.' On page 55 of his evidence he says: 'The upper Peace river country consists of 700,000 acres of prairie land not suited for the growth of wheat.'

A. That is correct.

- Q. In page 62 of his evidence—of course it is hard for anybody to say——Mr. Broder—You are referring to the evidence before the Committee ?
- Mr. OLIVER.—Yes, the first evidence. On page 62 he says: 'The reason I consider the Peace river country, the upper Peace river country, unsuited for the growth of wheat is that the altitude of the country, 2,300 feet, is too high to grow wheat in that latitude.'
 - A. That is all right.
 - Q. The man said that ?
 - A. Yes, that is absolutely right.
- Q. In his printed report on page 12 'E,' he says: On page 64 of his evidence he says: 'To sum it all up, there are three reasons why I consider this country is not suited for agriculture. I say first, it is too cold. Another is that it is too far north. Another is that it is too high.' On page 66 of his evidence he says: 'I tell you there is not a single word from a reputable man—and I have read everything on the subject—contradicting what I have said.' He not only says that the country is no good for agriculture himself, but he says that everybody else has said so.

Mr. Ingram.—You spoke of 12 'E'; please quote that again.

Mr. Ross (Ontario).—Does he not partially take that back this morning?

Mr. OLIVER.—I want him to take it all back, or else stand by it.

An Hon. Member.—Right or wrong ?

Mr. OLIVER.—Not at all. I want to know whether it is right or wrong. In the printed report on page 12 'E,' he says: 'The difference in altitude between the river bottom and the plateau being about 1,000 feet generally, this alone would account for the different results of a frost.'

A. That is from Mr. Ogilive's report.

Q. He has adopted it in his report. It is not any question in doubt at all in the matter.

Mr. INGRAM.—I want to point out that I made the same error myself.

Mr. OLIVER.—There is no error about it.

Mr. INGRAM.—That is the report that Mr. Ogilvie made.

Mr. OLIVER.—Mr. Macoun does make it as he adopts it in his report from Mr. Ogilvie. There is no question in regard to this, to my mind.

Mr. Ingram.—It is Mr. Ogilvie's report embodied in his report.

Mr. OLIVER.—Certainly. I would like to know if Mr. Macoun stands by what he has said on page 64 of his evidence. 'To sum it all up, there are three reasons why I consider this country is not suited for agriculture'—

Mr. SPROULE.—He is then speaking of the upper Peace river country.

Mr. OLIVER.—'I say first it is too cold. Another is that it is too far north'—

Mr. Broder.—That is what Mr. Macoun says ?

Mr. OLIVER.—Yes, it is in his evidence. 'This country is not suited for agriculture. I say first, it is too cold. Another is that it is too far north. Another is that it is too high.'

A. Mr. Chairman and Mr. Oliver, if that appears in my evidence, of course I said it.

Mr. OLIVER.—Did you not say to the Committee a few minutes ago that you had reviewed your evidence, and that your signature is attached?

A. That is perfectly correct. In many places in my report, and here in giving evidence over and over again, I have said that my remarks not in favour of the country applied exclusively to wheat growing and cattle breeding as an industry. Any member will say that is true. If I used the word agriculture there and in the book I don't wish to be thought as takink any back water. I say it was entirely a slip, because I have always held that the natural field of that country was not wheat and cattle raising as an industry. If every member of the Committee thinks that the soil and climate as I have described them warrant farming in a general way, I say go there and farm. When Mr. Oliver quotes the word agriculture, although undoubtedly I used the word there, it was entirely in the sense that the country was not suited for wheat growing and cattle raising as an industry.

Q. Might I ask you to explain these words which appear on page 40 'E' of your printed report: 'While the country that has been described should, in the opinion of the writer, not be settled by either the rancer or the grower of wheat, until there is more satisfactory evidence that it is suited for either of these pursuits, it may be safely prophesied that after railways have been built there will be only a very small part of it that will not afford homes for hardy northern people, who never having had

much will be satisfied with little.'

A. Read the rest of it, Mr. Oliver.

Q. Is that-

Mr. Ross (Victoria).—He means it will do for Scotchmen.

Mr. OLIVER.—If there be a stronger condemnation of the country as an agricultural country I am at a loss to know how it could be done.

Mr. WADE.—Read the next sentence.

By Mr. Oliver:

Q. (Reads) 'It is emphatically a poor man's country, a country where any hardworking man may, in a few years, gather around him a few head of stock-horses,

cattle and hogs, where he will be able to grow vegetables and in most years, barley and oats and sometimes even wheat.'

A. Just like around Edmonton.

Q. All right; we will attend to that later. Will the Committee bear that in mind. 'It will be many years,'—he says that when he used the word that the country was not fit for agriculture he did not mean that. I am reading from his own report to show that he did mean that and so stated in his report that it is not fitted for practical agriculture.

An Mon. Member.—Is this a question.

The CHARMAN.—I think the gentleman is in order. I don't see why we should not hear this.

Mr. CLANCY.—Is this asked by way of a question?

The CHAIRMAN.—Yes, and the answer is not satisfactory.

Mr. CLANCY.—I think, Mr. Oliver will admit himself that he makes the statement and points it out. He should have Mr. Macoun's answer.

Mr. OLIVER.—I am reading what he says, not arguing.

Mr. Clancy.—Mr. Oliver is making comments.

Mr. OLIVER.—If members will not interrupt me I will not comment.

Mr. CLANCY.—We are not interrupting you.

Mr. OLIVER.—Mr. Macoun interrupted me in a most unjustifiable way. The report goes on, 'but it will be many years before anything can be grown for export, even with good transport facilities.' Is that an agricultural country?

Mr. Cochrane.—Better ask Mr. Macoun.

Mr. OLIVER.—This is what he says: 'The building of the railway will lead to the development of the mines in Northern British Columbia, and these mines will afford a market for beef and pork at least; but until there is some such market, cash will be very scarce. During the construction of the Grand Trunk Pacific Railway, there will of course, be a ready market for any produce grown near the route it will follow, but such a market cannot last more than a year or two and the demand for fruit products will cease when the road is completed.' Read that paragraph to any man who wants to settle in any country to make a living, and he will not settle there. That is his statement in regard to that country.

A. That is my summing up in a few words, as I put it, of the whole of the explorations in that upper country.

By Mr. Bell:

Q. Why do you make a summing up?

A. That was my special business in going there. Every one else has the privilege of taking my report and forming whatever conclusion he may.

Q. You are not volunteering this statement; you were under orders to make that

report ?

A. Yes, I handed the report to Dr. Bell, the acting director of the Geological Survey, and that ended it. I have nothing to do with the publication of the report any more than I have with the publication of the proceedings of this Committee.

By Mr. Ingram:

Q. Here in this report, the North-west mounted police Report of 1903, in the report of Inspector C. H. West of the Peace river sub-district, page 39, find this: 'A few settlers from the outside, mostly Swedes and Norwegians, have come and settled in the vicinity of Lesser Slave lake for farming and ranching purposes. They seem to be an industrious and thrifty class of people, and I have no doubt will do well.' This is the point I want to draw your attention to: 'The crops have in places suffered a good deal from the frost, both here and at Peace river, but some were fortunate enough to escape the frost altogether and in consequence have had fairly good crops.

2-42

Mr. A. Brick, of Peace river, has 1,000 bushels of good wheat, which the Hudson's Bay Company offered \$1.50 for landed at their Vermilion flour mill, and this could have been easily done by rafting down, but I understand Mr. Brick asked \$2, which the company was not prepared to give. The company's representative at Vermilion is selling the farmers of that district all kinds of farm implements at cost landed, to encourage grain raising in the hope of having wheat enough grown to supply their large mill, their ambition being to turn out enough flour to supply their posts in the far north, as wheat bought at \$1.50 per bushel at Vermilion and milled there could be sold a good deal cheaper than flour shipped from Edmonton, on account of the enormous freight rates. Before the mill was running, strong bakers was selling at \$10 per hundred, and now the price is \$6.' I may point out—

Mr. WADE.—Is this taking evidence ? That has all been read once.

Mr. INGRAM.—No, it has'nt—not this part.

Q. You fully corroborate the statement I have made as quoted from this report?

A. I have not heard of that before. Mr. Ingram did not quote that the other day, but another extract. I agree with that, that is, the prices at Vermilion. I bought flour myself there at \$6.

Q. Then he bears out what you say with regard to implements and frost ?

A. Yes.

Q. And yet he tells us something about good crops?

A. Mr. Brick lives in the Peace river valley.

By Mr. Wilson:

Q. Was the wheat touched with the frost at all?

A. No. I had a letter from Mr. Brick yesterday. Mr. Oliver asked about it the other day.

By Mr. Oliver :

Q. Will you read it ?

A. Certainly, I will read it after I am through with Mr. Ingram.

By Mr. Ingram:

Q. I want to ask about another report with respect to the Peace river and Mackenzie district, another report by Mr. Constantine, superintendent of the Fort Saskatchewan division.

Mr. OLIVER.—I don't wish to interrupt only for a moment to call your attention to the fact that when I was reading from Mr. Macoun's report I was called down by Mr. Ingram and various other members. He is reading from another report, and his friends don't find any fault.

Mr. CLANCY.—I called attention not to Mr. Oliver's reading, which is a proper

thing, but to his commenting and arguing the point.

Mr. Ingram.—I want to ask you something which to an eastern man seems inconsistent, but an explanation might clear the whole thing up. This gentleman says: Small steamers are also required to work on the lakes and rivers in the Chipewyan, Peace river and Mackenzie districts. The Mackenzie river district is barren and desolate, swamp, rock and muskeg being the general character of the country. The capabilities of a region in which the snow lies on the ground for over six months in the year, from an agricultural point of view, is not encouraging, but at nearly all the Hudson's Bay Company's posts (except McPherson) along the Mackenzie river, small plots of land are cultivated, and potatoes, turnips and other hardy vegetables are grown for the use of the posts. I do not think that the Mackenzie district, as a whole, will ever support a purely agricutural community; the amount of arable land is very small, as compared with the total area. Away from the river, frozen marshes, muskegs, and shallow lakes cover the greatest portion of the country. The alluvial lands bordering on Slave river, the upper part of the Mackenzie, and on parts of the Liard

river, are the best in the district. From Chipewyan, on my return journey, I came out by way of the Peace river, travelling up it for 600 miles to Peace river crossing.'

The CHAIRMAN.—Are you reading from Constantine's report ?

Mr. Ingram.—Yes, sir.

Mr. Davis.—That is not the Peace river country. That is the Mackenzie country.

Mr. INGRAM.—No. In the first part he speaks very strongly against it.

Mr. OLIVER.—Against what ?

Mr. INGRAM.—He uses these strong words, 'barren and desolate.'

Mr. Davis.—That is not what we are discussing.

Mr. INGRAM.—What I am trying to find out is this fact, if it is a barren and desolate country, how can they grow potatoes, turnips, and hardy vegetables. does not seem consistent, yet there may be a proper explanation.

Mr. Wade.—A point of order. We are not discussing that district. I have

tried for two days to ask a few questions of this witness.

The CHAIRMAN.—I think Mr. Ingram is just through.

Mr. INGRAM.—That is what I want to ask Mr. Macoun. Does it seem inconsistent to Mr. Macoun himself ? I will give him the report to read, and perhaps he can give us an explanation of the inconsistency.

The WITNESS.—I may say in explanation of that, such reports as that are quite

common about that part of the country.

Mr. WADE.—I object to that because it is not part of the Peace river country.

The CHAIRMAN.—It is part of the Peace river country.

Mr. OLIVER.—I would be very glad to have the question answered.

A. Well, the general district might be as described in Mr. Constantine's report, that is swamps, muskegs, and so on, and differ from those parts in which the vegetables were grown. Usually high and dry points are picked out by the Hudson Bay Company for their posts that would be well suited for agriculture. They make clearings and grow potatoes and vegetables, whereas the general country may not be at all suitable for agriculture. I think that explains it.

By Mr. Blain:

Q. I would like to draw the attention of the witness to page 36 'E' of his report. Here he refers to low temperatures in 1903 and other years and says, 'among the two score or more old residents of that region with whom I talked in 1903 there was not one who believed that the parts of the plateau country with which he was acquainted were fitted for wheat growing. Some of them thought some other part might be, but not the part with which they were acquainted.' What I want to ask is, you refer to old residents here?

Q. How long have they been settled in that country ?

Mr. Davis.—What page is that ?

Mr. Blain.—Page 36 'E.'

A. These men were nearly all old Hudson's Bay employees, or freemen, as they are called. Two of them travelled with my father in 1872, so that they had been more than thirty years there. They are what we usually call 'old timers.'

Q. How many years had they been there ?

A. Between ten and thirty years. Some of them spoke of a plateau immediately behind them. I did not meet a man including the Bricks, who thought it was a good country to farm in, except a few people who were at Spirit river. I did not meet a

single man who thought it was a good country.

Q. On page 35 'F' you say: 'After perusal of all published reports on the Peace river country, an examination of almost every acre of cultivated land in that region and a careful study of the natural vegetation, soil and climatic conditions, I have been forced to the conclusion that, notwithstanding the luxuriant growth that is to be seen almost everywhere, the upper Peace river country, to which so many eyes are now

2-423

4 EDWARD VII., A. 1904

turned, will never be a country in which wheat can be grown successfully.' Do I understand the gentleman to say that he substantiates that report?

A. Certainly; that is my opinion.

By Mr. Davis:

Q. Just one question: What reason have you for coming to the conclusion that

wheat cannot be grown successfully there on account of the early frosts?

A. It is on account of several reasons. Summer frosts,—early autumn frosts chiefly—and also in the late spring in many parts, but also—and this is the greatest reason—so far wheat growing has been an absolute failure except in two or three years out of the six in which Mr. Brick did get crops. It seems to me the fact that all attempts at wheat culture have been a failure would be to farmers more conclusive evidence than to me. I judge from the vegetation of the country that the altitude is too far north for wheat growing, and if I had no other reason I still would report that judging from the vegetation that country is not suitable for agriculture. I give these other reasons as carrying more weight with some people than those held by scientific men.

Q. The same conditions applied to the North-west Territories?

A. Not summer frosts.

Q. Oh, yes, 25 years ago, when I went there-

Mr. OLIVER.—The hour for the meeting of the Railway Committee has arrived.

By Mr. Blain:

Q. Continuing on the same page, 'That this grain will mature occasionally there is no doubt, but that it will ever become the staple product of any considerable area I do not believe. The fact must never be lost sight of that there have been very few attempts to grow grain, except in the river valley, and that when these attempts have been made they have almost always failed.'

A. That is my belief; that is correct.

By Mr. Wade:

Q. How do you know that ?

A. I know from the evidence given before the Mackenzie Basin Committee, the report of which I brought with me every day. Every word I said about that country has been substantiated by the people examined before that committee.

By Mr. Davis:

Q. How many years ago is that ?

A. In 1888. Mr. Brick gives his evidence and from that time until this there has been no attempt made at agriculture on the upper plateau, as I have told you, except those six years y Mr. Brick. As to Spirit river and Grande Prairie, I saw the men myself and saw the grain myself this year and the wheat was not ripened, except partially.

Q. Has there not een any change in climate since 1888 ?

A. Not that I know of, unless it is due to cultivation.

Q. Let us hear the letter ?

A. There is nothing much in the letter, except—

Mr. WADE.—Allow me to ask a question.

Mr. BLAIN.—I have the floor.

Mr. WADE.—I do not know about that.

Mr. Blain.—I ask for a ruling. I will sit down if the witness will read the letter. If not, I have the floor.

Mr. WADE.—I rise to a point of order.

Mr. SPROULE.—What is your point ?

Mr. BLAIN.—I have the floor.

Mr. Wade.—I will state my point when I have an opportunity. I was proceeding to examine the witness this morning and had a perfect right to do so.

Mr. Blain.—I object and ask for a ruling of the chair. I was reading from a

report and drew attention-

Mr. Wade.—I do not wish to be interrupted. I was taking a point of order and was interrupted.

Mr. Blain.—You cannot do that with me.

The CHAIRMAN.—My ruling is that the gentleman has the floor, but if a gentle-

man rises to a point of order he has a right to do so.

Mr. Wade.—I was proceeding to examine this witness this morning, as I had a perfect right to do, when it was suggested to allow him to finish his direct examination and then I could examine him. I agreed to that in deference to the expressed opinion of the Committee, and since his direct examination was over I have a right to examine or cross-examine the witness if the does not break in and take this out of my hands. Now, I say to be in order I am entitled to proceed with my suspended cross-examination which was suspended—

Mr. Wilson.—After Mr. Blain gets through.

Mr. Wade.—This is a point of order that I have the right to examine the witness; he is my hands.

The Witness.—I object to being called a witness. I came here to give my honest testimony about the country, and I am getting the treatment that a man gets in court when he is up for perjury or something of that kind.

Mr. WADE.-I do not see why.

Mr. Blain.—If the decision of the Committee is to hear the letter and then adjourn—

Mr. Ross (Ontario).—I move we adjourn.
The motion carried and Committee adjourned.

Having read the foregoing transcript of my evidence, I find it correct.

J. M. MACOUN.

House of Commons, Room No. 32.

THURSDAY, April 28, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Douglas, Chairman, presiding.

The Chairman.—Mr. Macoun having finished his evidence at the last meeting is present to answer any questions that the Committee may wish to put to him. I believe Mr. Blain has the floor or had the floor when we adjourned at our last meeting, and is entitled to it this morning.

Mr. Blain.—I thank you very much. I was asking the witness some questions about—oh, yes, are we going to have that letter read. Will we have it now, Mr. Chairman?

The CHAIRMAN.—Did you bring Mr. Brick's letter with you ?

Mr. Davis.—Mr. Chairman, I would suggest you had better go on. We have a railway committee here this morning, and we are not going to make very much pro-

gress unless we get on. I think we had better have that letter read.

Mr. Macoun.—As I said the other day, the only occasion for reading the letter is that Mr. Oliver asked me if I had one, and I had not received it at that time; I received it on the Monday following. The letter which I received from Mr. Brick is as follows:—

PEACE RIVER CROSSING,

March 26, 1904.

J. M. MACOUN, Esq.,

Dear Sir,—I would like to get some fruit trees or seeds of some that would be suitable for this climate, and as you have been out here I am taking the liberty of writing to you. Could you recommend me to the Experimental Farm at Indian Head and tell them what would be most suitable for me? I would like to try crab apples, plums and cherries, lilac, maple and currants, or whatever you think best. I got my outfit all right.'

Mr. MACOUN.—That is a point I will want to explain presently.

'And am glad to say we had a good crop considering the weather we had. Our wheat was very good, the oats not A1, but fair. Nothing touched with frost on the flats.'

Mr. Macoun.—The inference I draw from his remark, 'nothing touched with frost on the flats' is that there was frost on the plateau.

Mr. Wade.—I would ask the witness not to draw these damaging inferences all the time. Let him state the facts; that is in the letter I presume.

Mr. Macoun.—As I say, that is the letter.

Mr. Wade.—You were not asked to make any point. Surely the witness is not here to argue.

Mr. Wilson.—He is here to give his opinion.

Mr. Wade.—He is here to tell the facts and to give us his judgment on those facts, but he is not to draw inferences adverse to the interests of the country.

Mr. Wilson.—He is giving his opinion.

Mr. WADE.—Well, if you would like to have it done, I do not object.

Mr. Wilson.—All I have to say is the witness ought to have fair-play. If he wants to give his opinion, he has a right to. If he states a fact, he ought to give his opinion on it.

Mr. Wade.—He is not giving his opinion, but drawing adverse inferences.

Mr. Macoun.—Mr. Brick says, 'I got my outfit all right.' That is the point I should have explained to the Committee the first day I gave evidence, and I would like to do so to-day if you have no objection. When I went through to that country I knew that Dr. Saunders, of the Experimental Farm at Ottawa, had been making experiments with early ripening kinds of wheat. I spoke to Dr. Saunders before I went away and asked him if some of that grain would not be available for settlers in the Peace river country. He said it might be to a certain extent. I went through the country, and wherever I went I took a list of those who were engaged in farming and who were likely to stay in that country, with every one not only the old settlers, but all the missions and trading posts and Hudson's Bay Company people, and when I came home I gave that list to Dr. Saunders, and Dr. Saunders prepared for each of those people whose names I gave him, and an especially large quantity for the missions and trading companies, packages of all the early ripening seeds of which he told you the other day-this early ripening wheat we have on the farm and other kindsand I recommended on the way out to the Hudson Bay Company and Breden and Cornwall transportation men that whenever this consignment of stuff would arrive in the country, no matter who saw it, it was to be taken in with dog sleighs into the country. Mr. Brick having mentioned on March 26 that the outfit reached him, as he is in the centre of that country, it is an intimation I suppose, that all the people

received their outfits too. The reason I mention it is that next year and the years following I hope we will receive better reports of the Peace river district than I brought home, and if we do, I want you all to know it will be in a great measure attributable to the fact that Mr. Macoun, whom you condemn, has been instrumental in sending to that country the early ripening grain. I want you to know and to remember the fact, if it is ten, twenty or thirty years after this, that I had Dr. Saunders, of the Experimental Farm, send to every man in that country 10, 15 or 20 pounds of this wheat which we expect to ripen from 7 to 10 days earlier than any other wheat we have.

Bu Mr. Blain :

- Q. I want to ask you one question. In your report I understand you made some reference to Dr. Dawson's report of the Peace river district?
 - A. Yes, sir.

Q. Can you tell us how long Dr. Dawson was up there ?

A. Well, I could, but I don't know that it is necessary to go into that unless it is to compare the length of time I was there.

By the Chairman:

Q. If you cannot, that is quite enough.

A. I can, because I have prepared a statement to bring to your notice this morning if it is endeavoured to show I was there too short a time, as was the case the other day.

By Mr. Ross (Ontario):

Q. Mr. Blain is asking the question.

Mr. Macoun.—Do I understand that the Committee want to know how long Dr. Dawson was there?

By Mr. Blain:

Q. My point is this: As I understand it we have two reports, Mr. Macoun's report and Dr. Dawson's report, and some reference is made in Mr. Macoun's report to Dr. Dawson, who travelled in that country. There seems to be some division of opinion as to whether or not there are contradictory statements in the two reports. I want to know what length of time was spent in that country by Dr. Dawson and Mr. Macoun. My question is: Does Mr. Macoun know long Dr. Dawson was in that country?

A. I do. I carefully prepared a statement yesterday as I was trying to explain.

Q. I would like an answer.

A. I will read it as I prepared it:-

Synopsis of Work done by Dr. G. M. Dawson in Upper Peace River Country in 1879.

Left Pouce Coupé prairie August 13, and travelled eastward nineteen miles.

August 14-Travelled 17 miles.

August 15—Travelled 13 miles.

August 16—Travelled 21 miles to Dunvegan.

Seventy miles from Pouce Coupé prairie to Dunvegan in four days, none of it over any of the 700,000 acres referred to in Macoun's report.

Mr. Macoun.—He left Pouce Coupé prairie at the point at which Mr. Davis left me the other day.

Q. Pardon me, where is this on the map?

A. It is a little west of the white limit on the map.

By Mr. Ross:

Q. About where the green begins?

A. British Columbia is where the green begins on the map. He left Pouce Coupé in August and travelled 70 miles to Dunvegan. None of the country travelled in that four days applies to the 700,000 acres I have talked of before the Committee.

'August 18-Travelled 28 miles from Dunvegan south on road to Grande Prairie,

crossing Spirit river prairie en route.

August 19—Travelled 30 miles to Grande Prairie. On these two days covered 58 miles.

August 20—Travelled 21 miles across north end of Grande Prairie.

August 21—Travelled 18 miles along west end of the Grande Prairie.

August 22—Travelled 17 miles towards S.E., where he left the prairie and went by canoe down the Wapiti and Smoky rivers to the mouth of the latter, which he reached August 28, having travelled 56 miles on Grande Prairie in three days.'

He then reached Grande Prairie, the only part of the country he covered which is included in my work. These three days covers his entire explorations in the prairie

part of that country.

'Going from the mouth of the Smoky he reached Dunvegan in two days and remained there five days. On his trip out from Dunvegan he went south to Spirit river, 15 miles the first day, September 5, and travelling about 20 miles a day near the Smoky river, reached its junction with the Wapiti on the 8th, and then left the district covered by Macoun's report.'

To sum up, he travelled on land:

Four days from Pouce Coupé to Dunvegan, 70 miles.

Five days from Dunvegan to the Wapiti, including traverse of Grande Prairie, 114 miles.

Four days from Dunvegan to Smoky river, principally over ground travelled by him before, 75 miles.

Thirteen days-259 miles.

By Mr. Oliver:

Q. Mr. Chairman, may I ask what is the purpose of this question ?

Mr. Wade.—To show that Dr. Dawson did not know what he was talking about.

Mr. Blain.—I wish to answer my hon. friend's question with pleasure.

Mr. OLIVER.—Well, let me ask it then, please. You asked a question as to what Dr. Dawson had seen and done in that country, as though there was a conflict of opinion. You said, I think, that there was a difference of opinion between Professor Macoun and Dr. Dawson, but Professor Macoun says there is no difference of opinion. He challenges contradiction from the records as to any difference of opinion by any competent authority in regard to his opinions on the Peace river prairie country.

Mr. Blain.—I wish to answer Mr. Oliver. He asked me why I asked the ques-

tion, is that not it ?

Mr. OLIVER.—Yes, that is it.

Mr. Blain.—I asked it so that the Committee would understand for themselves whether they could base a better opinion on Mr. Macoun's travels in the country, or Dr. Dawson. That is the only reason I had in asking the question. Mr. Wade seems to have some police court lawyer view on his mind.

Mr. Wade.—I have stood enough of this police court lawyer business, and I will ask the hon. gentleman to withdraw the statement and refrain from making any more

of the kind. I am in the hearing of the Chairman.

Mr. BLAIN.—No, I won't withdraw it; it is all right.

The CHAIRMAN.—I do not know what the phrase was.

Mr. WADE.—The phrase was that I was acting as a police court lawyer, or something of that kind. Is it a proper statement?

Mr. Blain.—I say police court lawyer, and I repeat it.

Mr. Maclaren (Huntingdon).—Is it not a necessary part of a lawyer's duties? The Chairman.—I think so.

AFFENDIX No. 2

Mr. Blain.—I am not passing any reflection.

Mr. Wade.—I say it is an offensive term. Lawyers do defend criminals in the police court, but when you speak of a lawyer as a police court lawyer, you know it is a matter of reproach. I cannot understand why hon, gentleman before this Committee cannot express their views without making themselves offensive. I know that in the case of some men their inclinations are in that direction, and it is very hard for them to do anything else. But we are here for a certain purpose. We all have our rights here, and it is our duty to do our best according to our views, and no man has a right to make himself offensive to another.

The CHAIRMAN.—I do not think Mr. Blain wishes to be offensive.

Mr. WADE.—It will only provoke incrimination, that is all.

Mr. Blan.—I do not wish to pursue this subject further. I do not wish to cause any disturbance in the Committee and I will not. I could very well answer Mr. Wade if I desire to, that the most troublesome man in the Committee if he has any special work to do is Mr. Wade himself. He only comes in occasionally. He apparently takes no interest in the Committee, except where there is some special case that needs some defence.

Mr. WADE.—I am only here when there is somebody trying to blacken the reputa-

tion of the country.

Mr. Macoun.—I ask now to have that statement withdrawn, Mr. Chairman.

The CHAIRMAN.—Oh, no, he has a right to state whatever he pleases.

Mr. Oliver.—We are here to substantiate that statement if we can get an opportunity.

Mr. Wilson.—That does not necessarily affect the witness.

The CHAIRMAN.—Not at all.

Mr. Blann.—I do not wish to prolong this matter at all. I am as much interested in the development of that country as any other ordinary Canadian is in this House, and if my friend Mr. Wade imagines for one moment that a certain section of this Committee desires to blacken that country, then I think it my duty to protest against that statement in respect of myself. What I want to do is to ask the witness a question briefly. How many days did Dr. Dawson travel on the Peace river district, and how many days did Mr. Macoun travel over it? How many miles did you each cover? In the statement you gave here, if I understood it correctly, it covered some other section of the country that Dr. Dawson travelled over. What I would like you to do is to give the Committee a statement of the number of miles Dr. Dawson travelled in the Peace river district, and the number of miles that you travelled in the Peace river district.

Mr. WILSON.—Do you mean the upper part or the whole of it? Mr. BLAIN.—The Peace river district that we are discussing.

A. Well, I have already given you Dr. Dawson's distances from his own report. As regards the distance I have travelled myself—

Q. How many miles ?

A. 259 miles.

Q. In the Peace river district ?

A. Much of it over the same ground, too.

Q. What do you understand by that ?

A. When he went out from Dunvegan a second time he travelled south to the Grande Prairie, a distance of 70 miles, practically over the same route that he had travelled when coming in on the previous occasion. Those 70 miles should really come off the 250.

Mr. OLIVER.—I beg to call attention to that very remarkable statement ?

A. I have Dr. Dawson's report.

Q. But according to my reading of the report Mr. Macoun is in error. He did not travel 70 miles over the same ground.

A. Practically the same ground.

Q. I take the liberty of contradicting that.

A. We had better settle it now. I have a map with me. If Mr. Oliver does not mind looking over the map with me I will convince him.

Mr. OLIVER.—Show the Committee. My mind is made up about it. I have been

looking at the map and have read your report, and am satisfied I am right.

A. I will state again: Of these 259 miles, part of it going south from Dunvegan to Grande Prairie covered practically the same ground that he went over the first time.

Q. For 70 miles.

A. For nearly 70 miles, the distance to Grande Prairie. Here is the map, Dr. Dawson's route is marked here. Now, Dr. Dawson (this is the Pouce Coupé prairie, the point I spoke about), Dr. Dawson travelled over there to Dunvegan, a distance of 70 miles, that is to this point, Dunvegan he then came south from Dunvegan on this route and turned across from here to Grande Prairie, came down here and struck the Wahpatie river, and then down the Wahpatie to the Smoky, and so down to the Peace river and back to Dunvegan along the shore, and then coming south, the second time he again left Dunvegan and came exactly along the same way south to Smoky river, just exactly what I have told you. Here is the track marked on the map with the dates of his camps.

By Mr. Oliver:

Q. Was that a second trip?

A. Yes, that was a second trip; here are the camps marked.

Q. If that is a fact, I wish to apologize for the statement I have made, as I suppose I may explain to the Committee, as I supposed Dr. Dawson had made only one trip from Dunvegan to Grande Prairie by this route, and I thought Mr. Macoun meant he had gone out from Dunvegan to Grande Prairie by the same route that he had come in the Dunvegan from the Pouce Coupé prairie. I was not aware that Dr. Dawson had travelled the route from Dunvegan to Grande Prairie twice.

By Mr. Maclaren (Huntingdon):

Q. So that you were wrong.

Mr. OLIVER.—I was wrong in that, but I wish to point out that if Dr. Dawson travelled that country twice he must have seen it fairly well.

Mr. WILSON.—That part of it.

A. Well, that 70 miles was through the woods, both times in the woods, he went to Grande Prairie in that direction, he came out here, this part of it he never saw at all, his camps are all marked, showing where he stopped when he came out a second time. He came out the whole of that long distance through the woods, and he covered the whole of that country we are talking about in three days each time, and left it here the second time at the same point. So that in his report all that he had to go on was this little piece here.

By Mr. Blain:

Q. Then I am to understand that the total extent of Dr. Dawson's travelling in that country was 259 miles, 70 miles of which was retracing his steps or travelling over the same ground.

A. Well, 75 miles to be accurate. I was not sure when I spoke.

Q. Yes, then we are to understand that he travelled so that he only actually travelled 180 miles?

A. I would rather leave it at 259 miles, although, as explained, part of it was over the same region twice.

Q. Then he only travelled 259 miles we would say; what length of time did you stay in that country, as compared with Dr. Dawson?

A. In the region I have just spoken of I spent exactly one month, but I spent none of it in camp. I spent every day of it travelling, and as I explained when first I was before the Committee, I not only travelled with horses, but I walked on foot, and I spent every hour of the day from morning till night looking at the country. When I say I travelled 30 miles a day, and if it may seem a good deal to you, gentleman, I average last summer easy 30 miles a day.

By Mr. Wade:

Q. That is easy.

A. That is all right then if you think so, so that I am quite within bounds when I say I travelled over the same area I refer to for 1,000 miles on foot. Dr. Dawson travelled on horseback, because as those who know him know he could not travel this distance on foot.

By Mr. Davis:

Q. Just a monent now. With reference to Dr. Dawson's report—

A. Yes, sir.

Q. What is the difference between your report and his as to the character of the soil ? If Dr. Dawson travelled only 4 miles over the Grande Prairie, and you say he travelled 70 miles, examining the soils, he would surely have some knowledge of what the soil was like.

A. In particular places he examined it certainly.

Q. That is the difference as I understand it as between you and he, as to the character of the soil, he says the soil is good and the subsoil is good, and you say it is something else.

A. We agree, Dr. Dawson and myself agree in every particular except as to the

depth.

Q. So that if he travelled 70 miles over that prairie he would know something of the depth. It is a question as between his judgment and yours as to the depth of the soil.

A. Not at all. I say I dug holes every day, several times in the day; he does not say he dug holes at all. He judged by the luxuriance of the vegetation that it was a deep fertile soil, but as I have pointed out, this luxuriance is due to the moisture and not to the depth of the soil. Nobody suggests that it is not a fertile soil. If there is an inch, a single inch, it may be a fertile soil, and my report says that.

By the Chairman:

Q. How did you dig into the soil, did you carry a spade ?

A. No, I did not carry a spade; I carried a knife about 15 inches long that I used to dig out plants. My work is that of a botanist, and in digging them up I never had occasion to use more than a knife in that country. In addition to that at noon, one of my men would take an axe, because the ground was very hard in some places, and cut a square piece of sod out and dug the soil out. We did that each day in camp.

By Mr. Oliver:

Q. Might I ask Mr. Macoun if he will state specifically, if there is a difference between himself and Dr. Dawson in regard to the soil of the Peace river country?

A. Not as regards the fertility of the soil.

- Q. Well, is there a difference? I am asking a straight question: is there a difference as regards the value of the soil for agricultural purposes.
 - A. No, there is not.

Q. There is not ? A. No, there is not. Q. So that it does not make any difference as to whether the soil is 4 inches deep

or ten inches deep, it is just the same; it does not make any difference.

A. Certainly not. When you speak of the value of the soil, everybody says the soil is fine; I doubt if it could be excelled anywhere. We both agree as to its excellence. I doubt whether it could be excelled anywhere. The only difference between Dr. Dawson and myself is, I think, he says in a general way the soil is deep, and I say I did not find it deep except in crossing, I think it was Bear creek, where the character of the soil comes from the alluvium of the creek.

By Mr. Wade:

Q. You quoted him in your report ?

A. 'The soil of Grande Prairie almost everywhere, is exceedingly fertile, and is often for miles together of deep rich loam, which would be impossible to surpass in excellence.'

By Mr. Oliver:

Q. Either the soil is deep or it is not deep, and valuable or not valuable, according to whether it is deep or not deep. This gentleman says everything he has said has been substantiated by all the official reports of the country?

A. I was referring to the climate at that time.

Q. You did not say climate, if you have to explain your evidence so much.

A. If you read my evidence, it was the climate. I think that everything I have said is more than borne out by the reports, I say it again. I could not say that everything I said was substantiated when writing in my own report. As regards the soil, I differ from Dr. Dawson in that he said it was deep.

Q. That is one of the peculiarities of your report, and the evidence you gave in the Committee, if you will pardon me saying so, that you contradict yourself?

A. Will you point out where I contradict myself?

Q. That will come later on. We are all ready for that. What I want to establish before the Committee now, and what I want Mr. Macoun to establish is, that he is giving up his contention that his evidence with regard to the soil is substantiated by every scientific man.

A. Certainly not.

- Q. Well then, do you maintain that your evidence is the same as that of every scientific man ?
- A. As regards the fertility of the soil there has never been any difference of opinion about that country. As regards the depth of the soil, I do not know that anybody has ever reported as far as I know.

Q. I can find you their reports.

(No answer.)

By Mr. Ross (Ontario):

Q. Has the climate anything to do with the fertility of the soil ?

A. With the depth of it, no.

Q. As to its value for raising grain or anything of that kind?

A. I would certainly think it has, of course.

Q. Do you take that into consideration in valuing the soil ?

A. Not in speaking of the soil, I would not; the two would go together in condenning or recommending the country. Of course, but in treating of this soil, I would not consider the climate at all. After examining the soil I would say it was good, bad or otherwise, without reference to the climate.

Q. If you had a climate that would not raise wheat it would not make any differ-

ence what kind of soil you had ?

A. No, certainly.

By Mr. Oliver:

Q. I want to get this thing down, I want to know where we are getting at. Does this witness undertake to say that it makes no difference with regard to the fertility of the soil, whether it is one inch or five inches deep. Is that his position?

A. Not in the soil itself, but it makes a great difference as to what the soil would produce, but if you take a pound of soil from one inch deep and a pound from one foot deep there is no difference in the scientific value of the soil, but it makes a great deal of difference as to what the soil will produce. The inch is not enough, we all know that.

Q. Is there a difference between your report and Dr. Dawson in regard to the depth of the soil?

A. Certainly, I stated in my report that there is a difference.

Q. Then you do not maintain that the evidence of other scientific men agrees with yours as regards the depth of the soil?

A. Certainly not, I mention in my own report that Dr. Dawson and myself do not agree.

Q. You admit you do not agree ?

A. As regards the depth of the soil, we do not agree.

Q. Pardon me now, you admit that. That is understood and admitted before the Committee?

(No answer.)

By Mr. Maclaren:

Q. We all understood that.

By Mr. Oliver :

Q. All right then, we will go on from there, because it is important, and Mr. Maclaren has pointed out the very great importance of that point. Now, I want to ask is there a difference between Mr. Macoun's and other scientific men with regard to the climate of the country, or do they coincide?

The CHAIRMAN.—The climate.

By Mr. Oliver:

Q. That is what we are at.

A. This question of course, as you all know, is a very important question as regards the climate of the Peace river country, including the valley. You understand, as far as I know, there is no difference of opinion.

Q. As far as you know ?

A. As far as I know there is no difference of opinion.

- Q. I merely wish to establish that point, and I will leave the floor to other gentlemen who wish to ask questions, because I have prepared certain matter bearing on on that point, and I wish to be permitted on a later stage to come before the Committee and deal with that question with a view of bringing out the facts. I wish it distinctly understood by the Committee that Mr. Macoun has said there is no difference of opinion?
 - A. As far as I know.

Q. As far as you know, and you say you have read everything ?

A. I think I have.

Q. Between yourself and other scientific and authoritative men in regard to the climate of the Peace river country?

A. That's right.

By Mr. Davis:

Q. There is a difference of opinion with regard to the subsoil between you and Dr. Dawson?

A. No, there is no difference as far as I know. We both agree that it is the same silt. We both remarked that repeatedly in our report.

Q. I understand that he has stated in his report that it would be good for farm-

ing purposes ?

A. He said judging from the vegetation growing on it it would be good. I had an analysis made of it.

Q. You don't think it would be good ?

A. The roots don't penetrate the subsoil. I told you that the first day.

By Mr. Ross (Ontario) :

Q. Is it blue clay?

A. It is not blue clay, it is a sort of boulder clay—about the same.

By Mr. Davis:

Q. I want to ask about the Pouce Coupé prairie. You told me the other day that you had read every line you could find with reference to the Peace river country, and that you had embodied anything that was good in any of these reports in your report?

A. Yes.

Q. Every good word that you could find? Now, I have gone through and I find that you took some selections from Dr. Dawson, McConnell, and Ogilvie. Is it not a fact also that other gentlemen examined that country whose reports you evidently have not gone through?

A. I don't know that.

Q. Well, there is a Prof. Macoun, senior? I have got his report here?

A. That is a point I would like to make clear. I will explain it. My father never saw that country in his whole life.

Q. What about Sir John Richardson?

A. He never saw it.

- Q. What about J. S. Onion ?
- A. I never heard of him.

Q. What about Mr. Selwyn?

A. He never saw anything of it. The Peace river valley is not the upper country. Any quotation from my father applied to the valley and he was never on the plateau. He travelled in the valley, and the people who have boomed the Peace river country have used his report on the valley to boom the whole country. It is unfair to my father as well as to the country. He was never on the plateau unless he went out of Dunvegan up to the top of the bank. When I came away this morning my father told me to be very emphatic that he was never out of the valley of the Peace river.

Q. What about Sir George Simpson; I see he examined it. Sir Sandford Fleming

reports on it ?

A. He never was in it. Simpson was never in it except in the valley; he passed through the valley.

Q. What about Herevert, Dawson, McLean and several others? There are a

whole lot of them ?

A. They were all in the valley. I would like to read the first words of my report. 'Practically all the glowing reports on the Peace river region have been based on crops grown in the Peace river valley between Peace river landing and a point about 15 miles up stream on the north side of the river.' That place and at Dunvegan. Every single report before Ogilvie's is based on the river valley, and nothing else. I want the Committee to remember this, because some one else may come and read these reports to you when I am not here. There is not a single line about the upper country except Dr. Dawson's and mine. Every one of these, Heretzky, Macoun and Selwyn travelled through this country in the valley and reported on the valley alone. He is trying to make it appear that they contradict me. We will fight it out and we will

fight it in the newspapers if necessary. The people will know there is no difference of opinion.

By Mr. Oliver:

- Q. You are better in the newspapers than in the Committee.
- A. I will take my chances in both places.
- Q. You are a long-range fighter ?
- A. I am close to the Committee now. If I have not the opportunity, if you will give me an opportunity to cross-examine Mr. Oliver—if you will not give me the opportunity, I will state it to you now that every single one of these quotations applies to the valley and not the upper country.

By Mr. Davis:

- Q. Now, you say that you took every good word, every single good word that you could find about that country, and that you embodied it in your report? Now, you have come down and say there is none of these gentlemen who travelled over the country knew anything about it except Dr. Dawson.
 - A. I don't say that.
 - Q. You say Dr. Dawson is the only other gentleman who examined that country ?
- A. That is right; he is the only other gentleman besides myself who reported on that country. We eliminate the valley because it is a good country, every one admits that it is a good country.

By the Chairman:

- Q. We all understand that.
- A. These gentlemen make it appear the other way.

By Mr. Davis:

Q. You say you got every good word in your report. Now, here is something that Dr. Dawson says in describing the prairie that I do not see in your report. I may be mistaken and hope to be corrected?

'This is the first prairie country'—he is speaking of the Pouce Coupé prairie, under date August 12—'we have seen and contrasts very pleasantly with the dense forests through which, for the most part, we have heretofore been groping our way. The grass is in most places as high as the horse's belly, and is already ripe and turning brown at the tops.'

An Hon. Member.—That is not the Peace river.

Mr. Davis.—Hold on. Certain gentlemen start to interrupt me. They do not want to hear anything good about the country.

Mr. Kidd.—Why do you not say that they were Shetland ponies. We had that

question the other day. Why should you go over that again ?

Mr. Davis.—I want to draw the attention of the Committee to this fact, that this is on August 12, and that the grass was then as high as the horses' bellies, and is already ripe and turning brown at the top. This is the Pouce Coupé prairie. In the western part of the country where I live we do not get the grass ripe until September. Evidently this is a better country than that. I want to ask why he didn't embody that in his report? That is a good word?

A. Certainly, that is a good word. You will find many good words in Dr. Daw-

son's report.

Q. You said you had embodied everything good that you could find ?

A. Certainly, I said that. But I do not think anybody but Mr. Davis and Mr. Oliver would take the significance that every actual printed word went into the report. I took the very best that any man ever said about the Peace river country,

and I have included it in my report. That is what I did about Dr. Dawson's. The very best he said I included that in my report. Such a report as Mr. Davis evidently expected me to make could not possibly be made with any reasonable justice. If I said I included everything good I spoke the actual literal truth from my point of view, not that every literal word had been used, which appears to be Mr. Davis' view. I did quote Dr. Dawson—

By Mr. Blain:

Q. What page ?

A. On page 19 of the report. Still I point out in every case, I give the citations, it is open to every person to see if I have quoted them correctly. If there is anything good, bad or indifferent I leave it for them to see. If I wanted to quote voluminously from his report as might have been done, I could show how very little value can be placed on his report, but Dr. Dawson was my old chief, and it was none of my business

By Mr. Ross (Victoria):

Q. Then he did not know very much ?

A. Dr. Dawson was a very young man at that time. It was not my duty to bring any odium on him. It was my duty to quote everthing good I could about the country. Although I did not quote every single word, I quoted the main things and used the very best things he said about the country in my rpeort. I quote from his references to the Pouce Coupé prairie:—

'The soil in the valleys is very deep and rich, while that of the plateau is similar but not so deep, and rests on a silty deposit, which when it comes to the surface gives the soil a pale aspect. Even the silt, however, is a rich soil as evidenced by the luxu-

riant growth found upon it.'

If that is not speaking highly of the Pouce Coupé prairie—those are Dr. Dawson's own words, and not nearly so highly as I spoke myself, as I read the other day. I quoted Dr. Dawson also on the same point.

By Mr. Davis:

- Q. We will settle that point. Then you hold that the opinions of every gentleman with the exception of Dr. Dawson are given, although they never examine the plateau at all.
 - A. Not one of them, so far as I understand.
 - Q. The Grande Prairie or Pouce Coupé ?
 - A. Not so far as I know.

By Mr. Oliver:

Q. Not even your father ?

A. He never left the Peace river valley. I have told you that many times.

Q. I read on page 79 of this report on the Mackenzie Basin that Professor Macoun is being examined?

By Mr. Ross (Ontario):

Q. What date was that ?

Mr. OLIVER.—The session of 1888. He is being examined in regard to the Peace river. He complains that people reporting on the Peace river previously to him only spoke of the valley, and he says: 'They were all the time looking at the bank of the river, because when we climbed up we found from where the river left the mountains it was getting lower and lower, and at the end of 500 miles it was not more than 500 feet below the level of the country, but at Dunvegan it was

700 feet. Mr. Horetzy and I measured it and found it that distance from the level of the prairie; the country above that was found to be level as a floor. The Peace river country is without hills. I never saw a hill near the river in its course east of the mountains. Looking up from the bed of the river, it is like a mountain chain on each side for 500 miles, but I climbed up at several places and the character of the country was, as I have described it.' Was Professor Macoun on the plateau of the Peace river or was he not?

A. It is quite obvious from what Mr. Oliver has read to the members of the Committee that my father climbed up to the edge of the bank and saw the country. That was the extent—

Q. What you say is he did'nt see it ?

A. I said he never saw or examined the plateau of the country. He never travelled on the plateau.

Q. When this witness makes this specific statement he should explain it at the time, and not go back afterwards. He left the impression in the minds of the Committee that his fathter had never seen the uplands of this Peace river country.

A. That is practically true also. He said that he did climb up the edge of the bank.

Q. Pardon me, sit down.

A. Well, it is my business to stand up and answer questions, I think.

Q. I am not asking a question just now. The witness stated that his father had never been on the upland of the Peace river. That is a plain statement of fact. His father presumed to go to the Mackenzie river commission and state that he had been on the upland and reported on the general appearance of the upland in his evidence before that Committee in this way. Not only so, but he measured the height with Mr. Horetzky, a railway engineer, of the upland above the river. Did Mr. Macoun do that?

A. No, I did not do that, because it was done by Mr. Ogilvie, who was sent there for that purpose. I am a botanist, although I had an aneroid in my pocket. It was done by him; he was sent there for that special purpose.

Q. And the height given by Professor Macoun of the upland about the river which was taken by a railway engineer and not by a surveyor, was 700 feet, while Mr. Macoun's report places it at 1,000 feet.

A. Mr. Macoun says in his report that the altitude is 700 to 1,000 feet above the river.

Q. I am reading the evidence that he gave to the Mackenzie Basin Committee.

A. That is right.

Q. He should perhaps have had somebody to explain his evidence too. He said that the height above the river by actual measurement made by a railway engineer was 700 feet, and he did not qualify the statement.

A. He reported that the edge of the bank—if you will kindly read again, my father climbed from the valley to the edge of the bank—

By Mr. Wade:

Q. He doesn't say the edge of the bank ?

A. Read it again. My father never travelled on the upper plateau.

By Mr. Oliver:

Q. We never said he did.

A. Let it go at that.

Q. You admit you made a statement that was not absolutely correct?

A. Oh, no, not at all. I don't do anything of the kind.

Mr. Blain.—I am not familiar with that report. Might I ask if in any part of that report Professor Macoun says he did travel on the upper plateau?

2 - 43

Mr. OLIVER .- I don't know that he does; I have not read the whole report.

The CHARMAN.—I think it will be in the memory of the Committee that Professor Macoun when he was before the Committee this year said that he was not called upon to report on the upper plateau, but that his observations were confined almost solely to the valley of the river. I think we all understand that, and if the Committee would allow me I would say that I think if the witness was a little more careful, and said a little less on the spur of the moment he would do better.

Mr. Wilson.—The provocation is great.

By Mr. Kidd:

Q. He is doing all right.

The Chairman.—I admit the provocation may be great, and gentlemen of the Committee take advantage of it, and often these slips are made just on the spur of the moment. There is an old saying, 'The least said soonest mended,' and especially in this case it would be well for him to be very correct when he gives his answers to

give them as concisely as possible.

A. I would like to thank the Chairman for what he has said. I also want to point out that since first I came before you I had not spoken to a single member of the Committee outside this room; the temptation has been great to speak to some of those members, who have, to a certain extent taken my part, I do not know any of them, and point out to them some of the many things that could be explained, and upon which they might put questions to me. I have come before you without consulting anybody. The Chairman says I sometimes say too much. If I say too much it is because I feel the importance of making every point perfectly clear as it goes along. I will stay here as long as you like, but I will not permit a single misapprehension to go on the minutes of this Committee, even if I do sometimes speak too quickly. When I tell you I am here not only as a witness, but also in my own defence, and any member of the Committee who gets up and speaks on my behalf, he is speaking without any reference to me. I have not spoken to a single member of this Committee outside of these rooms; I am here fighting the fight alone.

By Mr. Davis:

Q. I wanted to find out how long the time was after you struck the country which you are describing in your report, until you came out. How long did you put in altogether in that country from the time you went in until you came out?

A. Just an even three months.

Q. Three months ?

A. An even three months.

Q. What is the size of the country you are discussing, that you were supposed to give a report on? How many thousand square miles of territory does it contain?

A. I have always taken Dr. Dawson's estimate of that—21,000,000 acres, I think.

Q. How would that compare with the agricultural portion of Ontario ?

A. I do not know what the figures for Ontario are.

Q. I think that is about the size of the whole of Ontario. Do you say that a man can go over the whole of a territory like that in three months, and give an accurate account of its capabilities?

A. I would just like to explain. In that kind of country you can.

By Mr. Wilson:

Q. Is that the whole of the country, or the upper Peace river? (No answer.)

By Mr. Davis :

Q. He put in three months covering the whole country. If you want to find out how much time he put in in the upper country, perhaps he will tell us?

A. That is a very important point that Mr. Davis has raised, and I think it should be answered. Supposing this room to be 21,000,000 acres in extent. If I had examined a piece out of this corner, for example, it would be very unfair to take that as an indication of what the whole country was like, but I covered it in the way I have described, and Dr. Dawson states that the whole country is practically alike as regards the soil and the subsoil, there is practically no difference.

By Mr. Wilson:

Q. You are now talking about the upper Peace river country?

A. The upper Peace river country. Mr. Davis has questioned my competency to report on the country after so short a visit. I might say that I zigzagged over the whole country, practically the whole of it, and there is no difference in the soil or subsoil, except as regards its depth, and to be more accurate, except a few knolls where it is gravel, otherwise the whole of that country, excluding the muskegs and swamps, the whole of it is identical. There is no difference south or north of the river, the soil is of rich black loam resting on the subsoil.

By Mr. Oliver:

Q. How thick is the loam?

A. Oh, that varies, north of the river it is much deeper than on the south, and in other places it is from 2 to 4 inches, and in Grande Prairie 4 or 5 inches.

Q. Of deep, rich, black soil ?

A. Yes.

Q. There is no exception ?

A. No exceptions, except on top of a few knolls, and of course the muskegs and swamps and so on, but I mean the nature of the soil itself.

By Mr. Wade:

Q. Would you mind copying on that plan your route, put it on in heavy ink or pencil, so that we can see it ?

A. Yes, sir, I will.

Mr. Wade.—Mr. Chairman, I wish to make a motion, it is that I be allowed to take up the cross-examination of this witness at the commencement of our next meeting. I think I have refrained from asking scarcely any questions, because I think it causes confusion when gentlemen are asking questions indiscriminately. I think it would be well that one should take up his examination and finish it.

Mr. Davis.-I second that.

Mr. Blain.—Do we understand that when the Committee next comes together, Mr. Wade will take possession of the witness and that nobody else will have an opportunity of asking questions?

Mr. Wilson.—If he does he won't get it.

The CHAIRMAN.—I do not think Mr. Wade would expect that.

Mr. Blain.—This is a very unusual motion, and it should be ruled out of order. If that is not done I ask Mr. Wade for an explanation.

Mr. Wade.—There is no explanation to be given, every member of this Committee has the right to interject a question and to make remarks. I only want to have an opportunity of examining this witness at the next meeting.

Mr. Wilson.-You have the floor now.

Mr. Wade.—I have made a motion that this witness be given me, it is perfectly in order, in my own judgment for the Committee to pass it.

Mr. Blain.—If the motion is put, I wish to speak to it.

The CHAIRMAN.—Go on.

Mr. Blain.—I do not profess to be familiar with all the rules of the Committee. I have not been a very long time in the House, but I attend the Committee very regu
2-43½

larly, and I have never heard till now, such a motion being made in any committee, or ever being presented to the Committee before. I do not suppose any other man on the Committee and I am quite sure the Chairman has never heard tell of such a motion.

Mr. Ross (Victoria).—I understood when we dismissed at the last meeting you claimed you yould have the right of the floor to-day when we met; that has been

accorded to you.

Mr. BLAIN.-No.

Mr. Ross (Victoria).—Yes, excuse me, and now Mr. Wade claims the same privi-

lege for to-morrow.

Mr. Blain.—I beg pardon, Mr. Ross is entirely mistaken. What I said the other day was, I was cross-questioning the witness on this page 35 'E,' and then some interruption took place, and I said I would sit down to allow Mr. Macoun to read the letter, but for me to ask the Committee that I should have the floor at the opening of the next meeting, I never dreamed of such a thing. The Chairman was good enough to-day to say to me that I had the floor.

Mr. Davis.—I think this Committee has the right to make its own regulations,

and they can make regulations about that.

Mr. Wilson.—The rules of the House will not permit it.

Mr. Kidd.—We will talk as much as we like.

Mr. OLIVER.—That is the way you have of protecting the witness.

Mr. Davis.—I think there is a good deal in what Mr. Wade says. The way to get an intelligent examination of the witness is to let one gentleman go on and finish his examination of the witness, and have it done with; not spread it over three, four or five days, with other gentlemen chipping in, you are spoiling the whole thing that way.

Mr. Boyd.—I have not attended this Committee before, I have been away for some time, but as I understand the intention of this examination is that the facts with regard to that country are to be brought out, whether it is for the betterment of that country to induce more settlers to go in or to prevent them. I cannot say from what I have heard here to-day that this examination is going to better it in any way.

Mr. OLIVER .- Give us a chance.

Mr. Boyd.—You have had a chance, but it is a most unusual thing for Mr. Wade to come in and take possession of a witness, and I do not see any necessity for the motion.

Mr. CHAIRMAN.—Vote it down.

Mr. Ross (Victoria).-Mr. Wade does not mean any such thing.

The CHAIRMAN.—Vote it down if you want to do so.

Mr. BOYD.—We will not vote it down; we will come here the next day and talk

as much as we think fit.

Mr. Wilson.—It is well known that the rules of the House are the rules of the Committee, and no rule of this kind would have any effect. I do not propose if I want to ask a question to have it said that I shall not do it. I will ask it. I think we should be content to abide by the rules of the House; I do not think anybody will desire to shut Mr. Wade off if he wants to examine the witness.

Mr. Wade.—I have been trying here for three days to examine the witness.

Mr. Wilson.—Will you have the same chance as any other member of the Committee. I think you had better make yourself aquainted with the rules of the House, which govern here.

Mr. OLIVER.—I would like to say for my own part I have been trying since the first day we met Mr. Macoun here, to substantiate a statement I made with regard to his evidence, which I so far have not been given an opportunity to do.

Mr. Davis.—They will not allow you.

Mr. OLIVER.—And when gentlemen persist, I think I can do it in about an hour or two.

Mr. Wilson.—What time do you want ?

Mr. OLIVER.—I think I can do it in about an hour or two. I have not had any time yet.

Mr. Wilson.—You can have all the session if you want it.

Mr. OLIVER.—I think I can do it in about an hour or two hours if I had the time given me. But since we began, since 10 o'clock to-day, one half the time has been taken up by speeches by Mr. Macoun, and half of the rest of the time by speeches by those gentlemen who are trying to prevent this evidence from being got at.

Mr. DAVIS.—Where did you come in.

Mr. OLIVER .- I did not come in.

Mr. Ross (Victoria).—I was here at the last meeting and Mr. Blain claimed to have the floor when we meet again, I think it is so recorded.

Mr. Blain.—I just want to point out—

Mr. Ross (Victoria).—That is in the report, and it would be true.

Mr. BLAIN.—It is not right.

Mr. Ross (Victoria).—It would be true, and now Mr. Wade claims the same right to-morrow as Mr. Blain had to-day.

Mr. BLAIN.—No, I do not.

Mr. Ross (Victoria).—And Mr. Blain can interrupt Mr. Wade just as often as he likes.

Mr. Broder.—Well, put Mr. Wade on the same footing.

Mr. Blain.—We can get at this, I think—Mr. Ross, in the face of my statement to the Committee that I ask no such right, and the minutes of the meeting do not record any such claim—now then, in the face of my statement, Mr. Ross gets up here—

Mr. Ross.—I appeal to the Chairman.

The Chairman.—Just allow me, I think perhaps Mr. Blain may have forgotten precisely what he said at our last meeting, but I have a distinct impression, as Chairman, that Mr. Blain asked that he have the floor when me met again the following day. I kept it carefully in mind, and reminded him to-day that such was his opportunity and privilege. I do not say that the motion that is before the Committee is really necessary, but I think it is quite open for Mr. Wade if he chooses to claim the floor.

Mr. Wilson.—Nobody objects to that.

The CHAIRMAN.—But it is for you to do with the motion as you see fit. I think the best way is to put the motion to the Committee.

Mr. Blain.—I wish to correct that, I suppose the Committee in a moment will see

the difference-

Mr. WADE.-Mr. Chairman-

The CHAIRMAN.—Allow me to finish.

Mr. Blain.—I positively say that the statement the Chairman has made is absolutely wrong.

Several Hon. MEMBERS.—Order, order.

Mr. Blain.—What I say is absolutely true.

Some Hon. Members.—Order, order.

Mr. Blain.—Don't worry yourselves about that, order you, you keep quiet and don't worry yourself about me. I say emphatically I made no such statement, and the shorthand minutes will not show that I did so. I repeat what I say, I had the floor, I was questioning the witness on page 35 'E,' in reference to his report, and Mr. Oliver stood up and suggested that the Railway Committee was meeting, and some members of the Committee, I think Mr. Wilson, asked that the letter should be read at that stage. I said I would give way to have that letter read, with the distinct understanding that after the letter was read I had the floor; but for me to ask that I should have the floor at the next meeting I never attempted, nor never would dream of such a thing. Furthermore, there was no suggestion on my part that I should have

the floor at the next meeting. Now Mr. Mr. Wade stands up and says I must have possession of the Committee at the next meeting—a most unusual thing. I ask, I call upon the Chairman as an old parliamentarian, and a man of very large experience, to give a precedent for any such motion, and no precedent being given by the Chairman or any man on this Committee, I say it ought to be ruled out of order. That is my position. I do not wish Mr. Ross, Mr. Wade or any other man to make a statement here in respect to my position that is absolutely and entirely contrary to fact.

By Mr. Oliver:

Q. Might I ask what this Committee is here for, if it is here for the purpose of getting at the facts from the witness. If it is, certainly Mr. Wade's proposition is one that should commend itself to the Committee. But if we are here for the purpose of preventing these facts from getting out then the attitude of gentlemen opposing it is certainly accounted for. The witness is in possession of the facts and we want them.

An Hon. Member.—Is nobody in possession of facts except Mr. Wade ?

Mr. Wilson.—I don't think anybody has done more to prevent getting the facts than Mr. Oliver. He took very strong grounds from the beginning, and I think the witness has impressed his honesty on the Committee and has shown that he only wanted to tell what he believed is true, whether it was pleasant or not. I think Mr. Oliver has taken up as much time as any man in the Committee.

The Chairman.—I must put the motion unless there is an amendment.

Mr. OLIVER.—I might say in regard to my attitude in this matter, perhaps I might claim a particular interest in the evidence to be given, inasmuch as the constituency I represent lies closely to and adjoining that which he speaks of, and the reports he makes must necessarily, if unfavourable, reflect upon the country which I represent. Therefore I think I have a legitimate interest which the Committee should recognize in trying to bring out these facts which are favourable to the country rather than those which are unfavourable. Besides that, you will remember that at the first meeting of the Committee at which Mr. Macoun gave evidence that I had the temerity to suggest that Mr. Macoun's conclusions were not warranted by the facts. I did not challenge his facts; I did not challenge his statements, I only challenged his conclusions. However, I was the recipient of a torrent of abuse from that gentleman and from the gentlemen who support him.

Several Hon. MEMBERS.—Oh, oh.

Mr. OLIVER.—Yes, the records are here, and they show that, and as the witness was supported in that by certain members of this Committee, I certainly felt bound to follow this matter to an end until I get an opportunity to make good the statement that I made; and I think in all fairness should accord that to me.

Mr. Rem (Grenville).—I would like to know what the rules of the House are? Is it a fact that a majority of this Committee may take possession of it and prevent the minority from saying anything?

Mr WADE.—Nobody has asked that.

Mr. Reid.—That is exactly what is asked.

Mr. WADE.-No.

Mr. Reid.—Mr. Wade has the same privilege which other members of the Committee have. He has been up several times. I think there is no reason why he should take the liberty of holding the Committee the whole of next session. I would like to know your ruling on that?

The CHAIRMAN.—My ruling is this, that this motion as put into my hands is in perfect order. It is for the Committee to say whether it shall be granted or not.

An Hon. MEMBER.—Read it.

The CHAIRMAN.—(Reads) 'Resolved that at the opening of next meeting Mr. Wade be allowed to examine the witness.'

Mr. BLAIN.—Will the chairman explain to the Committee what alteration that will make in the usual proceedings of the Committee.

The CHAIRMAN.—I don't think it will prevent any individual member of the Com-

mittee from asking any question.

Mr. Broder.—Tell us what ruling you intend to enforce next meeting?

The CHAIRMAN.—That every individual member asking a legitimate question would be heard.

Mr. Broder.—What is the use of your motion ?

The CHAIRMAN.—I have nothing to say as to that. Let me put the question.

Mr. Wilson.—I think you will admit that the rules governing the Committee as a whole govern the standing committees of the House.

Mr. Wade.—What rules are there about the examinations of witnesses in the

House ?

Mr. Wilson.—I would like the ruling of the Chair.

Mr. WADE .- You have it.

Mr. Wilson.—You want to take it away from us.

Mr. Broder.—It seems to me that this may be in order, but it is very questionable.

The CHAIRMAN.—I cannot rule this motion out of order, but I would certainly say that it is not absolutely necessary, and this Committee need not grant the privilege unless they feel disposed.

Mr. Broder.—If it is intended to please Mr. Wade he is very easily pleased. The motion don't mean anything. If every member of this Committee has the right to

ask questions then the motion don't mean anything.

Mr. Ross (Victoria).—I suggest that Mr. Wade be asked to withdraw his resolution, with the understanding that he will have the opportunity at the next meeting of asking questions, and then any person can interrupt him.

Mr. Broder.—Everybody will agree with that.

Mr. Wade.—Mr. Chairman, I may say that when I put this resolution I was engaged in the examination of this witness. As you have said what your ruling is, or would be under certain circumstances, of course there is not much necessity for the resolution, and in deference to the request of my friend, Mr. Ross, with the consent of Mr. Davis, the seconder, and with the consent of the hon. gentlemen composing the Committee, I will withdraw the resolution. I want to go on with the examination of Mr. Macoun. If you—

Mr. Ross (Ontario).—I move we adjourn. I think we should go to the Railway

Committee.

The Committee then adjourned.

Having read over the above transcript of my evidence, I find the same correct.

J. M. MACOUN.

House of Commons, Committee Room 62, Friday, April 29, 1904.

The Select Standing Committee on Agriculture and Colonization met this day at 10 o'clock a.m., Mr. Douglas, Chairman, presiding.

The CHAIRMAN.—We will now hear Mr. Macoun in order that his examination may be completed.

By Mr. Wade:

- Q. Mr. Macoun you were sent out, you told me, to explore the Peace river country?
 - A. Yes. sir.
 - Q. The whole of the Peace river or the upper Peace river?
 - A. The upper Peace river, as I understood.
 - Q. The upper Peace river ?
 - A. Yes, sir.
 - Q. Were your instructions verbal or in writing ?
 - A. Verbal.
 - Q. And who is the officer that sent you, Dr. Bell ?
 - A. Dr. Bell, yes, sir.
- Q. Well, I am going to ask you, Mr. Macoun, I want you to understand that I want to get information and all the information I can, and I would like you therefore—I see you have made the maps I asked you to make—to point out on the map the route that you travelled?
 - A. Yes.
 - Q. And give us the names of the places and the distances ?
- A. Well, the distance I can only give you by referring to my note book as I go along.
 - Q. That is right.
 - A. If you would allow me to say within about a mile or two ?
 - Q. Approximately?
- A. I think every one can see the map if I use a pointer. This red line here is on the trail from Lesser Slave lake to Peace river landing. My finger is on Peace river landing.
 - Q. Peace river landing, is that at the beginning of the country you visited ?
- A. That is the beginning of the upper Peace river, what I call the uper Peace river country. From there I went to Vermilion and came back on July 2 to Peace river landing. From Peace river landing between July 2 and July 5, I travelled over this piece of country here under my finger between Peace river landing and the Smoky river mission. Smoky river mission is the largest settlement in the Peace river country, where Mr. Brick and others live.

By Mr. Wright:

- Q. What do you call it ?
- A. Smoky river mission. Smoky river flows into the Peace river from the south, and the mission is on the north side. From Smoky river mission I went to Old Wives' lake, just here.

By Mr. Wade:

- Q. You have not given us the distance ?
- A. The distance from Peace river landing to Smoky river mission is between 8 and 12 miles, commonly called 10 miles. It is dependent upon what part of the settlement you go to. From Smoky river mission to Old Wives' lake, which is the next point marked on the map, is 15 miles. I spent two days in these two places; I followed that route (pointing to map).

By Mr. Blain:

- Q. May I ask, Mr. Chairman, what these red marks are; I did not see them on the original map?
- A. Mr. Wade asked me yesterday if I would mark down on the map the route I followed.

Q. That indicates your route?

A. Indicates my route, yes, sir. We spent two days on these 15 miles from Smoky river mission to Old Wives' lake—at least we were two days in camp here—and examined the country north and south of our camp. I went to Old Wives' lake, camped there, and examined the country in this direction (pointing to map). The next day I went from Old Wives' lake in this direction north to Bear lake and followed along south of the lake to this point where we camped again.

By Mr. Wade:

Q. What is the distance ?

A. The distance would be about 15 miles by the route we travelled to this camp. The following day we camped half way between here and the White Mud river. It is a matter of about 12 miles, I should say, between there and White Mud river. Next day I camped at White Mud river itself.

Q. What is the distance ?

- A. About 15 miles to where we camped. At this place between this point and the Battle river trail just over here I spent three days examining this whole region of country. I might say that on each of these days I went along here, I travelled from 15 to 20 miles, looking at the country on one side or the other of the actual route.
 - Q. You did not give us the distance?

A. This distance is about 10 miles.

Q. From where to where ?

A. From where we camped on the White Mud river to what is called the Battle river trail. I travelled about fifty miles in that region.

By Mr. Wilson:

Q. Is that not in your report ?

A. That route is followed exactly in my report.

Q. What page is it ?

A. Where we have just been speaking of now? It is on page 18. The White Mud trail is marked as a side note.

By Mr. Blain:

- Q. Do I understand you to say that you travelled 15 and 20 miles on each side of that red line?
 - A. In addition to the distance my pack train moved.

Q. Your red line indicates the pack train?

A. Just the trail it travelled and nothing else.

Q. Are we to understan you travelled a good deal outside of that?

A. Yes; you must understand that I saw the whole of this region travelling north and south or east and west of the pack trail as the case might be; I am giving just the distance I travelled on that trail. That does not indicate exactly the distance or the amount of the distance I walked or rode.

By Mr. Stephens:

Q. Were you on horseback or did you walk?

A. I always walk. Occasionally when we camped, and I wanted to make a long trip, I went on horseback to see the country. Travelling through the country a man can walk faster than a pack train can go, and I saw the country in that way. As a matter of fact, I had no riding horse for myself that year. I had them for my men, and I took a horse when it was not used in camp. But I walked every single foot of that distance.

By Mr. Wade:

Q. Get on with your evidence ?

A. I cannot help it when they interrupt me. I think I might read the distances from my note book; I have my note book here (after referring to note book) I find that I have noted the distances in my note book in this way: 'Travelled 5 miles to such a river and two miles to such a river,' and so I think I had better trust to my memory if you will allow me. It will save time.

Q. State the place and the distances between.

A. From the White Mud river, crossing the White Mud river on the Battle river trail, we travelled south in this direction to Island lake. We were two days making that trip of about 30 miles on the trail. From Island lake we went 21 miles southeast to Little Burnt lake and camped on the Little Burnt river. From there I went down to Dunvegan. That covers this route in that direction and so to Dunvegan. From Dunvegan in order to see the Peace river valley, that is the valley itself, I took a boat and floated down the stream to Smoky River Mission, looking at the banks of the stream as we went along.

Q. Never mind, what distance is that you went by steamer ?

A. I did not go by steamer, but floated down by boat, landing wherever I could see a good piece of land.

Q. That is in the valley?

A. I have not marked it on the map at all. I floated down to Smoky River Mission, they call it 50 miles by river. Then I walked back again, following this particular route. They call it 60 miles from here to Dunvegan by the trail, but I think it is nearer fifty.

Q. Give the distance first ?

Mr. Ross (Victoria).—I cannot hear the questions.

By Mr. Wade:

Q. Go on and give the distances travelled and the places and we will go back on it afterwards.

A. Very well.

By Mr. Ingram :

Q. You spoke about 60 miles to Dunvegan, where is that from ?

A. Smoky River Mission. I just took their estimate of the country for that distance. They call it 60 miles, but I think it is nearer 50 miles. I went south from Dunvegan to the Spirit river. It is called 15 miles. From Spirit river I went west then to Pouce Coupé prairie on the trail, a matter of 70 miles. Pouce Coupé prairie begins just under my finger. I stayed three days in that region and covered the country. I could not tell you how many miles I travelled. I show on the may how much country. From Pouce Coupé prairie I skirted this high plateau coming towards Grande Prairie, towards this point here.

By Mr. Wright:

Q. What is that other prairie?

A. Pouce Coupé prairie, the French word for 'cut thumb.'

By Mr. Ross (Ontario):

- Q. How do you spell it ?
- A. P-o-u-c-e C-o-u-p-é ?

Q. Pouce Coupé ?

A. Pouce Coupé. From Pouce Coupé prairie I travelled in this direction to Grande Prairie and camped here, making the trip over the prairie in this direction,

and then went to Saskatoon lake where the Hudson Bay Company's post and the traders' posts are.

Mr. WADE.—You are not giving the distances.

By Mr. Ross (Victoria):

Q. What do you mean by travel, were you on horseback or foot ?

A. I mean the men camped and I travelled on foot in that direction. My own travels were altogether beyond this trail.

By Mr. Wade:

Q. What was the last distance?

A. The distance from Pouce Coupé to Grande Prairie is the same as from here to here, we call it about 75 miles, but I will give you the distance exactly.

Q. I only want it approximately.

A. About 75 miles. From Saskatoon lake to the Beaver Lodge river is 15 miles. People settled on the Beaver Lodge river last spring, and I went to see their place. This 15 miles from Beaver Lodge I followed along the southern side of the Grande Prairie—that is the line shown here—and north in this direction and so on here to the centre of the prairie. That would cover, I think, about 50 miles, this region here-From there I went back again on this trail, as shown here, to Spirit river and Dunvegan. That was about 45 miles.

By Mr. Lennox:

Q. If the witness would mention, instead of saying from here to here, that he went from a certain place to a certain place, it would be intelligible in the evidence.

A. I have done that, in every case the place had a name I have mentioned it. I mentioned from Pouce Coupé Prairie to Grande Prairie, from Grande Prairie to Beaver Lodge creek, then the 15 miles on the Grande Prairie itself, and I would say about 50 miles between Grande Prairie and the Spirit river. I am not sure, about 45 or 50 miles. Then this was my route from there to Lesser Slave lake.

By Mr. Wade:

Q. Now, from the time that you got to the Peace River Landing until you left the country, what time elapsed ?

A. The better way to answer that would be to give the time I left Peace River

Landing.

Q. Very well, from the time you left Peace River Landing? A. To make this trip?

A. I reached Peace River Landing July 2, and reached Lesser Slave lake on September 4, two months and two days.

Q. Two months and two days ?

A. Yes.

- Q. How long were you going from Spirit river to Lesser Slave lake ?
- A. Eight days, I think it was, seven or eight days.

Q. Seven or eight days ?

A. Yes, sir.

- Q. Have you reported upon that part of the country between Spirit river and the Lesser Slave lake?
 - A. Yes, sir.

By Mr. Ingram:

Q. Spirit river and Ghost river are the same ?

A. Spirit river and Ghost river are the same place.

By Mr. Wade:

- Q. In the first instance, you went from Peace River Landing to Vermilion?
- A. Yes, that was before I started on the trip. That was in the month of June, on June 11, before I started.

Q. How did you go to Vermilion ?

A. I went on a small steamer from the Roman Catholic mission.

Q. How far it is to Vermilion from Peace River Landing ?

A. They call it 283 miles.

Q. You didn't land from the steamer until you got there ?

- A. Except when they stopped to get wood several times. I was not outside the river valley.
 - Q. How many days did you spend in the vicinity of Vermilion ?

A. Ten days.

By Mr. Ross (Ontario):

Q. Are there Indians in that country?

A. A great many Indians in the Vermilion country, but there are very few, practically none, I think only three Indians left at Dunvegan.

Q. What variety of birds did you see ?

A. I have made a list of the birds. I saw 120 kinds of birds.

Q. You saw 120 species? A. Yes.

Q. What kind of wild animals did you see ?

A. I did not see any, except rabbits—I saw two or three bears.

Q. Any buffalo there ?

A. Not where I was.

By Mr. Wade:

Q. In giving your evidence the other day, I find on page 46, you said-

A. Excuse me, Mr. Wade, I think it is only fair to Mr. Macoun that he should have a copy of this evidence. Six copies were made. I have not seen this evidence since I handed it in, although members quote from it continually. I have not had it in my hands. I think I should have a copy.

Q. I don't think there is any objection. Have you ever asked for it. you could get it if you ask for it.

A. I asked for it yesterday.

Q. I don't think there is any objection to your having it, in fact, I would sooner you would have it. I find on page 46 that you said: 'I am simply corroborating everything that any one else has said about that country.'

A. I have not got that evidence, I have the wrong copy here. I think you are not quoting from the first day. I have page 46 here, and there is nothing of the kind

on it.

Mr. Wilson.—I think the witness should have a copy of each day's evidence.

By Mr. Wade:

Q. This is April 22. Will you give me that day's evidence. Just look at page 46 ?

Mr. Blain.—Without wishing to be misunderstood, I would like if Mr. Wade would stand at the end or the table. I don't think anybody can hear his questions.

Mr. Wade.—I turn around when I ask a question. I make every question heard.

Mr. Broder.—I notice when we don't speak loud we hear much better. The echo is done away with then.

Mr. Ross (Ontario).—I really think we had better adjourn until we get our own room.

A. PENDIX No. 2

By Mr. Wade:

- Q. Is this right, that you stated in your evidence, 'I am simply corroborating everything that every one else has said about that country.' Is that right?
 - A. I said that, yes, sir.
- Q. And further down, 'No man can produce a single line about the Peace river country that I talked about the other day which is at variance with what I have said in the report, nor can any witness be brought that can contradict me. I put in every good word that I could find about that country.'
 - A. Yes, sir.

Q. That is right ?

A. That is what I said the other day.

Q. Well now, as a matter of fact, you and Dr. Dawson are at direct conflict as to the depth of the soil on the Grande Prairie?

A. Yes, sir.

Q. He claiming that the soil is deep and rich, and you claiming that it is rich but is not deep.

A. That is the difference, sir, yes.

Q. Well, then you are a bit wrong in stating that no one could be found at variance with what you have said?

A. Well, I explained that.

Q. I know what your explanation was, but you were wrong in stating that. Dr. Dawson and yourself are at variance with regard to the depth of the soil on the Grand Prairie?

A. Yes, there is no doubt of that. I had explained that though to the Committee

at the time.

By Mr. Ingram:

Q. Please explain that again ?

A. If the Committee will allow me-

By Mr. Wade:

Q. I think we will get along better if you will answer the questions. Every possible opportunity will be given you to make explanations.

A. As I said—

Mr. Lennox.—Mr. Chairman, I rise to a point of order. I do not understand that this Committee is here for the purpose of quibbling upon words and wasting time in pointing out to this witness through Mr. Wade or anybody else that there is a slight variation in a statement, that there could be an argument founded upon a particular expression he used on a former occasion. Let us have his statements, and we can accept them or reject them as we see fit, but we are not here for the purpose of

quibbling upon words.

Mr. Wade.—Mr. Chairman, I am very glad that the gentleman has made the remark that he has. I am not here for the purpose of quibbling upon words, but a witness has come upon the stand here as a paid official of the government, who has gone into the country, has made an examination and has presented a report. In the evidence which he gave here the other day he stated emphatically that not a line about the Peace river country at variance with his report could be found. Now I have shown from the lips of the witness himself that he is in direct conflict with Dr. Dawson upon one point, namely, the depth of the soil, and I submit to this Committee that that is one of the most important things in connection with the whole matter. Either this witness is right—

Mr. Ingram.—Is this a point of order?
The Chairman,—It is not a point of order.

Mr. WADE.—Either this witness is right or he is wrong. He says the soil is shallow, and Dr. Dawson says it is deep. Now we want to determine which is right.

Mr. Macoun.-Mr. Chairman, I think if you will allow me a single word of explanation I would be very much obliged. What Mr. Wade says is perfectly correct, but every member of the Committee knows that in my report I pointed out the very difference that he is now asking about that Dr. Dawson and I are at variance upon the soil. I had already in the Committee spoken of it as part of the report, and although I use the words that are here and used them in the sense they are meant as well, every member of the Committee knew at that time that Dr. Dawson and I were at variance about the soil. I was talking about the bad and good things that other people had said. I had not Dr. Dawson in my mind at all. Dr. Dawson had already been quoted, and when I spoke there I had in mind the bad and good things that other pople had said about the Peace river country. I still hold to what I said that I do not know a single good thing about that country that I have not quoted.

Q. But you find yourself at variance with Dr. Dawson about the depth of the soil ?

A. I made that clear in the report.

Q. That is what I want to get from you, that you were at variance?

Mr. Lennox.—I want to ask the Chairman what line he is going to take, because I submit it is not worth while for gentlemen of the Committee to come here day after day and listen to this kind of thing. I came here for three days, and I went away when I found out what was going on, when I found that this kind of thing was going on. What I want to say is this: The Chairman is here to control the Committee, and I ask him to control the Committee and say whether this course of action is to be pursued by Mr. Wade or any other members of the Committee. If it is, I do not for my part consider it worth while to be here.

The CHAIRMAN.—My ruling in the matter is that I believe Mr. Wade is perfectly

in order in seeking that information.

Mr. Lennox.—Very good, now we have your ruling.

Mr. Macoun.—Allow me to repeat what I said. No man can produce a single line about the Peace river which is at variance with my report—that is, my printed No man can do it, because in my report there I refer to that very thing which Mr. Wade objects to. That is in my report what Dr. Dawson said on the soil was certainly at variance with my own statement, but I quoted it in my own report.

Mr. Wade.—Now we will quote your report, I have got it here.

A. It is on page 21: 'While I cannot agree with Dr. Dawson in saying that the soil is "deep," or that it cannot be surpassed in excellence, it is true that a very small proportion of the surface is unfavourable for cultivation.'

By Mr. Wade:

Q. Mr. Macoun, I started out to get from you an admission that you are at variance with Dr. Dawson ?

A. No, sir, you did not. If you will allow me-

The CHAIRMAN.—Order.

By Mr. Wade:

Q. I started out to get from you an admission that you are at variance with Dr. Dawson on the depth of the soil and you admitted it?

A. That is right.

Q. What is the necessity for talking or any explanation ?

Q. You are squarely at issue with Dr. Dawson as to the depth of the soil on Grande Prairie?

A. Certainly.

Q. Well, that is my object in getting that ?

A. That is all right.

Q. You also say that no witness could be found, would you be surprised for a witness to be found who would contradict this statement in regard to this country?

A. What region is that Mr. Wade, please, the Grande Prairie ?

Q. The upper Peace river country and the Grande Prairie. Now, the witness I referred to writes as follows:—

ALTANA, MAN., April 21, 1904.

DEAR MR. STEWART,—I have read the article in the Globe on Mr. Macoun's report of the upper Peace river country. I wish I could have been there to prove the incorrectness of what Mr. Macoun said about the Grande Prairie, both as to soil and vegetation. He said that there was very little vegetation and only two to four inches of loam covering the subsoil.

Mr. Macoun.-I did not say that.

'I know that this is not correct. I never saw such a layer of humus soil in my life as I have seen in the Grande Prairie. In fact I have seen in lots of places black humus soil from one to three feet deep and with a hy dry land supporting an enormous growth of grass, pea vines, and nearer the foot hills there are vast stretches of the celebrated bunch grass growing. I know whereof I speak, for I have travelled through the whole of the North-west from Winnipeg to Fort Graham, from the international boundary as far as Athabaska landing, and all along the Saskatchewan, and I can prove that west of Edmonton our fair Dominion owns several Manitobas in fertility and area equal to the one I am living in, and I know that the Grand Trunk Pacific in going through the Peace river country will open up much more fertile lands than ever the C.P.R. did.'

By Mr. Wilson :

Q. What are you reading from ?

Mr. WADE.—A letter signed by John Hiebert.

Mr. Wilson.—What is his business ?

Mr. WADE.—You will see by the letter what his business is.

By Mr. Wade:

Q. Would you be surprised-

A. I would be surprised if he came here and made that statement whoever he is.

Q. You would ?

A. Yes.

By Mr. Ingram:

Q. I have another witness here I will quote in opposition to that. The witness is Mr. C. H. West, a government officer, who, speaking of the district of Grande Prairie, says: 'A good deal of excitement seems to have existed about the Grande Prairie country last summer and winter, and several came in to look through the country, but as they did not find it the paradise they expected, most of them returned and I hear, condemned it as being no good.' That is another witness, a government officer.

Mr. WADE.—That is not an officer that condemns it.

Mr. INGRAM.—It is the officer.

Mr. WADE.—He says it was 'disappointed settlers.'

Mr. INGRAM.—That is what he says.

Mr. Wade.—He says 'disappointed settlers.' It is not the officer himself.

By an Hon. Member:

Q. Who is he?

4 EDWARD VII., A. 1904

Mr. INGRAM.—Mr. C. H. West, Inspector of the Mounted Police in the Grande Prairie district.

Mr. Blain.—Might I ask Mr. Wade a question. Will Mr. Wade tell us how long this gentleman that signed the letter and visited the Peace river district, how long he spent there?

Mr. WADE.—I think he had better be brought here and we will examine him.

Mr. Blain.—That is not an answer to the question.

Mr. WADE.—I know nothing more than is in this letter.

Mr. BLAIN.—Who is the gentleman ?

Mr. WADE.-Mr. Heibert.

Mr. Blain.—Where does he live now ?

Mr. WADE.—Somewhere in Manitoba.

Mr. Blain.—Perhaps Mr. Stewart will answer the question. I just want to ask the question. The reason is that Mr. Macoun spent three months in that district.

Mr. WADE.—Two months.

Mr. BLAIN.—He spent three months.

Mr. MACOUN.-Two months.

Mr. Blain.—Two months, I beg your pardon. It is only fair to know how long the gentleman who is giving other evidence spent in that country.

The Chairman.—Mr. Stewart knows something about it, perhaps he will give us some information?

Mr. Stewart.—Mr. Heibert is a resident of Manitoba. He has been in Manitoba for about 30 years and has travelled all over the country as he said. He is a merchant in Altoona in the Mennonite district, which is considered the garden of Southern Manitoba. He spent a summer with four or five men in that country.

Mr. WADE.—What country ?

Mr. Stewart.—The Peace river country.

Mr. WADE.—In summer ?

Mr. Stewart.—In summer.

Mr. Blain.—What summer ?

Mr. Stewart.—I cannot tell you whether it was 1897 or 1898.

Mr. Blain.—How many months?

Mr. Stewart.—I cannot tell you how many months, he spent a summer.

Mr. WADE.—He spent a summer.

Mr. Blain.—I can understand the word summer. I am asking Mr.. Stewart. Did he leave early in the spring?

Mr. Stewart.—He left Manitoba early in the spring, very early and he did not get home until the fall.

Mr. Parmalee.—That is a summer.

Mr. Blain.—That is all right, I am asking this question. I would like to ask Mr. Stewart—would you say of your own knowledge how long this man spent in this part of the country to which Mr. Macoun refers on which to make any report?

A. I do not. I was not with the party.

Mr. Blain.—I am not asking that.

Mr. Wade.—You have a hard job giving this country a black eye.

Mr. Blain.—Can't this persecuting counsel keep quiet. He is persecuting the patience of this Committee.

The WITNESS.—I would like to quote—

Mr. Blain.—Mr. Stewart, can you tell of your own knowledge how long this gentleman spent in this district?

Mr. Stewart.—I can't say that

Mr. Blain.—Then we are to understand that a letter is produced here supposed to be evidence—

Mr. Wade.—No, I am not producing it as evidence. I have read a certain statement from a letter, and asked the witness if he would be surprised to have a party come here and state that.

A. I said I was.

Mr. Blain.—Might I ask just this question. The attention of the Committee was drawn to a letter written by a gentleman who was supposed to have spent some time in that country. I asked the gentleman who produced the letter how long the writer of it had spent in that country, and he says he don't know.

An Hon. Member.-No.

Mr. Blain.—I am saying that the gentleman who produced the letter says he don't know anything about the man, or how long he spent in that country. He refers to Mr. Stewart and says the same thing.

Mr. WADE.—I beg your pardon.

Mr. Blain.—I ask how long he spent there ?

Mr. Stewart.—I can't tell you.

Mr. Blain.—There is an answer to Mr. Wade.

Mr. Stewart.—I know he spent the summer there.

Mr. Blain.—Will he say that he spent the summer there in the country on which Mr. Macoun is reporting?

The CHAIRMAN.—I think you should be satisfied with the answer such as it is. The answer is simply this, that he spent a summer there, and he gave it for what it is worth, Mr. Blain.

Mr. Blain.—I don't wish to be contentious. I want to ask Mr. Stewart a single question.

The CHAIRMAN.—All right.

Mr. Blain.—Mr. Stewart, when you say-

Mr. Stewart.-No, I will not say anything.

Mr. Wade.-Mr. Stewart is not here to be cross-examined.

The Witness.—I want to read a selection from my report—

Mr. WADE.—We will take it up again where we leave off.

Mr. Wilson.—I would like to ask-

The Committee then adjourned.

Having read over the foregoing transcript of my evidence, I find the same correct.

J. M. MACOUN.

House of Commons,

COMMITTEE ROOM 32,

TUESDAY, May 3, 1904.

The Select Standing Committee on Agriculture and Colonization met this day at 10 o'clock a.m., the Chairman, Mr. Douglas, presiding.

The CHAIRMAN.—The next unfinished business is the continuation of the examination of Mr. Macoun.

Mr. Macoun,—Mr. Chairman, under the heading 'Communications,' there is a communication from me to yourself. I would like to have it read to the Committee if you have no objection.

The CHAIRMAN.—I suppose there is no objection.

Mr. WADE.—I should think the examination had better proceed.

2-44

Mr. Macoun.—I addressed a communication to the Chairman under the impression that it would be brought before the Committee; it was certainly written for that purpose. The communication asks that a certain gentleman be called before this Committee to give evidence, and I think it is very important that it should be read.

The CHAIRMAN.—I do not know that I need trouble you with the whole affair, but the principal point of the letter is this, that Rev. Father Hughson, from the Peace river country, who has been many years living in that region, is now in Ottawa, and he is willing to appear before the Committee and make a statement if they so desire. I met him on Saturday, and in addition to the communication from Mr. Macoun, which I now lay on the table, I may state that the Rev. Father Hughson is quite willing to make a statement about the Peace river country if the Committee so de-

Mr. Macoun.—Three other names are also mentioned there, Mr. R. G. McConnell-

Mr. WADE.—Why not read the letter?

The CHAIRMAN.—It is as follows: 'Dear Dr. Douglas, I happened to meet on the street this morning the Rev. Father Hughson, who has been for many years in the Peace river country, and from whom a considerable part of the information embodied in my report was secured. Father Hughson will be in Ottawa over Tuesday, and I would most respectfully suggest that he be asked by you to come before the Committee and tell to the members what he knows of that country. This is the more important as he is the man who has done more than any one else to make a success of such agriculture as has been carried on at the various missions. I have no idea what Father Hughson will have to say as I had only few minutes' conversation and the country was not specially spoken of. I was sure that you would be most willing to avail yourself of this chance to get information at first hand.

'You will, perhaps, also permit me to suggest that instead of quibbling about Dr. Dawson's report, his assistant, Mr. R. G. McConnell, of this department, be called to Mr. McConnell was with Dr. Dawson in 1879, and he is referred to in my report. Mr. H. A. S. Macloed, 340 Cooper street, a railway engineer, also travelled with Dr. Dawson that year and examined a considerable part of the country. Mr. Macleod should also be called before your Committee to give evidence. Charles Wright, who knows the country well, a former partner of Mr. George Macleod, a son of your secretary, also lives in Ottawa and should be called by your Com-

mittee to give evidence.

'Yours truly,

JAMES MACOUN.

Mr. Macoun.—I am sure, Mr. Chairman, that if the investigation were confined to an examination of me and my evidence I would be perfectly satisfied to have nobody called. If it is proposed to call evidence in rebuttal these are the gentleman I would like called first.

Mr. WADE.—I wish to protest against a witness dictating a course which the Committee should pursue in the way this witness is. Surely we can decide for ourselves whom we will call as witnesses, and it is not for him to suggest the names of witnesses to be called or the course we should pursue. I think it will be very much better if Mr. Macoun would not show so much animus in this matter and allow the examination to proceed.

Mr. Macoun.—Very well.

Mr. WADE.—It is for the Committee to take whatever course they see fit. would like to ask Mr. Macoun, have you ever read Dr. Gordon's book ?

A. No, I never have.

Q. 'Mountains to Prairie.?'

A. I never heard of it before. No, I never read Dr. Gordon's book.

Q. Well, it is a very nice book. I will have to compare some of his statements with yours later on. I am going to ask you a few questions more touching the evidence you have given. You have told us the course you took in going round the country, and you have given us the mileage, but I do not think it has been added up. How many miles did you travel?

A. I never added them up. I travelled from 25 to 30 miles a day, but I never

added up the mileage.

- Q. In your outfit, you have told us you had not spade, or shovel or anything of that kind?
 - A. No, I had no spade or shovel, I had an axe and a knife.

Q. You had an axe and a botanist's knife?

A. Well, a large sheath knife.

Q. A large sheath knife. Yes, and it was with that axe and with that sheath knife that you tested the depth of the soil?

A. That and digging tent post holes and things of that kind. It was with those

implements that it was done.

Q. With those implements. Now, the soil you say that you saw in the Grande Prairie section was shallow—it was only about—

A. From four to six inches I mentioned in my report.

Q. Four to six inches deep. That is, for that part of it-

A. That I travelled.

- Q. And then you assume that the balance would be the same as that you travelled over ?
 - A. Never, sir. In my report-
 - Q. Well, do you assume—
 - A. No, in my report—
 - Q. Tell me, do you?
 - A. Indeed, I do not.
 - Q. That is a simple question ?
 - A. I thought you said I did assume.
- Q. Then you did not assume that the soil in other parts of the Grande Prairie might be better?
 - A. Certainly, I say in my report that it may be better in other places.
 - Q. You are only speaking from the part you went over and examined?

A. That is all, sir.

- Q. And that is true of the other section ?
- A. True of the whole country, sir. I make no general statement.
- Q. I think you told us that the whole of the upper Peace river country contains about 23,000,000 acres?
 - A. I said Dr. Dawson had estimated it at that. I never estimated it myself.
 - Q. You based that on Dr. Dawson's estimate?
 - A. I just assumed that was correct.
 - Q. Had you any reason to suppose it was not correct?
 - A. None whatever, I have never measured it myself.
- Q. Well, now of those 23,000,000 acres how much of it is fit for habitation, settlement?
- A. Well, I estimated that very carefully, because I considered of course, as you do that it is an important matter, and I would say four-fifths of it in a general way. Of course as you know part it is wooded. One-fifth would be swamp and muskeg and rest I would consider fit for habitation.

Q. Fit for settlement. Now in making your report did you depend entirely on what you had seen yourself?

A. No. sir.

- Q. You gathered information from other sources ?
- A. All that I could gather, yes, sir.

2-441

4 EDWARD VII., A. 1904

Q. Well, is it not likely that Dr. Dawson did the same thing when he was going through there ?

A. I think very likely. I am quite sure he would do so.

Q. I notice in part of Dr. Dawson's report, I do not know whether you have it or not—

A. I have it here.

Q. That he gives the reasons, or one of the reasons why he knows the depth of the soil. He says that the buffalo runs were worn deep. Can you turn to the paragraph you quote from here with regard to Grande Prairie?

A. That is pages 53 and 54. 'Buffalo trails still score the sod.' I think that is

the paragraph.

Q. What page is that from ?

A. Page 54 'B' of Dr. Dawson's report. 'Buffalo trails still score the sod in all directions and are deeply hollowed out'

Q. That is the statement in his report?

A. Yes, sir.

Q. You did not include that in your report ?

A. No, I did not see any reason why that should be included.

- Q. There is just this reason. You admitted in your evidence the other day that Dr. Dawson rode through this country on horseback and that you went on foot, and consequently you had a better chance for learning everything about the soil than he did.
 - A. These buffalo trails are still here; I saw them myself.
- Q. You did not report them. He reports them as evidence of the depth of the soil ?
 - A. I was not considering that at all, but Dr. Dawson referred to it in his report.

Q. What does he say? Let me see the report for a minute, please?

A. It is near the top of the page ?

Q. 'The soil of Grande Prairie is almost everywhere exceedingly fertile, and is often, for miles together, of deep rich loam which it would be impossible to surpass in excellence. The loam ridges sometimes show rather light soil with an admixture of sand or gravel and a few boulders, but a very small proportion of the surface is unfavourable to cultivation. Buffalo trails still score the sod in all directions, and are deeply hollowed out where a number converge for the crossing of a river or a lake. or some such place.' Now if buffalo are scored down into the soil don't they show the depth of the soil?

A. If they were scored into the subsoil ?

Q. What I am getting at is this. If they are scored down through the top soil and into the subsoil, then you can see the depth of the soil?

A. Certainly, why of course. Oh, no, I beg your pardon, those buffalo trails are all grown over with grass.

Q. Those that were not grown up ?

A. There were none that had not grown up in 1879.

Q. He says they are still there.

Mr. Ingram.—Mr. Macoun says in his report, 'While I cannot agree with Dr. Dawson in saying that the soil is "deep," or that it cannot be surpassed in excellence, it is true that a very small proportion of the surface is unfavourable for cultivation.'

Mr. Macoun.—Let me read what Dr. Dawson says about buffalo ?

By Mr. Wade:

Q. Don't let us read that.

A. It is absolutely necessary, the buffalo were all extinct many years before that.

Q. Certainly, we all know that, we all know that the buffalo is extinct.

A. If you will allow me, Mr. Chairman, to give that explanation: 'Buffalo trails still score the sod in all directions and are deeply hollowed out where a number con-

verge for the crossing of a river or a lake, or some such place—saucer-shaped wallows of the buffalo. Scattered bones are also numerous though the animal is now no more seen here. The Indians state that the extinction of the buffalo was not entirely due to the introduction of fire arms and the active hunting carried on for the supply of the Hudson's Bay Company posts, but the remnant were killed many years ago by the excessively severe winter when the snow was over the buffaloes' backs. Those tracks are all grown over with grass and there is not a particle of soil to be seen in them anyway.

Q. Do you know whether Dr. Dawson in his outfit carried spades or shovels ?

A. Nobody who travels with a pack train does.

Q. Do you know or not ?

A. No, I do not.

Q. Well, that is all I asked you. Now, I asked you if a man is on horseback and has helpers with him, if he cannot have those helpers dig the soil and see how deep it is ? It is not necessary for him to get off his horse, is it ?

A. Certainly not.

Q. You have told us something about settlers you have met turning back. How many of them did you meet ?

A. I mention the names of three-

Q. How many ?

A. Between six and ten, I should say.

Q. These you found coming back ?

A. All that were left in the Grande Prairie country.

Q. How many settlers have ever been in the Grande Prairie country, as far as you know?

A. Well, I have no personal knowledge. All I know is that those I met.

Q. Where did they come from ?

A. Those I have met ?

Q. Yes.

A. Some came from near Edmonton, and two or three men near Spirit river came from Manitoba. One man who has a wife and nine children came from Nebraska.

Q. Outside Vermilion, what is the population of the whole of the Peace river

A. Well, I do not know exactly how many settlers.

Q. About how many ?

A. Outside the Peace river valley and Vermilion, the population is about sixteen people.

Q. Outside of what ?

A. Outside of Vermilion and the Peace River valley, about sixteen people.

Q. How many would you suppose were in Vermilion?

A. There are 32 people farming there; I don't know what their families are.

Q. Thirty-two families ?

A. Some of them may be unmarried, but there are 32 men farming there.

By Mr. Hughes:

Q. How long have they been farming?

A. Some for nearly 20 years. The Lawrence family, old man Lawrence, I think, was there nearly 20 years.

By Mr. Wade:

- Q. And those in the Peace river valley and Vermilion, how many there?
- A. I should say 25 or 30.
- Q. Men and their-
- A. Men and their families. The Indians do a lot of cultivating.

4 EDWARD VII., A. 1904

Q. But outside of the Indians ?

A. About 25.

By Mr. Hughes:

Q. Did you find in the valley at Vermilion any evidences of a colony having settled there on land given by the government.

A. No, sir. None of the people in the valley hold their land in tenure. It has

not been surveyed at all.

Q. There was no settlement ?

A. Not that I heard of, all the people had squatted.

By Mr. Wade :

Q. Is it possible to settle up that country without railway facilities?

A. The Peace river country ?

Q. Yes.

A. I should say not, sir.

Q. And would not, in your judgment, a railway constructed through that country tend to its rapid filling up ?

A. Will it not be filled up by means of a railway?

Q. Would it not tend to rapid filling up of that country ?

A. It would all depend upon the results as to whether the people succeeded who first went there.

Q. I am asking your opinion ?

A. I do not know, sir.

By Mr. Hughes:

Q. The Peace river country covers several hundred miles.

A. I always say the upper Peace River country.

- Q. Do you mean to say the lower Peace River country could not be settled without a railway?
 - A. It could not be settled up to the limit of its market, certainly.

By Mr. Blain:

Q. Did I understand you to say that one settler had been farming in that district for more than 20 years?

A. Down at Vermilion, I think Mr. Lawrence—he is now dead and his family have the place—I think Mr. Lawrence took up farming there more than 20 years ago. In fact I know that.

Q. Do I understand that a farmer went in and settled 20 years ago ?

A. He was a missionary, and so was Mr. Brick in the Peace River country. That is how the settlements grew up around the Roman Catholic and the Church of England missions. These old settlers, Mr. Lawrence at Vermilion and Mr. Brick at the Smoky river mission were missionaries who carried on farming, and their sons continued to farm.

By Mr. Wade:

- Q. I just want to ask you one more question, Mr. Macoun. What did you give us as the altitude of Grande Prairie?
 - A. I think between 23 and 25 hundred feet as the altitude.

Q. What does Dr. Dawson give ?

A. I do not think Dr. Dawson mentions the altitude.

Q. I think he does?

A. I think not. If he does it is 2,300 feet. I think Dr. Dawson has put the altitude on his map.

By Mr. Hughes:

Q. It would depend on which side of the Grande Prairie country it was, whether east or west ?

A. Of course it varies. The north and the west ends are higher than the east and the south.

By Mr. Wade:

Q. You and Dr. Dawson went over the same ground ?

A. Yes, we covered practically the same ground.

Q. So that there can be no difference in that respect?

A. (After referring to the map) Dr. Dawson does not give the altitude of Grande

Prairie itself, but he mentions it in a report. It is 2,300 feet, I think he said.

Q. Then Dr. Gordon, in his work that I have referred to, makes the statement that the daylight in this section is about an hour and a half longer than it is at Toronto?

A. Yes, that is about correct.

Q. At Dunvegan he says and in that vicinity. That would be right, would it not?

A. That is about correct, yes.

Q. And he says it largely enhances the value of the northern prairies for agricultural purposes?

A. Dr. Dawson says that it does not in his report.

Q. Well, I see doctors differ ?

A. Well, Dr. Gordon was not a scientific man at that time. He was a young clergyman out for a trip.

Q. Not a young clergyman?

A. He was a pretty young man.
Q. He was a pretty old clergyman, was he not?

A. He was there about 25 years ago. I did not know that he had written a book.

By an Hon. Member :

Q. He travelled with Sandford Fleming ?

A. Yes, he travelled with Sandford Fleming.

Bu Mr. Blain :

Q. We might as well have that given us, the date of his trip. Yes, he went with Sandford Fleming.

A. I think so, yes.

Q. Sandford Fleming's trip was in 1879, was it not ?

A. He was either with Fleming or Selwyn.

Q. In 1879 ?

A. (After referring to book) He was with Dr. Dawson, that was 25 years ago, as I thought. He was just a young clergyman out for a trip.

By Mr. Wade:

Q. The book was written in 1880 ?

A. That was the next year. I think he was with Dr. Dawson at that time, or Mr. McConnell, or Mr. Macleod probably.

Mr. Ross. (Victoria)—He was not with Dr. Dawson, because he gives extracts from Dr. Dawson's report.

4 EDWARD VII., A. 1904

By Mr. Wade ::

Q. Extracts from Dr. Dawson and Mr. Macoun ?

A. Dr. Dawson says in his report that although the day is longer, the mean temperature of that region is very low. I found the same thing too, and mentioned it in my report. I mentioned that at six o'clock in the evening it goes down to the mean temperature instead of eight as in the east, showing that although the day is longer the evenings are very cool. During forty nights last summer the thermometer fell below 40, showing how cool the nights are. At six o'clock in the evening the mean temperature in that country is the same as at eight o'clock in the east, which shows very much colder nights.

Mr. Wade.—(Reads).—'The party appointed by parliament to make this examination consisted of Messrs. H. J. Cambray, H. J. F. Macleod, of the Canadian Pacific Railway engineering staff, and Dr. G. W. Dawson, of the Geological survey of Canada. The writer accompanied them, and they travelled together from Victoria, V.I., to the mouth of the Skeena river, thence across the northern part of the province to Fort Macleod, where the party was divided. Dr. Dawson proceeded by the Pine river pass, the others by the Peace river pass, to meet at Dunvegan. From Dunvegan, the writer came eastward in advance of the others —

Mr. Blain.—What was the mission in that case ?

Mr. Wade.—(Reads).—'In 1879 the Canadian parliament, having decided that additional information should be obtained regarding certain proposed routes for the Canadian Pacific Railway, resolved that a party be sent to examine the country from Port Simpson on the Pacific across Northern British Columbia and through the Pine river pass to the prairie. Copious information had already been secured regarding several other routes connecting the prairie routes with the Pacific, but the final selection of the Pacific terminus was reserved until this northern route to Port Simpson had been examined and fuller information had been obtained regarding the size, character and resources and the engineering features of the country.'

Mr. Blain.—That was from a railway standpoint. Mr. Wade.—They were sent out for that purpose.

The Witness.—Will you allow me to read what Dr. Dawson says: 'It would appear that while in most places the mean temperature of the day is reached about 8 p.m., it is found in the Peace river county not tar from 6 p.m., by reason of the increased rapidity of loss of heat by radiation due to the greater elevation and dryer atmosphere.' That is just the point I make in my report exactly.

By Mr. Oliver:

Q. I would like to draw the attention of the Committee to the statement of Mr. Macoun's on page 64 of his evidence, in which he says—

A. Which date, Mr. Oliver, please ?

Q. The first day's evidence, page 64: 'To sum it all up, there are three reasons why I consider this country is not suited to agriculture. I say that it is too cold. Another is that it is too far north, and another is that it is too high.' I wish to ask Mr. Macoun upon what particular fact, or series of facts, he bases his statements that it is too cold for agriculture?

A. Well, I would change that word agriculture as I did the other day. As I explained it—this question was up the other day—and I explained the word agriculture used them.

ture used there. Just a few pages before I had spoken of wheat growing.

Q. Might I ask you to withdraw the statement or stand by it. We want to know what we are doing. We don't want these perpetual explanations.

A. Well, for this purpose I will stand by it. Why do I consider it too cold ?

Q. Yes.

A. Because my own evidence to some extent, and the evidence of every one else whom I could get, including a lot of material I have not yet given you, shows that the

summer frosts are so frequent and severe that in a great many years everything that is planted is frozen.

By Mr. Hughes (Victoria):

Q. What country ?

A. The upper part of the Peace river country.

Q. I want you to limit yourself to that.

A. The upper part of the Peace river country.

By Mr. Oliver:

Q. I wish to limit my examination to the upper Peace river country. Everything I say will be understood to apply to the upper Peace river country, from the forks of the Smoky river westward and southward.

A. Not southward, but westward and northward.

Q. Westward and southward towards Grande Prairie?

A. I was not at-

Q. You were on the Grande Prairie?

A. That is south-west, not very far south.
Q. Well, it is south, anyway. The reason I say it is, because Dr. Dawson in estimating the agricultural area of the country makes that his estimate the basis of his estimate of that country?

A. Yes.

Q. Now Mr. Macoun, I understand, bases his conclusions that the country is too cold for agriculture—for successful agriculture, I suppose would be the better way of saying it-

A. Yes.

Q. —on his own experience and the information he got from other people in

regard to the country ?

- A. Yes, and the fact that it is well-known, or well-believed by people like myself, that a certain altitude in a certain latitude it is too cold, and the vegetation also proved it to me—the vegetation which you find there indicates a cold climate.
- Q. You base it on your own experiences and the reports of other people, not the actual temperature?

A. Yes.

Q. Then you generally conclude that the altitude is too great ?

A. Yes, and the vegetation.

Q. And your knowledge of vegetation indicates that the climate is not sufficiently warm ?

A. Yes, that includes everything.

Mr. WADE.—That covers the ground.

The CHAIRMAN.—That is satisfactory.

By Mr. Oliver:

Q. From your report here I see you took observations, meteorological observations, during your stay in the country ?

A. Yes.

Q. You took these observations at each night camp?

A. Yes, sir, my man took them while I was at Vermilion these first days. I took all the others myself. But the ones at Peace river landing were taken by my assistant while I went to Vermilion.

Q. They were taken by you or by him at whatever place you camped for the night ?

A. Yes.

Q. Did you fix your camps with a view to the favourable meteorological conditions, or with a view to convenience?

A. In the usual way. For example, at Dunvegan my man went out seven miles to place the thermometer on the plateau.

Q. You were located at Dunvegan for some time?

A. The man was. I made trips about the country, I went over a good part of the country.

Q. When the thermometer was not in the Peace river valley, or at the Smoky river, and when not on the upland behind Dunvegan, it was with you at your various camping places?

A. Yes, very close to the camp always.

Q. You camped wherever it was convenient to camp?

A. Yes, wherever there was water.

Q. That was usually on low ground ?

A. No, there was no water-

Q. Is the higher ground usually wet?

A. No, there is no water there; it was practically level.

Q. Generally where there is water there is more or less swamp ?

A. Well, there is not there. As I pointed out, there are no sloughs in that country.

Q. None whatever ?

A. There are one or two at Spirit river, and one or two at Old Wives' lake.

Q. There are no sloughs?

A. No, I would not say there ar enone—we did not camp at any.

Q. I think a little explanation will be in order, because I find from your report that in your travels from Smoky River Mission to White Mud and to Battle river, that there were muskegs?

A. Oh, yes, I was thinking of the prairie country.

Q. I was speaking of the whole country. Your meteorological observations relate to the country through which you travelled ?

A. Yes, sir.

Mr. Hughes (Victoria).—Your remarks apply to the upper Peace river country. Mr. OLIVER.—Yes.

By Mr. Hughes:

Q. These reports of which you spoke now ?

A. I took no meteorological observations then.

By Mr. Oliver:

Q. Have you any knowledge of meteorology generally ?

A. I have indeed, sir.

Q. Yes, and have you any knowledge, or do you believe this to be a fact, that the temperature in the vicinity of houses, or of a town for instance, is somewhat higher than that of a similarly situated country where there are no houses?

A. Certainly, I know that.

Q. There is a difference of several degrees ?

A. There is a difference. Here at Ottawa there are 3° or 4° difference between

h re and the experimental farm?

Q. Will the Committee bear that in mind, that there is a difference of 4° or 5° between here and the experimental farm, which is only a mile from the centre of the city. Do you know how many degrees ?

A. Four or five.

By Mr. Wade :

Q. Will you allow me to ask a question. Is it not a fact, Mr. Macoun, that when the prairie country is broken and cultivated and planted, that there is not as much frost as there was before?

A. Well, I don't think it is due to that fact-

- Q. Just answer my question and then explain it. Is it not a fact, is that not the experience of the west ?
- A. I do not think that is the reason in the west. I think the different conditions in the west are due far more to the use of improved grain and earlier planting.
- Q. I am asking you, is it not a fact then, as the country in the west has been cultivated there has been less frost?
 - A. Yes, but I don't think it is due to the cultivation.

Q. I am not asking you that ?

A. That is the way I am making the answer.

- Q. Is it not a fact that there is now less frost since the North-west has been cultivated?
- A. Since the country has been settled? I am one of those who don't believe it is due to the cultivation.
- Q. Let put the other question. You admit it is the fact that don't believe it is frost in the west than formerly before it was settled?

A. I admit that, certainly.

Q. Now, then to what do you attribute that ?

A. I attribute it chiefly to earlier planting of grain and also the planting of grains that ripen earlier, and also to the large amount of summer fallowing.

Q. What has the grain got to do with the frost?

A. Well, if the grain ripens on the 15th of August—

Q. I am not asking you about that. I am asking you simply about frost ?

A. Because—

Q. I am asking simply about the frost.

- Mr. Hughes (Victoria).—Let the witness answer the question in his own way.
- Mr. Wade.—I have been perfectly fair with this witness from the beginning and will be to the end. I am asking him what the grain has to do with the frost. I have asked simply about the frost.
- Q. Is it not a fact that when the country has been settled, there has not been so much frost. I am asking you to what you attribute that fact?

A. Because when the frost comes, the grain is ripe.

Q. I am not asking about the ripening of the grain. Do you think there are fewer summer frosts?

A. I do not think there is less frost.

Q. Are there not fewer summer frosts than in earlier years ?

A. I don't know that there are.

Q. You have no information about that?

A. No, I have not. I don't think there is any difference.

Q. What effect upon the frost has the general cultivation of a section of prairie?

- A. If it is planted it has none. If it is summer fallowed it has a great effect. If you plant a large tract and it grows up it has no effect on the temperature. If you plough a great tract and leave it summer fallowed it has a great effect owing to the radiation.
- Q. I thought I would get some very valuable information in a very pleasant conversation I had with your father one time, in which he explained to me the reverse and told me the effect of planting in the west the effect of breaking the soil. His statement was that before the country has been ploughed that the surface is hard and almost impervious to wet?

A. Yes.

4 EDWARD VII., A. 1904

Q. Then the moisture runs off, but afterwards when you come to plough it up, it is very hard to plough it in some places. Then the rains come and they soak into the ground and so the ground resists the frost; they don't have the early summer frost to the same extent. That was his statement and I was so convinced by it, that I am greatly surprised to hear you differ from him?

A. I have often discussed this with my father, and I may tell you in a few

words-

Q. You don't agree with him ?

A. No, I don't agree with my father. Some Hon. MEMBERS.—Explain your views.

By Mr. Wilson :

Q. Has he given a correct representation of your father's views ?

A. Pretty much; I have heard my father express similar opinions. My idea—I will give you in a few words my view. If a field, no matter what he says, is ploughed in the midst of the prairie, up to the time at which the grain reaches a height of six inches or a foot, up to that time the rays of the sun strike on the broken ground and penetrate it, and that soil is heated to a greater depth than where the grass is growing on the prairie around it. But when the grain, whatever it may be, reaches a height of more than a foot, a foot and a half or two feet, the sun no more reaches that ground, because every inch of it is shaded by the growing wheat, and when the thermometer begins to fall at night this part is very much cooler than the prairie with the short grass on it that surrounds it, and it is very much more liable to frost. If you put a little pan of water into the midst of that field of grain I am very certain, although I have never made the experiment, it would freeze more quickly than if you put it on the prairie where there is no radiation from the soil, whereas, on the open ground it is hotter at night than where the earth is covered by the growing grain.

Mr. Hughes.—Are frosts caused by the simple coolness and verdure in the

grain ?

A. No, I do not think so, but if the frost comes, this is a very important question, the matter of frosts, although not pertaining especially to the Peace river. There is the question of how many degrees of frost will kill grain, and also the question of how long the frosts last. If a wave passes over a field of grain it has no effect, although a low temperature is reached. But if we have a few degrees of frosts that lasts for ten or twelve hours, it has a great effect on the grain. When that wave has passed over the grain, it is more apt to freeze that grain than it is on the open ground where there is warm radiation. My father does not agree with me, my father and I have discussed it for years, and we do not agree.

By Mr. Hughes:

Q. I think experience shows the old man is right?

A. Perhaps so, I am quite willing to have it so.

By Mr. Stewart:

Q. Have you performed that experiment of making a test of the temperature in a field of grain and upon the open prairie?

A. No, I never have, because this last year is the first time in twenty years I have

been where grain is growing; I am usually in the woods in the summer time.

Q. I have found the dew hanging on the grain, and on the grass on the prairie near by I have found frost?

(No answer.)

By Mr. Wade:

Q. That supports the old man?

A. I am quite willing to have it so.

By Mr. Hughes:

Q. Would it be possible—you have noticed stony ground in the North-west, where the stones are a little below the surface of the earth, that these stones retain the heat until long after the surrounding country is affected by cold in the fall ?

A. Yes, I have, and I have warmed my hands with them many a time.

Q. Is it not likely that the same thing will occur in the heat of summer, the rays of the sun getting down into the loosened soil, would that heat not be kept in there by the long leaves of this grain?

A. It would, but as I say in growing grain, the heat never gets down to the earth, no man ever saw the sun's rdays reach the earth, every man knows that. I have gone into a field of wheat many at time to lay down and get cooled off, because every one knows it is cooler there than on the grass where the sod is exposed to the sun.

Q. Have you placed a thermometer in that loosened soil at the same time, and is

not that soil warmer ?

A. Of course, it is.

By the Chairman:

Q. There is about 8 degrees difference between the temperature of broken ground and the prairie itself ?

A. I am only stating my opinion.

By Mr. Oliver:

Q. There is a difference of 4 degrees between the temperature here in Ottawa and at the experimental farm?

A. I am not certain about the exact figures, there is a difference of two or three degrees.

Q. There is a difference of two or three degrees ?

A. I know there is a difference; I do not know exactly.

Q. You would consider the experimental farm a particularly cold location ? A. Well, it is rather?

Q. Because ?

A. It is an open bleak place.

- Q. I see, your idea then is that the higher the locality the colder it is, is that the idea ?
- A. I do not imagine the difference between here and the farm would make any very great difference.

Q. You say the farm is a cold bleak place, why is it cold ?

A. It is open to the weather and wind.

- Q. And you consider any place open to the wind is colder than any place that is sheltered ?
- A. Oh, no; summer frosts happen much more frequently in sheltered quiet places, not winter frosts.
- Q. You say the farm is a cold bleak place, but you do not give any reason for thinking so, is that it ?

A. You can put it that way if you like, it will save time.

Q. Did you ever in your experience in travelling over the Peace aver or Northwest, you say you have travelled a great deal in unsettled country ?

A. Yes.

Q. Did you ever find any difference in the temperature in the evening between land of a certain height, and of a certain character, and land of another certain character, that is to say, does the character of low ground make any difference in the temperature within your knowledge?

A. Yes, it does certainly; on calm, cool evenings we found it colder in the hollows. than higher up.

- Q. That is on pieces of ground where the grey willow, for instance, grows and where the blue clay is near the surface you will find it a little colder there than in places where the Saskatoon and wild rose grow?
- A. It does not freeze in the low places, the fogs very often rise from the low ground and protect it.
 - Q. You think the low ground is less liable to frost than the higher ground ?
 - A. Sometimes.
 - Q. That is your opinion ?
- A. Only in the Peace river valley, that is to say that is the opinion of the people living there, not my opinion I am giving you.
- Q. I am not talking about the valley, but about the general level of the country; what about that, that is what we want to know?
- A. I found when the fog rises it does not freeze as quickly on the low ground as it does on the high ground when the fog does not rise.
- Q. We have established this point that the temperature is necessarily higher in all localities where there are houses, dwellings in occupation, villages, and towns, so to speak, than it is where there are no such places in occupation?
 - A. Yes, that is generally admitted, I think.
- Q. And in ground, what we call in the North-west of a cold character, that is low, wet ground, the temperature is a little lower than it is on higher and warmer soil?
 - A. That is right.
- Q. Very well. Now, then I find in your record, and you also say that you camped where it suited you, near the water?
 - A. But never in low, wet ground.
 - Q. But you camped near water ?
 - A. Certainly.
 - Q. Near water is not in general the highest and dryest ground ?
 - A. Well, we camped always on the best ground.
- Q. Yes, but near water. Now, the record which you give here shows frost in June at the Peace river landing on the 12th of June, one degree?
 - A. Yes.
 - Q. In July—
 - A. It also shows four degrees on the 14th at Peace river landing.
- Q. Oh, yes, four degrees on the 14th, that is right. Then in July you say you show five degrees at Bear lake?
 - A. Yes, sir.
 - Q. And one degree at McAllister's creek?
- A. One degree, not at McAllister's creek, but between Bear creek and White Mud river, on the 11th July. There was another degree the next night.
 - Q. And then at McAllister's creek there was one degree ?
 - A. Yes, sir.
 - Q. Now in August there were two degrees at Swan lake on the 11th?
 - A. Yes. sir.
 - Q. And three degrees at the head of Bear lake on the 14th?
 - A. Yes.
 - Q. And there were six degrees at Egg lake on the 30th August?
 - A. Yes.
 - Q. That is a killing frost?
 - A. That is a killing frost, yes.
- Q. And in September on the 3rd September, there were four degrees at east of Smoky river?
 - A. Yes, four then five, then eight.
 - Q. Well, yes, on the 5th there were five, that is right.
 - A. Five.

Q. Now did you compare these records, I suppose you have, with the records of other places in the North-west where agriculture has been pursued successfully?

A. I know that the Peace river was better than many parts of the North-west last

year, I said that the other day.

- Q. Last year, but other years too, did you make a comparison of the records, the general statement?
- A. I made a comparison with all the Peace river records and also with my own record.
- Q. Did you make your comparison of your records of temperature on the Peace river with the official records of the weather, and meteorological conditions, in different important centres throughout the North-west?

A. For last year ?

Q. For last and for other years ?

- A. I compared the whole of the Peace river with several other years; I did not compare one particular year, but all the Peace river records with other records.
- Q. But your own record, this is your own record, and you compared your own record with the records of other places?

A. Not for any special year or place.

By Mr. Hughes:

Q. In taking your records, where did you hang the thermometer, was it down near the ground or up in a bush?

A. Generally it was about 18 inches from the ground.

Q. Did you ever take the thermometer reading from close to the ground, and say four feet high?

A. No.

Q. It will make a great difference ?

A. I put the thermometer where the things were growing at the height of the things that were growing.

By Mr. Oliver :

Q. You put your thermometer where things would be likely to freeze?

A. No, I did not, I put it at the height things would be growing.

By Mr. Ingram:

Q. Take Ontario, for instance, last season and the season before last, the seasons were exceptionally cold and wet?

A. So I have heard, I was not here.

- Q. How would that compare with the North-west? Would that be cold and wet the same as in our own district?
- A. I do not know that it makes any difference, I do not know that the conditions in one part of the country affect another part in that way.

Q. Of course, we had a cold wet season last year ?

A. I was not in Ontario in the summer, and I very seldom see the newspapers and I have not heard anything particular about the weather here last summer.

By Mr. Hughes:

Q. Would this frost—I suppose you have noticed that the thermometer will range in this country even until September, say 29, 30, 31 and 32, in other words, it will range around freezing point practically regularly?

A. Without doing serious harm.

Q. No, but I grant it will range that way in nice warm weather, do you find that it will range near freezing point?

A. That is on a very clear night in the Peace river district it comes to about 35.

Q. Would the frost in the ground have anything to do with that, frost deep in the ground?

A. I do not think there is frost, any frost deep in the ground in that prairie country.

By Mr. Oliver:

Q. You hang the thermometer about 18 inches from the ground; it is a little cooler there than it is at say 6 feet in height?

A. It might be.

Q. Do you think it would be, or would it not be ?

A. No, I do not think it would be; I think from the radiation it would be warmer near the ground.

Q. Meteorological instruments are generally hung, as I understand it, about 6 feet from the ground. I might say in my estimation that it is a little warmer at a height of 6 feet than it is nearer the ground?

A. If radiation was going on from the ground it would be warmer nearer the ground.

Q. Of course you admit that you have been mistaken in some of your conclusions already, according to other gentlemen and scientists, so that we cannot accept your statement on this point as being absolute any more than any other?

A. In what way was I mistaken?

Q. Oh, never mind.

A. But I would like-

Q. Oh. take my word for it-

A. I do not think that is fair, Mr. Oliver.

Mr. Ingram.—The Railway Committee meets at eleven, and I think we had better adjourn.

By Mr. Oliver:

Q. I want to ask a question or two to finish this point, it will not take a minute. Did you compare the meteorological record of the Peace river which you took with that of Regina?

A. No, sir, I did not.

Q. Well, then, you do not know that while your record shows the lowest temperature in the Peace river in June to be 31, the official record at Regina, a town of some 2,000 or 3,000 inhabitants, situated not near any swampy grounds at all, but where the instrument was placed 6 feet from the ground, in the year 1901, showed the lowest temperature to be 32, that is one degree more than in the Peace river country, where this gentleman hung his thermometer. In 1902 the lowest was 30, one degree lower than it was in the Peace river, and in 1903, it was 23, or 8 degrees lower than it was according to the record taken by this gentleman in the Peace river?

A. Compare Mr. Ogilvie's records now with these.

Q. Never mind Mr. Ogilvie's records, we will get through with these first. In August your record shows the lowest to be 26, that occurred—

A. Near Egg lake.

Q. Hold on. July your lowest shows 27, does it not ?

A. Yes, near Bear lake.

Q. That is in that country which is inclinded to be swampy?

A. Well, it was not swampy where we camped.

'Q. It is not dry prairie I think, you said there was not any prairie ?

A. There is cultivated ground there.

Q. The record in Regina shows also for July 41 in 1901, in 1902 the lowest was 31, and in 1903 the lowest was 40. There is a very great-difference you see in that instance, between the Peace river and Regina in favour of Regina, but even that

difference in 1902, the difference is four degrees. is only the difference between the city of Ottawa and the experimental farm showing that the locality in which, the locality and conditions, in which this record was arrived at, more than made up the difference in the temperature.

A. Mr. Oliver, these Ottawa records are winter records.

Q. Excuse me, I am going on-

- A. These were winter records, I would like that to go on recor,d and not summer records.
 - Q. What is the difference in summer ?
- A. I do not know. I am never here in summer. I think it is sultry here in summer for all I know—

By Mr. Ingram:

- .. Q. Let us get an understanding in relation to this, In Ottawa in the winter time I suppose that the amount of fuel used in the city would have a certain effect on the air that would not be experienced at the farm?
- A. I thought that was the very point Mr. Oliver was trying to make, that on account of the coal consumed in the city there would be a difference between the temperature in the city and at the farm.

By Mr. Oliver:

- Q. You seem to adjust your evidence to what you think the question is asked for ?
 - A. I thought I was answering your question.
 - Q. Very well, you say you do not know what difference it is in summer ?
 - A. No.
- Q. Then why did you stand up here and try to make people think you knew when you did not? Why do people leave Ottawa and elsewhere by the thousands in summer time, is it to get hotter or to get cooler? This is the question of fact and not of theory or opinion?
- A. It is important if you have them to take, not one year like that, but all the Peace river readings.
- Q. In August the lowest reading was 26, and in Regina the lowest reading in 1903 was 39. In 1902 it was 28 only, 2 degrees better than the Peace river.
 - A. Why do you not take Edmonton, which is nearer to the Peace river country?
- Q. If you wait, I will; do not get excited. In 1901 it was 35 at Regina, as compared with 28 in the Peace river and 26 taken at Swan lake. I do not know just what the character of that country was, but I presume it was either on the prairie north of the Peace river or on Grande Prairie.
 - A. It was 6 degrees at Swan lake.
- Q. Give us what it was—I wish to compare the record with Edmonton, which I will be very glad to do another day.

The Committee adjourned.

Having read over the above transcript of my evidence, I find the same to be correct.

JAMES M. MACOUN.

House of Commons, Committee Room 32, Wednesday, May 4, 1904.

The Select Standing Committee on Agriculture and Colonization met here this morning at 10 o'clock, Mr. Douglas, Chairman, presiding.

Mr. Maclaren (Huntingdon).—I would like to offer a few remarks this morning. I had supposed that the duties of this Committee are to gather information which would be for the general benefit of the Dominion. The whole of the meetings of the Agriculture Committee so far have been taken up with some disputes between Mr. Macoun and certain members from the North-west Territories. Those of us who do not live in the North-west would like to get some information which may be of benefit to the general farming public throughout the balance of the Dominion. As far as 1 can see from the way in which this examination is proceeding it is likely to take the whole session and then the question in my mind is whether any result would be arrived at. I do not profess to have more wisdom than the rest of the Committee, but I made the suggestion almost at the opening of this examination that the matter should be dropped. I recognize the importance of this matter just as much as anybody does, but whether we are going to come to any conclusion or not I very much doubt. My idea then was, and my idea is still, that if the report of Mr. Macoun is not satisfactory, which I do not think it is, appoint somebody else, two or three—it is a matter of sufficient importance to do that-and let them go out to the North-west and make a thorough examination of the Peace river country. In the meantime, let no part of Mr. Macoun's evidence be reported, but let the matter stand in abeyance.

Mr. Wilson.—I do not believe we have power to do all that.

Mr. Maclaren.—We can recommend it. But in all candor, I do not see for myself that any good is going to result from the continuation of this examination.

Several Hon. MEMBERS.—Hear, hear.

Mr. Maclaren.—Supposing that Mr. Macoun is wrong. Mr. Macoun has made a statement regarding that country. It has got into the press of the country, and no doubt has been magnified by the press, because they are always anxious to round out the news and to make it read a little better. How are you going to get this crossexamination by my friend Mr. Wade, Mr. Oliver, and the rest of them before the country, even supposing you succeed in contradicting Mr. Macoun; and to my mind, Mr. Macoun is in a better position to speak of the country than any man I have ever heard yet. Mr. Macoun was sent out to that country for a specific purpose. He spent three months there and he came back with a report. A man generally gets what he is looking for and I would more readily take the opinion of Mr. Macoun, presuming him to be an honest man of course, we are going upon that basis, than I would take the opinion of forty men who loped through that country on hoseback, and who went over it for other purposes than looking at the nature of the soil. I think that the time of the Committee is being wasted and that the farmers in the older parts of the country who want to know about agriculture and fruit growing and things that would be better for them, are being unjustly deprived of information which should come before them. I do not know that any good will result from continuing this examination.

The CHAIRMAN.—That is a matter of opinion.

Mr. OLIVER.—I would like to say that if there is any objection to the time that has been taken up before the Committee the objection does not lie against either Mr. Wade or myself, that we have been anxious and used every endeavour to get an oppor-

tuinty to arrive at the fact from this witness, but we are not able to because of interjections of different kinds by various gentlemen for different purposes.

Mr. Maclaren.—One question, Mr. Oliver, do you think there is any member of this Committee who has taken up as much time in the Committee as you have, apart from Mr. Wade?

Mr. OLIVER.-Why Mr. Macoun himself.

Mr. Maclaren.—Oh, certainly, Mr. Macoun is the witness, but I mean members of the Committee.

Mr. OLIVER.—Members of the Committee ? Why certainly, undoubtedly.

Mr. MACLAREN.-Who ?

Mr. Oliver.—Almost every member who has spoken.

Mr. Maclaren.—Myself, Mr. Oliver ?

Mr. OLIVER.—Yes, yourself. There has been a great deal of discussion in regard to matters in which I was interested, or perhaps in which an important question was raised, but to say that I was a party to that discussion is not borne out by the fact.

Mr. Maclaren.—I would like to take a vote of the Committee on that. Mr. Oliver.—Well, a vote of the Committee would not alter the facts.

Mr. MACLAREN.—As you understand them ?

Mr. OLIVER.—Exactly as they are, no matter who understands them. Just one moment on this point. I say the time of this Committee has been taken up for some six or seven sittings. I have been here every day anxious to put questions that I desire to put to Mr. Macoun and have not been permitted until yesterday, or at the last meeting for half an hour. Now, if the Committee will give me the opportunity—

Mr. Wilson-How long will it take ?

Mr. OLIVER.—I think I can do it before twelve o'clock if I get a fair opportunity. That is all I want.

Mr. Maclaren.—How long will you take, Mr. Wade? Mr. Wade.—I have made my statement, I have finished.

Mr. Maclaren.—Do not say any more.

Mr. Wade.—I will say something more because there has been something said that calls for a reply from me. I will say this, Mr. Chairman, and I think you will bear me out. If I had been left alone with this witness, I could have asked all the questions I did ask him in less than half an hour.

Mr. OLIVER.—Certainly.

The CHAIRMAN.—Hear, hear.

Mr. Wade.—In less than half an hour I could have got all the information I wanted. I say the time has not been wasted that I have occupied in cross-examining the witness. I agree with many things that have been said by my friend here, but I do not agree with him in others. I look upon Mr. Macoun's report as one of transcendant importance for this reason. He has visited a large section of our country, a country that we are looking to fill up in the near future, a country that we believe to be valuable, and if you will examine his report you will find that it is of a nature which would impress the ordinary reader with the idea that he was reporting in detail upon each section of that country, and as he refers to each section of the country there is something in his reference which gives it a black eye.

Mr. OLIVER.—Certainly.

Mr. Wade.—Every time there is a reference to it, it is either the frost, or it is the thin soil, or it is something that makes it undesirable. Now we cannot, as has been stated here, get this evidence and these remarks that have been made before the country. We cannot do that, but if we are going to adopt the course which has been suggested by my friend we must have something to base it on, and therefore if we are in a position by the examination of Mr. Macoun to show that there was prejudice in his mind, or that there was not fairness about his examination, or that he is in conflict with others who have examined the country, then we have something on which to base

2-451

a report and a recommendation, that the very thing which has been asked for shall be done: That is, that men qualified to make an exploration of that country should be sent to the different parts of the country visited by Mr. Macoun and be instructed to make a detailed and careful report of such a nature that there can be no question about it. Mr. Chairman, I submit my exhaustive examination of the witness has not There has been a great deal of talking backward occupied the time unnecessarily. and forward about this. The talk was unnecessary, the cross-examination was necessary and perfectly in order. And I must do Mr. Oliver this justice to bear out the statement he made, that he has been attempting for days and days to get an opportunity to ask questions of the witness, and it has always resulted in a discussion which choked off his question. And even yesterday when he started to cross-examine the witness I asked him to let me have the witness again and took him out of his hands to ask about some point that I had overlooked. Therefore, we must be just all around. There has been a good deal of heat in this matter. That I regret. There has not been much on my part, that I can assure the Committee.

Several Hon. MEMBERS.—Oh. oh.

Mr. Wade.—There has never been any on my part.

The CHAIRMAN.—I think we had better go on.

Mr. Hughes.—Are we to understand from Mr. Wade that he would profess for a moment that any member of this Committee would have the right to take a witness in hand and continue him through his examination?

Mr. WADE.—And what ?

Mr. Hughes.—And continue him throughout his examination to the exclusion of every other member of the Committee ?

Mr. Wade.—I disclaim that. I say it is one of the unfortunate things that every member has the right to interject, because it breaks up the proceedings.

Mr. Hughes.—It is one of the very fortunate things.

Mr. WADE.—No, I think not. I entirely disagree with Col. Hughes.

Mr. Wilson.—What is before the Chair?

The CHAIRMAN.—I think we had better go on with the examination.

Mr. OLIVER.—I would call the attention of the Committee to the fact that it is now twenty minutes after ten and we met here at ten o'clock, and so far there have been no question asked the witness, and it is not my fault. When we dispersed yesterday I was asking the witness certain questions in regard to comparisons which he made as to the temperature of the Peace river with other parts of the North-west. I have read to the Committee his general statement which he stood by, and I will take the liberty of repeating it. It will only occupy a moment. 'To sum it all up, there are three reason why I consider this country is not suited for agriculture. I say it is too cold, another that it is too far north and another it is too high.' Then we went into the question of what the temperature actually was, and we took the temperatures actually observed by himself. Then we undertook to compare those temperatures once in temperature between a locality in which houses are numerous and where there We were making it a comparison between his growing countries is established. record of the temperature of the Peace river and that of Regina. You will observe that Mr. Macoun only took the lowest temperature while he was in the Peace river, so that our comparison could only be between low temperatures. He was not in a position to give us high temperatures, so he could not make any comparison. I want to read a comparison we made with Regina, but as he expressed himself anxious to have a comparison made between his record here and that at Edmonton, I will be very glad to call his attention and that of the Committee to the fact.

Mr. Hughes.—If Mr. Oliver would allow me to give him a suggestion. Yesterday it was understood after we left the Committee that the temperatures Mr. Oliver was quoting were those for the same day Mr. Macoun took them in the Peace river country.

Mr. OLIVER.—Oh, no, no. It was just the lowest for the month, month after month, that was all.

Mr. INGRAM.—Perhaps Mr. Macoun could give us the other years other than 1903 ?

The CHAIRMAN.—He could not very well do that.

Mr. OLIVER.—I think he said he had them. We will be glad to take them up afterwards.

Mr. INGRAM.—He can give us them from the record.

Mr. OLIVER.—I think we also established the fact yesterday that there is a difference in temperature between a locality in which houses are numerous and where there are no houses; also that here is a difference in temperature between ground of a certain nature and location, and ground of another certain nature and location. We also establish the fact that Mr. Macoun took his observations his camp was pitched, that it was not therefore near a collection or houses or selected with the view of getting the warmest ground, and that without going too far into it we established practically that the difference between the observations as taken by Mr. Macoun here and there, on the prairie or in the woods, and between the meteorological observations taken at the government observatories would be possibly about 4 degrees on the average. Now Mr. Macoun's record shows that the lowest temperature for June in the Peace river was 31 degrees.

Mr. Hughes.—What year ?

Mr. OLIVER.—That was last year. I have asked him if, when he made the statement that the Peace river country was too cold and based that statement on the record he took, he had taken the trouble to compare that record with the records in

other parts of the North-west Territories. He said he had not.

Mr. Macoun.—May I make a correction, Mr. Chairman, please? My conclusion was not based on my record, but on all records of the Peace river country. I never said I compared last year with any other part of the country, or base any of my conclusions upon last year. I have said before to this Committee that I considered last year an exceptionally good year. I have said before, I think, to the Committee that my conclusions were based on all the records we have. I have said that repeatedly, and say it in my report and those records are bad. I made no comparison upon my records of last year and based no conclusions on them. I said on the contrary I thought from that record that it was a good record.

By Mr. Hughes:

Q. Are you speaking of the upper Peace river country ?

A. The upper Peace river country.

By Mr. Oliver:

Q. What did you say in your report ?

A. I said in my report that my conclusions were based on my own observations and all others available.

Q. And your conclusion is that the country is not suitable for agriculture?

A. For wheat growing and cattle raising.

Q. You said agriculture in your previous evidence ?

A. I did not say that in my evidence.

Q. As an industry?

The CHAIRMAN.—The Committee understand that point quite well.

Mr. OLIVER.—I have asked the gentleman if he made this comparison. I notice that he institutes a comparison here, between the suitability of the Peace river and that of the Edmonton district for agriculture.

Mr. Ingram.—If Mr. Oliver intends to get through before 12 he had better ask the question and let the witness answer. The hon, gentleman is arguing and not asking questions. Ask the question?

Mr. OLIVER.—I am stating the position so that the gentlemen will understand the questions when I ask them. I quite understand that certain gentlemen do not want to understand.

Mr. Ingram.—We don't want to be in here day after day listening to that kind of rot.

Mr. Oliver.—I would ask to be protected from this hon, gentleman. I would ask if I am to be protected in this Committee. I have been insulted before and I do not

want to be insulted by every member of the Committee.

- Mr. Ingram.—Mr. Chairman, I will put myself plain. As I understand, we are here to listen to the evidence of this man and any question that Mr. Oliver chooses to ask him. I do not take it that he is here to argue on the question and explain to the Committee what he is going to ask. Ask the question and let him give an answer.
 - Mr. OLIVER.—Is the hon, gentleman in order ?
 Mr. INGRAM.—I am better in order than you are.

The CHAIRMAN.—Well, his language is not what it should be.

Mr. Oliver.—I must ask your protection. Either I am to be permitted to go on with the examination, or I am not ?

Mr. Maclaren (Huntingdon).—You call this an examination.

Mr. OLIVER.—Yes, I do, and I think it will turn out very satisfactory before I get through. (To the witness). Did you make yourself acquainted with the meteorological conditions at Edmonton, Calgary and Regina before making the statement you did?

A. No, sir.

Q. Why did you not.

A. Because it was not my business to report on the Edmonton country.

Q. I am not asking you what your business was ?

A. I was not asked to report on the Edmonton country.

Q. I have been called down repeatedly for explaining, and yet this witness insists upon taking up the time of the Committee by explaining. Answer?

A. Very well, I have answered.

Q. Well, you did not make a comparison?

A. It was not my business to make a comparison of the Peace river, or any part of the North-west.

Q. May I get an answer to my question ?

Mr. Hughes.—He has given a very satisfactory answer. I don't agree with what he says about the North-west, but I am here to protect the witness. He has a right when you ask a question to answer it in his own way.

Mr. OLIVER.—In his own way ?

Mr. Hughes.—Yes, in his own way.

Mr. OLIVER.—Then it is no use asking questions.

Mr. Hughes.—Let him give his answer.

By Mr. Oliver:

Q. Well, I will ask him again. Did you make a comparison of the temperatures of the Peace river as made by yourself with those meteorological conditions deter-

mined in regard to other points in the Territories ?

- A. I can only answer the question in the one way. I tell you that I will not answer any question before the Committee, yes or no, without making some explanation. I will answer no direct question with a yes or no, that any possible misconstruction can be placed upon it. If the members of the Committee do not like that, I cannot help it.
- Q. Are we to understand that you will only answer such questions as you please ?
 A. I will answer if the Committee directs me to answer, if the Committee instructs me on that point.

Q. Very well, you have answered the question now ?

A. Yes, sir.

Q. All right. Now, you did not make a comparison which would show that in Edmonton in June of 1901, the lowest temperature was 34 degrees, or did you?

A. That has no bearing on the question at all, sir.

Q. May I be permitted to ask any questions which I think have a bearing on this matter?

A. Certainly.

Q. Well, if you-

The CHAIRMAN.—I must remind the witness, if my memory does not fail me, that he made a comparison between Edmonton and that country.

Mr. OLIVER.—Certainly.

The Charman.—Then I think Mr. Oliver is perfectly right to make this comparison in the general public interest. It is the most important thing that we should know. I have the impression in my own mind, although I have not interfered with the witness or made any reference, that the readings in that country were more favourable than in our own country.

Mr. OLIVER.—Certainly.

The CHAIRMAN.—Down on the banks of the Qu'Appelle last season.

Mr. Hughes.—That can be very readily brought out. Let him ask the question and then bring the evidence out. If you are a common sense man, you will do that.

The CHAIRMAN.—Let the question be asked. The rule of this Committee is that every member has a perfect right to ask any question he chooses, but the trouble is there is so much interruption that the witness does not get an opportunity of replying.

By Mr. Oliver:

Q. The witness has made a comparison in his report and in his evidence, and am asking him a question which will show whether a comparison was justified or not?

A. I have answered that question by saying I compared all the years. Any member who reads our meteorological reports knows that no part of our own Northwest is identical with any other part in any one year. The only way to make a comparison is to take all the years available, and I did that in my report.

Q. Will you permit me to make this comparison and then we will take up some other of your reports. You did not then make the comparison that in the year 1902

the lowest temperature in June was 31, did you?

A. I have no records for that year of the Peace river.

Q. Or that in 1903 the lowest was 32 degrees ?

A. No, I have no such comparison.

Q. Nor that in July the lowest in the Peace river according to your records was 27 degrees, in Edmonton it was 42 degrees, 41 degrees in 1902, and 41 degrees in 1903 ? You are not aware of that?

A. Well, I don't know whether I was aware of it or not.

Q. Well, that will do, that is quite a good answer. In August in the Peace river you gave the lowest temperature at 26 degrees?

A. Yes.

Q. And in Edmonton the records show that in 1901-

Mr. Hughes.—Which part of the Peace river ?

Mr. OLIVER.—Wherever his camp was pitched on that particular night. In 1901 the records show that in Edmonton the lowest temperature was 38 degrees in August, in 1902 34 degrees, and in 1903 37 degrees. Now, if there is a difference between the records of the meteorological observatory situated in or near a town and the observations taken by yourself within 18 inches of the ground wherever your camp was pitched away from houses, do you tell the Committee that it was on your own observations that

you based your statement that the climate of the Peace river country was too cold for

- A. I repeat what I have said many times. My statement that the climate of the Peace river was too cold for wheat growing and cattle raising was based on the observation not of one year or two years. I considered, as I told the Committee, I considered in the Peace river last year the conditions were better, certainly better, than around Edmonton, and better than some parts of the North-west-that is, there was more grain frozen about Dunvegan and north of Edmonton, than in the valley part of the Peace river country. Mr. Oliver knows that to be correct as well as I do. But my conclusions were based on all the observations, not of one particular year, not of any one or two particular years. I will give them to you presently.
- Q. Did you take up Mr. Ogilvie's observations in the Peace river country, his meteorological observations?
 - A. Yes, sir.
 - Q. And you based some of your conclusions on those observations, did you ?
 - A. Yes, sir.
 - Q. Those contained in his report ?
 - A. Yes, sir.
 - Q. Have you got them convenient there ?
 - A. No, I have not.
 - Q. Well, I have them here, that will answer the same purpose?
 - A. Certainly.
- Q. Well, I find that Mr. Ogilvie reports that in 1903 his highest temperature in June was 94 in the Peace river country; in July 881 degrees-
 - Mr. Hughes.—That is in the shade ?
- Mr. Oliver.—In the shade and wherever his camp happened to be pitched. In August, 1885, and in September, 1876, his lowest temperature for those months was in June 16.5. That is a very low temperature. In July 28.3, and in August 22.
- A. Excuse me, those are not Mr. Ogilvie's observations, they are the observations made at the Hudson's Bay post at Dunvegan in the valley. They are not Mr. Ogilvie's observations.

 - Q. Well, excuse me.A. You will find in your report those observations.
 - Q. All right, we will see.
 - A. Furnishd by the clerk of the Hudson's Bay post.
- Q. I hold here Mr. Ogilvie's report. I wish to call the attention of the Committee to the fact that this witness makes a very definite statement, and the value of his evidence depends upon the correctness of this very definite statement. He has said within your hearing that these records which I gave you were not the observations of Mr. Ogilvie himself. I hold here Mr. Ogilvie's report, and at page 40 he says: 'During the whole of my work I kept a daily record of the meteorological conditions. A summary for the months of July, August and September, I presented in my report for 1882. I now present a summary of it for the remaining months of the period I was in the field.'
 - A. Well.
- Q. Hold on. If you will just pardon me. He goes on to say: 'It will be seen from it that the summer of 1883 was very cold in the Peace river country, and I believe all over the territory. To show the state of the weather was exceptional, I have added the temperature observed by Mr. McDougall at Dunvegan for the two previous years. No record was kept there during the summer of 1883'—that is the summer that Mr. Ogilvie reports—'but that they had injurious frosts no one denies. That such were common during the summer months of other years, no one will admit.' Now the witness has made a definite statement.
 - Mr. Wright.—It does not make any difference who took them.
- Mr. OLIVER.—No, no, but this witness is here for the purpose of telling the truth. He made a definite statement and challenged contradiction, and here is the

contradiction right here. It is very important that should be taken down. Now, I must say it is a very important question who took these meteorological observations, and I must call the attention of the Committee to the answer given by the witness.

Mr. Blain .- Allow the witness to give his answer on that point.

Mr. Oliver.—He has already made a definite statement, and I have read the answer.

The CHAIRMAN.—His answer is in the record already.

Mr, Blain.—Mr. Oliver produces what he regards as proof. May I ask the wit-

ness if he has any explanation to make upon that point ?

Mr. Macoun.—I will do what Mr. Oliver did the other day and say I was mistaken. I read that table the other day, and the heading of the table is 'Observations taken at Dunvegan, 1887, 1888, 1889,' and I thought that was taken at the Hudson's Bay post. It does not affect the question in the least whether Mr. Ogilvie took them or anybody else. The temperatures were as Mr. Oliver reports.

Q. The temperatures were as I read them ?

A. Yes.

Q. Then the temperature taken by Mr. Macdougall in 1881 showed the highest to be 79°, in July 87°, in August 86°, and September 84°. The lowest showed to be 32° in June, 35° in July, 31° in August and 25° in September. The observations of 1880 showed 80° the highest in June, in July 86°, in August 76°, in September 78°, and the lowest in June, 1880 was 30°, in July 34°, in August 33°, and in September 23°?

A. Now those are the observations—

Q. Wait a minute. I ask the witness again was it on these figures that he based

his conclusions that the country was too cold for agriculture ?

A. No, it was not, because these are the figures that were taken in the valley of Dunvegan. According to Mr. Oliver's own statement they were taken by the Hudson's Bay Company at Dunvegan, a place we all know is much warmer than on the plateau. These figures could not be taken into account in considering the upper part of the Peace river plateau, because they were taken from a point 700 to a thousand feet lower than the observations taken by Mr. Ogilvie himelf during 1882 and 1883. They were taken in the valley according to Mr. Oliver's own statement, in the valley at Dunvegan, and have absolutely no bearing on the question of the climate of the plateau in the Peace river, no bearing directly or indirectly.

Q. There is another statement. He says distinctly in the hearing of the Committee, and the sound of his voice had not died away, that these observations were taken

in the valley at Dunvegan?

A. Yes, sir.

Q. Mr. Ogilvie says, 'during the whole of my work,' and he was not working in the valley,—

A. That was in 1883.

Q. Exactly. This is a report of his work in 1883. He says: 'During the whole of my work I kept a daily record of the meteorological conditions, a summary of the months of July, August and September, I presented my report for 1882. I now present a summary of it for the remaining months of the period I was in the field.'

A. I thought you had read over the two years that were taken at Dunvegan by the Hudson's Bay Company, and that you asked if I had taken them into considera-

tion, and I said no.

Mr. Hughes.—You said McDougall's report ?

Mr. OLIVER.—Not at all. I said, did you take Mr. Ogilvie's ?

A. I did not take those at Dunvegan, because they have no application to the climate of the Peace river country, none whatever to the question of the climate of the Peace river country.

Q. Then you place your statement that the climate was too cold on Ogilvie's

report ?

4 EDWARD VII., A. 1904

- A. Partly, and on Dr. Dawson's and my own.
- Q. Well, whose else then ?
- A. Dr. Dawson's. Dr. Dawson's is just as bad, or worse than Ogilvie's ?
- Q. You do not base it on your own ?
- A. If my own had stood alone I would not have considered that year, but it was so much worse these other years that I could not help considering it. Dr. Dawson's and Ogilvie's reports are both worse than mine.
 - Q. You say Ogilvie's is much worse, do you ?
 - A. I certainly do.

 - Q. You do ? A. You read his figures again.
 - Q. How much worse?
- A. There were 17 days when it went below freezing. I will read you what Mr. · Ogilvie said.
 - Q. Never mind, excuse me ?
 - A. I thought you asked me. I would like to read what Mr. Ogilvie said.
 - Mr. Wilson.—The witness must give an answer, Mr. Oliver.
 - Mr. Oliver.—I was asking a certain question. If you—
- Mr. Wilson.—You asked the question and he gave a certain answer, and you refused to take it.
- Mr. OLIVER.—Not at all. It was a question whether the thermometer went lower under Mr. Ogilvie's observations or under his.
 - A. I said that it did.
 - Mr. Wilson.—He wanted to read it and you refused to allow him.
 - Mr. Macoun.—I have the figures here.
- Q. What are your figures, Mr. Macoun, as to Mr. Ogilvie's lowest observations for June, 1883?
 - A. For June, 1883, 16:50 degrees.
 - Q. That is a very low observation?
 - A. That is very low.
 - Q. Do you know where that was taken ?
- A. I do not. I know he also had eight other days in June when it went below freezing.
- Q. Mr. Ogilvie's report states that it was not taken in the Peace river at all, but Slave lake?
 - A. The 16'50 ?
 - Q. You contradict that ?
- A. It does not contradict. He had eight days when there was frost in the month of June.
 - Mr. Hughes.—Which Slave lake?
- Mr. OLIVER.—At Lesser Slake lake in July his lowest was 28 degrees, and your lowest in July was 27 degrees.
 - Mr. MACOUN.—27 degrees, yes.
 - Mr. OLIVER.—Mr. Macoun's was lower by one degree than Mr. Ogilvie's.
 - Mr. Davis.—I thought he said Ogilvie's was worse than his.
 - Mr. Macoun.—For the summer.
- Mr. OLIVER.—In August Mr. Ogilvie records 22 degrees. Now, just a point. In the case of these 16 degrees I have called your attention to, Mr. Ogilvie was_not in the Peace river proper. He was near Slave lake when that was taken, and I am not prepared to say, nor is Mr. Macoun, I think, prepared to say, what was the character of the country or the location in which he found that temperature of 22 degrees. Therefore, the evidence of Mr. Ogilvie in his record, as far as records are concerned, does not conflict with that of Mr. Macoun, nor does it make a worse showing. However, I would ask Mr. Macoun if, when he made that general statement, did he allude to the extremes of temperature, or to the mean temperature, as being the cause of failure of agriculture in the Peace river country ?

A. Which ?

Q. Was it the extreme drop of the thermometer at improper seasons, or was it

the general coolness—because of the low mean temperature?

A. The effect of the mean temperature and the climate of course does not compare at all with a low temperature. That is, the mean temperature might be 34 or 35 and no harm done, whereas, one day at 20 would freeze everything. I consider the meteorological observations that would be injurious to crops are not the mean temperatures.

Q. You did not consider the mean temperature at all?

A. No, sir, because the mean might be high, and one low day would destroy everything.

Q. You did not examine the records for Ontario, or study the observations of any person or anything. Are you in position to give me an answer? You do not know that the mean temperature for the Peace river country is high, you did not examine into that question ?

A. I have sufficient observations on that. I did not consider it of any importance and do not consider it of any importance now as compared with the low tempera-

Q. Of course, the agricultural people of the country will perhaps differ from you in that, that unless they get a sufficient summer heat it does not make any difference whether the thermometer drops to freezing or not, the grain will not come. On that point, might I suggest that Mr. Ogilvie tells us that there was some importance to be attached to the mean temperature, and he made an estimate of calculation of the mean temperature for the years of which he gives a record. And while it would be entirely at the privilege of the Committee-that is for the Committee to say-whether I might place these facts before the Committee or not, from Mr. Ogilvie's report or not as to the mean temperature; if they will permit me, I will do so. The witness does not attach any importance to it; he does not apparently think it necessary to do so.

Mr. WRIGHT .- Do not be too long.

Mr. OLIVER .- No.

Mr. Blain.—Might I ask a question ?

Mr. Oliver.—I want to read this table from Mr. Ogilvie's report. He gives the mean temperature of the summer months of the upper Peace river country, on the upland where he makes his observations in 1883, and not in the valley. He says: 'The mean temperature for June is 55 in 1883, 55 in 1881, and 55 45 in 1880. Now, at Edmonton the mean temperatue in three years—not the same three years, but the three years of which I have record—was respectively 53, 52 and 60, a lower average than that of the Peace river country. I will not trouble the Committee to go through the list, but I have the mean temperatures here of Edmonon, Calgary, Regina, and Winnipeg, and that of Mr. Ogilvie for the Peace river for three years more than compares favourably with that of Edmonton, Calgary, Regina and Winnipeg.

Now, the witness has said in this connection that he has read everything on the subject, and I think he was specific in stating that Dr. Dawson agreed with him in

regard to the matter of climate—is not that right ?

A. Well, I may have said that. I certainly said he certainly does not disagree with me; although you did not ask it in that way. I have read the report repeatedly.

Q. Did you ever read on page 69 'B' of his report ?

A. Yes, sir.

Q. (Reads)—'It may be stated at once that the ascertained facts leave no doubt on the sufficient length and warmth of the season to ripen wheat, oats and barley'-

A. Read the rest of the paragraph?

Q. - with all the ordinary root crops and vegetables. The only point which may admit of question being to what extent the occurrence of late and early frosts may interfere with growth.'

A. Will you read the preceding sentence ?

Q. Please allow me to do this reading. 'This remark is intended to apply to the whole of the district previously defined, including the river valley and the plateau.

A. Dr. Dawson does not say that. You are just interpolating that. It is not on the page you are reading there.

Q. Am I?

A. Nothing similar to that.

Q. Isn't there ?

Mr. BLAIN.—Let the witness read what it is.

The CHAIRMAN.—Mr. Oliver has the floor. The witness makes a statement that ha is interpolating. If he has the authority let him give it?

By Mr. Oliver:

Q. I don't think the statement is actually transcribed. What I say is the statement is so in effect as I have read it.

A. I don't think it is anything like that, sir.

Mr. Wilson.—I think we should have it as it is in the report.

Mr. OLIVER.—I am just turning it up here. Yes, 'it may be stated,'—this is the second paragraph on page 69 'B'—'it may be stated at once that the ascertained facts leave no doubt on the subject of the sufficient length and warmth of the season to ripen wheat, oats and barley, with all the ordinary root crops and vegetables. The only point which may admit of question being to what extent the occurrence of late and early frosts may interfere with growth. This record is intended to apply to the whole district previously reported, including both the river valleys and the plateau.'

Mr. Hughes (Victoria).—Will you read more.

Mr. OLIVER.—I want to call the attention of the Committee to the fact that the witness distinctly denied that these are the words in the report.

Mr. Hughes.—Read the next sentence after that.

Mr. Blain.—I don't wish to interfere. What I say is, instead of taking the time of the Committee reading from your notes, wouldn't it be better to quote the page and read direct from the report?

Mr. OLIVER.—I quoted the page and read from the report. I was examining the

witness when he contradicted me.

The CHAIRMAN.—The point was this, the witness called in question the statement that he was reading from the report, and he had a perfect right to read from the report.

Mr. Blain.—What I am saying is this, if Mr. Oliver wishes to produce to the Committee the report of Dr. Dawson, I would suggest that he quote the page and read from the report. I am not questioning whether the report and his statement are the same. I understand that you are. I am not questioning that.

The CHARMAN.—That is a matter of opinion.

Mr. Blain.—Not a question of opinion, there can be no two opinions. He took the time of the Committee to read from his notes, and afterwards from the book instead of reading from the book first.

Mr. OLIVER.—I could find it in my notes much more quickly than in the book. What I want to point out is that the witness denied the fact, and I say that he was incorrect. There was nothing else for me to read. There is some rather good stuff in this report if the Committee will permit me to read it.

Q. You have the report ?

A. Would you read the sentence before ?

Q. Read the next paragraph?

A. Which is that ?

Q. The third paragraph following the one I read, page 69 ?

A. May I read the one preceding it afterwards?

An Hon. MEMBER.—Certainly.

By Mr. Oliver:

Q. Well, the one I read myself is the one preceding it ?

A. No, preceding yours.

Q. I want you to read the third paragraph in that page ?-

Mr. Blain.—Just let the witness read what he thinks is proper to read.

Mr. OLIVER.—Let him read what I think is proper to read first. We will consider about the other afterwards.

Mr. Hughes (Victoria).—You have some paragraph you wish to read to the Com-

mittee. Nobody has any right to interfere with you, Mr. Macoun.

Mr. Wilson.—I must differ with the hon, member in that. Mr. Oliver asked the question and has a right to have an answer.

Mr. OLIVER.—Undoubtedly.

WITNESS.—The only reason I wish to read a paragraph is that it explains all that follows.

Q. Read it.

A. Shall I read the whole of the next paragraph—'The summer season of 1879 was an unusual one, characterized by excessively heavy rainfall with cold, raw weather in the early summer months. These conditions did not extend to the west of the Rocky Mountains, but appear to have been felt over the entire area of the plains to the Red river valley. As the result of this, the crops generally throughout the North-west were later than usual, and the mean temperature of even the latter part of the summer appears to be rather normally low. Notwithstanding this, on my arrival at Dunvegan on the 16th of August small patches of wheat and barley in the garden of the fort presented a remarkably fine appearance and were beginning to turn slightly. On my return to the fort on August 31st, these were being harvested, their complete ripening having been delayed by overcast and chilly weather which prevailed between these dates. At the first mentioned date potatoes were quite ripe with the balls formed on the stalks, and the garden contained also fine cabbages, cauliflowers, beets, carrots, onions, lettuce and turnips. Dwarf beans, cucumbers and squashes were also flourishing, and though these plants are particularly tender, they showed no sign of frost. The two last named having been sown in the open ground did not appear likely to perfect their fruit. A few stalks of the Indian corn were also growing, though it is improbable that this cereal would ripen in this district.'

By Mr. Hughes (Victoria):

Q. Is that the paragraph you wanted read? A. That is the one Mr. Oliver wanted read.

Mr. OLIVER.-Now, Mr. Macoun, read that please ?

By Mr. Wright:

Q. Is that at Dunvegan?

A. Yes. The reason I wish to read this paragraph is that it entirely explains

those which follow, and why this did not go in my report.

'With regard to the climate of the Peace river country, we are without such accurate information as might be obtained from a careful meteorological record embracing even a single year, and its character can at present be ascertained merely from notes and observations of a general character and the appearance of the nature of the vegetation.' Those things that Dr. Dawson did not have, we have them now.

By Mr. Oliver:

Q. Well, now, I think we have established that point, that the climate of the Peace river is certainly not colder on the average than other wheat growing parts of

the North-west, and the mean temperature is not less. Therefore, whatever Mr. Macoun has based his conclusion on, it is not based on these facts.

A. Might I read something else that Dr. Dawson says to make my point clear on agriculture?

Mr. Hughes (Victoria).—Anything that Dr. Dawson says goes.

A. Dr. Dawson found that in the year 1879 in the Peace river country three days in August on which they had frost at Fort Saskatchewan where observations were taken that year there was no frost. Notwithstanding that fact he sums up his con-

clusions in this way:

'While regretting that the data at our disposal for the determination of the agricultural value of the Peace river country are not fuller, we may, I believe, arrive with considerable certainty at the general fact that it is great.' That is, the agricultural value. 'From such comparisons as can be made, it would be premature to allow that the climate of the Peace river is inferior to that of the region about Edmonton on the Saskatchewan.' That is the strongest statement that he had to make, notwith-standing what preceded it. 'It is true that in both the Saskatchewan and Peace river districts the season is none too long for the cultivation of wheat, but if the crop can be counted on as a sure one—and experience seems to indicate that it may'—this is at Dunvegan, the only place where agriculture has been attempted—'the occurrence of early and late frost may be regarded with comparative indifference.' That is full statement about the climate of the Peace river country, the strongest point is that it is premature to allow that it is inferior to that of Edmonton. But he bases it on such material as he had. We have 24 years additional material to base it on.

By Mr. Wilson:

Q. Was there much frost at Edmonton last year?

A. I don't know. I didn't read the observations. I saw the grain as I came home.

Mr. Oliver.—Yes, there was frost at Edmonton last year.

Q. I think he said that what he read was the strongest thing that Dr. Dawson had to say in regard to the comparison between Edmonton and the Peace river. Would the witness kindly read the last paragraph on page 73 'B' of Dr. Dawson's

report ?

A. Yes, sir. 'Through the kindness of Colonel Jarvis of the North-west Mounted Police, I have been able to secure a copy of records kept by Dr. Herchmer of Fort Saskatchewan on Saskatchewan river, about 20 miles north-east of Edmonton. For comparison with the observations of temperature in the portion of the Peace river country now discussed they are invaluable, for in the whole district surrounding Fort Saskatchewan and Edmonton we now know '—that was in 1879—'we now know from actual and repeated experiments that wheat and all other ordinary cereals and vegetables thrive and yield the most abundant crops. The climate in its great diurnal and annual range corresponds exactly with that of the Peace river country.' Shall I read the rest of it?

Q. Yes.

A. 'Fort Saskatchewan is situated on the brow of the Saskatchewan valley, about 70 feet above the river, and therefore probably less liable to frosts than either the bottom of the river valley or extensive flat tracks of plain where there is little circulation of air. That is, that the position of the thermometers in regard to the buildings leads to the belief that they are in error as representing the climate of the region generally, indicating the temperatures are slightly too great. The thermometer appears to have been read in all cases to the nearest degree only.'

Mr. OLIVER.—I think that quotation will carry to the Committee the idea I

wished to convey.

By Mr. Blain:

Q. Wherein does your report differ from Dr. Dawson's in respect to the vegetation in the Dunvegan district?

A. Not at all, except as to the cause of the luxuriance. We all agree that the vegetation is very luxuriant in that country—everybody agrees with that. I don't think there is any difference between Dr. Dawson and myself or anybody as to that.

Q. Then you don't differ as regards the Dunvegan district in regard to the produc-

tion of vegetation?

A. There is only about 300 acres fit for cultivation there.

Q. The point seems to be as to whether the upper Peace river is suited for cattle raising and wheat growing. Mr. Macoun gives a straight statement that in his opinion it is not suited for either for commercial purposes. What I want to ask Mr. Oliver is, has Mr. Oliver any evidence to produce to the Committee that this

country is suited for wheat growing and for cattle raising as an industry ?

Mr. OLIVER.—That is the evidence that I am busy producing from Mr. Macoun himself, and from other gentlemen, scientific gentlemen, who are certain I believe worthy of credence. He has demonstrated to this Committee that so far as climate is concerned and as far as his knowledge of the climate is concerned, the climate certainly compares very favourably with the Edmonton district, which certainly is established as a grain-producing country.

A. I don't agree with that at all, I don't say that.

By Mr. Blain:

Q. So there may be no misunderstanding—in the Committee's report for April 22, page 18, Mr. Macoun answers a question put to him by Mr. Davis. This was his

'To answer Mr. Davis' question, I would say that when giving evidence before the Committee that the country was less suited for cattle raising than for grain growing, I think I said, if I did not I say it now, that I meant it was not suited for cattle raising as an industry. That country is spoken of in two ways, as a grazing country and as a wheat growing country, and when I said it was less suited for cattle raising than for wheat growing, I meant cattle raising and ranching as an industry which the people are going there to engage in. I repeat it, it is not fitted for cattle raising as an industry. I say it over and over again that the people can make hay for a few head of cattle anywhere in that country, not only in places which Mr. Davis has quoted but anywhere. Ordinarily for the few head of cattle that are necessary for mixed farming hay can be made anywhere, but for cattle raising as an industry it is unsuited for two reasons: first, on account of the difficulty in making hay, and secondly, because water is very scarce.'

Q. Might I ask Mr. Oliver if in any of these reports there is any evidence that

water is plentiful in that country?

Mr. OLIVER.—Yes, I think it is. I would be very glad to take that up later, but I want to finish with Mr. Macoun on this climate question.

Q. Besides the meteorological observations, I suppose you considered the best evidence of the suitability of the country for agriculture is the actual growth of a crop. Would that be right?

A. Yes.

Q. Well, I will put in another way. Do you base your conclusion as to the unsuitability of the country for agriculture on your observations of the growth of the crop on the upland and on information that you got in regard to grain?

A. Partly on information as to the growth of crop. I saw, as I explained to you, none myself. I based it on Mr. Brick's attempt at agriculture, and on the views

of the people now in the country.

Q. You saw those at Spirit river and others ?

A. Yes.

- Q. In regard to Brick's observation, I think you said Brick's operations covered 1884 to 1889 ?
 - A. Yes.
 - Q. Six years.
 - A. Yes.
- Q. If I do not mistake, you said in three of these years he got good crops, and in three the crops were a total loss?
- A. Yes, that was the experience. I don't know what the grain was. I doubt if there was any wheat. His son didn't know when I asked him whether there was any wheat grown.
 - Q. However, that was one of the facts upon which you based your conclusions ?
 - A. Yes, three years' total failure.
- Q. You said already that you have read all the information that is extant on the subject ?
 - A. Yes, I said that.
- Q. Then you must have read Brick's evidence before the Mackenzie Basin Commission ?
 - A. Yes. That only covered part of his experiments.
 - Q. Does that correspond with what you read, Mr. Macoun?
 - A. What is the page, please?
 - Q. I can't give you the page.
 - A. If you don't mind, I will just look up Brick's evidence here.
 - Q. I will read it-
 - A. I will get it just in a second—I have it now.
- Q. All right. Do you read this—Rev. J. Gough Brick, present address, Toronto, ne writes to the Commission. This is the written statement of Mr. Brick: 'In 1884 I went up into the high prairie country some 36 miles from Dunvegan and broke up about three acres as an experiment.'
- A. Yes. Q. That was in 1884. 'In 1885, crop on land once ploughed fairly good.' You have found that place?
 - A. Yes.
 - Q. You might read the balance of what he has to say ?
- A. 'In 1884 I went up unto the high prairie country some 36 miles from Dunvegan and broke up about three acres as an experiment. In 1885 crop on land once ploughed fairly good. In 1886 a magnificent crop of wheat'-he had wheat that year-' barley, peas, potatoes, turnips and all other vegetables. In 1887, sorry to say, a total failure. The frost on July 26 killed out everything.'
 - Q. Yes.
- A. Of course Mr. Brick's evidence only took up to 1887. His son gave me the evidence for the following years.
- Q. You observe that his evidence indicates that he did not sow any crop in 1884, that he merely broke the land in 1884. So that his experience as put in black and white is that he tried to get crops in 1885, 1886 and 1887. In 1885 he got a fair crop, in 1886 a good crop, in 1887 his crop was a total loss.
- A. Well, his sons told me the six years, and Mr. Ogilvie's report also tells of six
- Q. That relieves you from any imputation of having been purposely in error, but it doesn't change the fact that the experiments did not cover six years of actual crops ?
 - A. I beg your pardon. If you don't-
- Q. Pardon me, that doesn't matter what Mr. Ogilvie says. You said he covered 1884 to 1889 inclusive. That is six years, and apparently as far as Brick was concerned his operations were confined to the four years, in three of which he got good crops?

A. That is what Mr. Ogilvie says of Brick, the remark made by Brick himself to Ogilive, borne out to me by his son: 'Mr. Brick farmed at Old Wives' lake from 1884 to 1889, and he informed me he had only two good crops and one indifferent. One of those two he described as excellent, the other good. The remainder were a total loss. Disheartened with his failure he abandoned it altogether.' Mr. Allie Brick, his son, who farmed with his father, told me the same thing. He said they were the laughing stock of the country with their attempt at farming on the plateau.

Q. I would like to give credit to Mr. Brick for his statements given officially to the Committee, as compared with the second-hand statement of Mr. Ogilvie or any-

body else.

A. That report doesn't cover all the years.

Q. I may point out it covers enough years to show that the statement was incorrect, that he had tried to grow a crop in 1884. As far as his operations were concerned they were confined to the three years, out of which he grew two crops. He had one excellent crop. In 1888 he was during the session of parliament in Toronto, and the circumstances being as they were, he personally—it was not possible for him to be there to grow a crop in 1888.

A. Yes.

Q. If it was done, it was done by hired help from outside or some other means. He was not there to superintend it.

Mr. Maclaren (Huntingdon).—Is it quite fair to quote Dr. Dawson approvingly,

then disapprovingly.

Mr. OLIVER.—This is not Dawson's report. The Chairman.—This is Ogilvie's report.

Mr. Maclaren.—If the man is worthy of credence he is worthy of credence all through.

Mr. OLIVER.—Surely the Committee will take the word of a man who did farm, as compared with the word of a man who only heard he did that.

A. We certainly take Brick's statement for those three years he was there, and

take his son's statement for the other three years.

Q. That's all right. I point out that instead of this farming being done personally by Brick he didn't plant it in one of these years. In two of these years he got crops; one of them was a good one. In the fourth year it was a failure, and in the other two years if a crop was planted it was not by Mr. Brick.

A. We have no evidence of that—none whatever.

Q. If Brick was in Toronto during 1888-

Mr. Maclaren (Huntingdon).—What proof have we of that ?

By Mr. Oliver:

Q. The report says, 'present address in Toronto.'

A. He was in Toronto during the winter.

Q. He could not get out from Toronto in time to sow a crop in the spring.

Mr. Hughes (Victoria).—In this connection I would like to ask—

Mr. Cochrane.—I would like to say that in Ontario there are plenty of men running farms who are not on the land themselves.

By Mr. Hughes:

- Q. Have you had any observations in regard to the time it took farmers to learn how to sow grain crops in Manitoba and the North-west to make sure of getting a crop?
 - A. Yes, I know it takes a long time.
- Q. In other words, if they get their crop in one week later in the spring, are they not likely to have a failure, whereas if they get it in in proper time in the spring they are almost certain to have success?

A. Yes. I think the crops in Manitoba depend to a very great extent on the time that they are got in in the spring.

Q. You say Brick's farm at Old Wives' lake ?

A. It was abandoned since 1889.

Q. Did you ever see a clergyman yet who was a good farmer-with all due

respect to the Chairman ?

A. Really, Mr. Brick was a first-class farmer. He was sent out as an instructor for Indian farmers, that was his business, toin struct the Indians, and on his farm at Smoky River mission he instructed the Indians how to farm. So I think we can assume that he was a good farmer.

Q. There is no data as to the time the grain was sown?

A. None whatever.

Mr. Hughes.-Well, I don't place much importance on that.

By Mr. Oliver :

Q. Just on that point, the witness says he was not a missionary, he was a farmer

in your previous evidence ?

A. I hardly put it that way. Mr. Brick, as I understood it, was in charge of a sort of industrial school. He conducted farming and held services. He was a clergyman to that extent. His mission was at Vermilion. He had for many years the only farm in the Peace river valley.

By the Chairman:

Q. He is dead now ?

A. Yes.

By Mr. Oliver :

Q. The point is as to Mr. Brick's knowledge of farming. Was he a farmer or a minister by profession?

A. I don't know about that. I never saw him, he has been dead for many years.

Q. It is important in this connection to know if he was a professional farmer. Then his farming operations would be entitled to more consideration than if merely a preacher, a missionary whose business was not farming.

Mr. Maclaren (Huntingdon).—What is the Chairman's opinion on that point? The Chairman.—I am quite willing to compare notes in farming with any man in the North-west Territories, and I think we are entitled to be heard on these general questions. I want to correct a statement made at the last sitting. It was this, that the change in the temperature of Manitoba and the Territories was due not to a change in the temperature itself, but to the fact that we sow the grain earlier and that we are using earlier kinds of grain that ripen earlier. I want to state to the Committee, that that should not go abroad, because it is incorrect. I am sure I would be sustained by the people throughout Manitoba and the Territories who are raising grain, that it is not due to that but it its due to this fact. We are sowing 80 per cent of the wheat raised in Manitoba and the Territories in Red Fife—80 per cent I venture to say is Red Fife. There has been no earlier kind of grain introduced in the country. In fact it is the opposition of the milling companies that has prevented the people from introducing earlier kinds of grain to make it more safe. Well, then, that is one point.

Then the next point is this, that the grain is sown in general practice as soon as there is enough soil to receive the grain and cover it decently. It is sown and sown successfully and grown successfully. But the change we believe in that country is due to the fact that large areas are now under cultivation, and the land thus cultivated absorbs the sun's rays, the sun's heat, much more rapidly than the prairie, and there is a difference between cultivated land and the prairie—at least it has been

stated in this Committee by scientists—of something like eight degrees. We all know that the climate is improving and there is less risk in growing grain in Manitoba and the Territories than there was in 1882-83, when I went to that country. Much has been said here that is misleading to the Committee. Take the Indian Head district, it is known the world over for its success in grain growing. I have known two or three years at a time when they suffered from frost and failed almost utterly. I remember the manager of the Bell farm went all the way to Montreal and asked Sir William Van Horne if he would take half the crop to take the other half to market; and Sir William looked wise and said: 'I don't know that it would pay for us to take one-half as our pay to take the other half to market.' Mr. Bell returned and could not sell or get his frozen wheat out to the market. And yet no one says to-day that that district is not a complete success, a grand success, known the world over. It is very difficult for any one, I don't care how careful the man sent to that country, it is very difficult for any one to make observations and general statements as to whether it is fit or unfit. But I must not make a speech.

Mr. Cochrane.—Well, can a preacher be a success as a farmer ?

The CHAIRMAN.—I think so, sir.

Mr. OLIVER.—I think the Chairman himself will admit that it is the exception rather than the rule. I think this is important, because this was the one important experiment that was tried on the upland near the Peace river, and the question is, under what conditions was it tried? We have given the results, and the point we want is whether Brick was a practical farmer or not. The witness in this previous examination as to Mr. Brick said that he was called a clergyman, but that he was a farmer as a matter of fact. The Committee will pardon me. I was very well acquainted with Mr. Brick. I know that he was a clergyman, and I verily believe only a clergyman; and when he left the Peace river he did so to take charge of a congregation on the Hudson river, within a few miles of New York, where he preached until his death. I think that that is evidence that he was a preacher rather than a farmer, and that therefore his experiments on the upland—with all deference to all parties concerned—are not on the same level as though they had been conducted by a practical farmer.

Mr. Ross (Victoria).—He made a selection and he took the church.

Mr. Robinson (Elgin).—He was wise.

Mr. Maclaren (Huntingdon).—Can't you give us some evidence by a practical farmer?

Mr. OLIVER.—Have you any knowledge of the operations—

Mr. WRIGHT.—Have you any evidence as to whether the crops were put in early or not?

Mr. OLIVER.—No. I have not, but the indications were that they were not.

Mr. Blain.—Have you any evidence by practical farmers there ?

Mr. OLIVER.—None. My point is, if I may be allowed the opportunity to explain it, that the operations carried on is evidence that the country is good, and not that it is bad.

Mr. INGRAM.—Was there another man there by the name of Brick ?

Mr. Oliver.—Yes, he is farming there now. He is in the valley. We are not discussing the valley just now.

The WITNESS.—He is there still.

Mr. INGRAM.—He had a thousand acres.

By Mr. Oliver :

Q. Have you any knowledge of a man named Milton making experiments on the upper plateau?

A. I suppose that is the man at the 'waterhole ?'

Q. Yes.

 $2 - 46\frac{1}{2}$

A. I knew he was there, but I did not know his name was Milton, or what he did there, I have a reference in my report.

Q. Is it embodied in your report ?

A. Yes, a reference is made in my report to it.

Q. What is it, please ?

A. 'Between 1882 and 1887, farming on a small scale was attempted at 'the waterhole' at first by settlers, afterwards by the Hudson's Bay Company. I was told at Dunvegan that a crop was harvested only once, but no one who was there in 1903 could tell me of what it consisted. No attempt at farming has been made there since 1887.' That is what I was told.

Q. You did not know what man it was, or anything about it ?

A. No, Mr. Ogilvie said something about him in his report. Might I read that ?

Mr. Hughes.—If it is not too long.

The Witness.—It is not too long. 'In 1882 three parties went into the Peace to settle in the neighbourhood of Dunvegan, but only one of them remained. He settled at a place called the waterhole, about 11 miles from Dunvegan, and made a feeble attempt at farming, but with no more success than his effort merited. After his departure in 1884, the Hudson's Bay Company cultivated his claim, but with very indifferent success. In the journal for 1886 it is stated that the grain at the waterhole was sowed and reaped about the same time as at the post, but it is not said of what quality it was; it is fair to assume, however, that it was fair; otherwise it would very likely have been stated so. In 1887, it is stated that the waterhole crop was destroyed by the frost. As far as I could learn the success there was limited.'

Q. Yes. Then the fact is that these experiments were conducted by a man, whom I may say for the information of the Committee, was retired, I guess retired by request, a retired naval officer, and that therefore his farming experiments would only be just as Mr. Ogilvie has said, and that is as far as Mr. Ogilvie said, is no evidence at all against the country. He got all the success that his efforts merited. The country was as good, and gave him all the returns that his efforts entitled him to. The Hudson Bay Company apparently cultivated that same land for two years, one year they got a crop and the other they did not. I would like to ask the witness what his opinion is of the standing of the Hudson's Bay officers generally as farmers?

A. I might say that in any place I have gone, especially in the Peace river country, the only farms I consider well farmed are those by the Hudson's Bay Company and the Roman Catholic missionaries, who for some reason or other seem to adapt themselves better to farming than the Anglican missionaries. Around most of the Hudson's Bay posts, very often the best farms I see in general in that western country, the very best farms, are carried on by the Hudson's Bay people. It entirely 'depends upon the man in charge of the post. Mr. Round was in charge at that time. Mr. Ogilvie explains these two questions. We will read another paragraph to show what Mr. Ogilvie's opinion was, so that there will be no misunderstanding about it. He says, 'in the summer of 1883, while I was engaged surveying on the plateau in the vicinity of Dunvegan we had frost three or four times in August, severe enough to destroy any grain at the stage of development it would be at that date, and worse still there were severe frosts in July. It appears from this that though farming in the immediate valley of the river has always met with a large share of success, on the plateau the experience is far from satisfactory, that is what little there is of it, and as both places tried were selected for their favourable location, it is fair to assume '-that is an important point-' it is fair to assume that it is a fair test of the capability of the plateau.' That was Mr. Ogilvie's belief in 1891, after having been in that country for two seasons. 'The difference in altitude between the river bottom and the plateau being about 1,000 feet generally, this alone would account for the different results of the frost.' I am pointing out as before, that I am only agreeing with what Mr. Ogilvie says in this and for nothing else. In addition to this the presence of a large body of water in the valley at a temperature of 55 degrees must have a

beneficial effect, also the condensation of the moisture in the valley in its heat during the evening so that a crop cannot have the same effect there as on the plateau. To conclude on this subject, I would not advise any one seeking a home in our great North-west to think of Peace river.' But Mr. Ogilvie's opinion, after seeing the people and having practically two seasons observation of farming in the valley, Mr. Ogilvie's opinion was that a fair test had been made of the capabilities of the plateau.

By Mr. Hughes:

Q. Was Mr. Ogilvie a farmer ?

A. I think he was before he was a surveyor.

Q. Did you ever read any reports of the early days in Manitoba to show that it was a very bad frost-bitten country?

(No answer.)

By Mr. Oliver:

Q. I think that with the evidence we have received so far we can make up our own minds as to whether it was a fair test of farming on the plateau?

A. I agree with Mr. Oliver, but I also wish to be understood that I was fair in making my statement, I considered all the points before me, and I think I was fair in making my report.

Q. The witness will bear with me, that is not the question, it is not his statement or mine that is in question, but the capabilities of this country. We can deal with him later on if we want to.

Mr. Cochrane.—You are getting to be a kind of preacher yourself.

Mr. OLIVER.—That is another interruption. I ask the Chairman to keep tally of the time taken up by these interruptions?

Mr. Cochrane.—You had better keep tally of your questions.

By Mr. Oliver:

Q. Do you know that Mr. Round? Do you know when he left the Hudson's Bay, when he left the Company's service?

A. No, I do not, he told me this year he had been at Dunvegan for a great many years. I went with him around on the boat down to Vermilion, but before I had an opportunity to question him very much he and Conroy went on their trip to the north. I do not know what years he was there.

Q. The point I want to make is this, that the impression attempted to be conveyed is that the Hudson Bay Company abandoned farming on the uplands, because it was not succeessful. The point I want to make in connection with what the witness has said is, that the abandonment of farming on the upland was more likely due to change of officers at the fort than it was to the conditions prevailing on the upland, and therefore the conclusion arrived at by Mr. Ogilvie that these experiments were a fair test of the upland is in no degree warranted.

A. Of course, Mr. Ogilvie knew the people and was there. I did not know the people and I was not there at that time.

Q. You were at Spirit river, were you not?

A. Yes.

Q. And you saw the farming operations there ?

A. Yes.

Q. I notice in your report you mention something of the crop of 1901, I think you indicated that it was harvested?

A. In 1901 ?

Q. On page 14 ?

A. Yes, sir.

The CHAIRMAN.—Is that the first day's evidence ?

Mr. OLIVER.—No, in his printed report.

A. What page ?

Q. Page 14.

A. Yes, sir.

Q. Have you any knowledge whether there was any wheat in that crop or not ?

A. I have not.

Q. There may have been ?

A. There may have been. I do not know whether there was any wheat or not.

Q. Would your information indicate that it had been frozen ?

A. For 1901 ?

Q. Yes.

- A. All the information given me by the men at Spirit river was that it had been frozen every year. But Bremner told me himself that his crop had been harvested in 1901, and I felt I was only doing justice to him and to the country to take his statement. I think 1902 was the first year wheat was planted there, but I am not certain about that.
 - Q. In 1902, I notice you say part of the wheat was frozen. Is that right ?

A. Yes.

Q. Does not that indicate that part of it was not frozen ?

A. May I explain why it was I made the statement in that way ?

Q. Yes.

A. My reason is that Bremner's wheat that year was all frozen. I might explain that it was blown down, that was the year the storms came up, of sleet and stuff of that kind. I do not know whether it was ripe when it was blown down. I could not find two people to agree whether the grain was ripe or not when it was blown down and destroyed by the sleet and snow that came afterwards. Bremner told me himself that it was not ripe and the half-breed who is his next door neighbour told me it was. I say part of the wheat was frozen, but whether whilst it was standing or afterwards I do not know.

Q. Do you know whether he used that for seed the following year?

A. I do not know. He bought his seed from Mr. Brick, but whether he used any of this or not, I do not know.

By Mr. Hughes:

Q. Was that the same storm that did the damage-

A. No, that was the previous year, in 1902, in 1903 there was a similar storm.

By Mr. Oliver :

Q. In 1903 you say 200 acres were under cultivation ?

A. Yes.

Q. The vegetables were a good crop ?

- A. All except one or two cases—yes, in a general way the vegetables were good.
- Q. You said that garden peas had ripened on August 31 ? Is that right, or am I incorrect?

A. I beg pardon ?

Q. Is that correct that garden peas were ripe on August 31 ?

A. That is correct, the garden peas ripened.

Q. By August 31 ?

A. Yes.

- Q. You say the planting was only done for seed and fodder? Did you say that in your report?
- A. I may have. But that is correct, it was only for those purposes. There is no market there.
- Q. Then on August 27, you say barley was fit to cut? That I presume was on land that had been already ploughed, already broken land?

A. That was on Bremner's field. I do not know whether it was new or old breaking; Bremner's barley was fit to cut that day.

Q. There is no question about that ?

- A. No question.
- Q. And the wheat was turning yellow ?

A. Yes.

Q. It was nearly ripe ?

A. Well, it was not ripe, it was turning yellow.

Q. And the oats were nearly ripe ?

A. Yes.

Q. That was on August 27?

A. Yes.

Q. At Bremner's and one or two other farms ?

A. Yes.

Q. Is that right ?

A. Yes.

Q. Then on Burnt river, I think your report indicates twenty acres of wheat, oats and barley on new breaking which had become ripe before the frost?

A. I do not say that.

Q. You do not say that, that is the way I read your report ?

A. I do not think so.

Q. That is in your report ?

A. I think not, I may have been mistaken. That is on page 15. I say, 'the crop referred to here consisted of about 20 acres of wheat, oats and barley on new breaking, on Burnt river, about seven miles south-east of the main settlement, at Spirit river, and though not so far advanced when I saw it as others nearer Spirit river, was in other respects the best looking crop in the region.' That is, I mean the grain was the fullest and so on. 'That this crop was fit to cut before September 4 is satisfactory evidence that the more advanced crops were harvested before that time.' That is what I say above. I was stating the best I could about the region.

Q. Have you read the last line of the preceding paragraph ?

A. I am quoting there from Rev Mr. Simpson, who says, speaking of the storms, 'all was over with the grain.' The crop at Burnt river still stands or lies flat. The continuous rain and the dilly-dallying of the half-breeds has lost my crop for me. It was ripe before the spell of bad weather came on.'

Q. The crop at Burnt river of 20 acres was ripe before the spell of bad weather

came on.'

- A. I quoted that. May I explain it ?
- Q. If an explanation is necessary?

A. I would like to explain it.

Q. All right ?

A. I know from having seen the grain and everything of that kind, that that grain was not ripe at that day, although the man was a clergyman and an honest truthful man. He said it was. I visited that place on my way out from Spirit river, and by no possibility could the grain have been ripe. Mr. Simpson believed it was ripe, there is no doubt about that, and I put his quotation in for what it was worth. When I received my letter from Mr. Bremner about his crop—I will read it to you.

Q. Never mind.

A. When I came to that letter I knew absolutely that Simpson was mistaken. This is what Bremner said. Bremner's crop was the best crop, and this is what he says about the wheat turning yellow and barley nearly ripe: 'According to promise I write you with regard to the condition of the crops here at time of harvest. The rainy weather which we were having when you left continued through September and October, giving the grain no opportunity to ripen. It was all frozen—that is, every body's grain—and useless for anything but green feed, with the exception of some of the barley, which, though frozen, will do for seed.'

4 EDWARD VII., A. 1904

By Mr. Hughes (Victoria):

Q. That was on spring ploughing ?

A. I said the remarkable thing about Bremner's crops was they were on spring ploughing.

By Mr. Blain:

Q. I see on page 15 'E,' a correspondent writes you in respect to last year's crops. Will you read it?

A. That is the letter Mr. Oliver referred to. 'We are in a bad way here. Little hay and less grain. Hard frost on September 4. We were encamped at Saddle Mountain on our way to Grande Prairie. There was about an inch of ice in our tea kettle. Rained on the 5th, snowed on the 6th and 7th. Rained every day until the 12th, then it snowed again. It was a terrible week. On the 14th (at Spirit river) we had twelve degrees of frost. All was over with the grain. The crop at Burnt river still stands, or lies flat. The continued rain and the dilly-dallying of the half breeds has lost my crop for me. It was ripe before the spell of bad weather came on.'

Mr. Blain.—That was an exceptional year.

The CHAIRMAN.—That is not an exceptional experience in Manitoba.

WITNESS.—The storm was at Burnt river where the crops were destroyed in exactly the same way.

Mr. Hughes (Victoria).—Have you any evidence as to snowstorms like that, where they strike down the grain, and after they pass away fine weather comes off again, the grain comes up again and is harvested afterwards?

A. Yes, just as I say-

By Mr. Stewart :

Q. Were you there when the wheat was harvested?

A. At Spirit river ?

Q. Any place in the Peace river valley ?

A. No, I was not.

Q. Do they allow their wheat to go dead ripe before they harvest it ?

A. No, I don't know what their custom is there ?

Q. We have to watch our wheat very closely in Manitoba. We often cut on the green side, when the kernels are turning yellow. We often cut and bind when it is in a glazing state. If we did not we would lose our wheat.

A. I saw no grain cut in the Peace river country.

By Mr. Oliver :

Q. To sum up the results of the witness' observation in in regard to the crops at Spirit river. There was a crop—a crop was harvested in 1891. The crop of 1902 was partly frozen, wheat included. In 1903 there was every prospect that it would ripen had it not been for this spell of bad weather; 200 acres of new breaking was sown merely for green feed, 20 acres of wheat, oats and barley at the Burnt river, according to the evidence of the man who owned it, was ripened before the bad weather came, I submit to the Committee that it is not evidence that the Spirit river country is not suitable for agriculture, when we consider the conditions under which farming is carried on there by Mr. Bremner, he is certainly a rancher and not a farmer, by the other men, who simply broke up their lands that year and by the preacher who farmed by means of half-breeds who knew nothing about farming at Burnt river. I think the evidence will be accepted by every member of this Committee—surrounded with conditions in the North-west—that the evidence of Mr. Macoun in his own report does not justify the conclusion at which he arrived in his evidence that the country is not suitable for agriculture?

A. But still for the information of the people I put that in my report. I conversed with every person in the country when I came through, and I do not think that one of those people in the Peace river country believes that wheat can be grown and ripened. He has not grown it himself-not one single person.

By Mr. Hughes:

Q. Did you ever find any Hudson's Bay trader or any other trader in that country anxious to have settlement go in there. Do they not all want to keep the people out of that country in order that they may keep the fur trade ?

A. It happens that none of my evidence came from the Hudson's Bay people

this year. It came from people actually settled on the land.

By Mr. Blain:

Q. Might I draw the witness' attention to page 19 of this same report of April 'As regards Mr. Bremner's place, Mr. Bremner is the only man who is making any attempt at wintering cattle this winter, and the Spirit river is reported to be, and I believe it is, the best district for cattle raising in that region.' I would like the witness to give an explanation of that ?

A. In what way?

Q. You make a comparison between that part of the country and the other

part, you say this is the very best ?

A. Well, the Spirit river is exceptionally good, although small in area, is an exceptionally good place, because it has a small stream the Spirit river running through it; for wintering it is well sheltered, and the soil especially near the Spirit river is a better soil to my mind than any other place. Taking everything together, water, shelter, hay and everything else, the Spirit river region I consider the best part of the country for cattle raising, although small.

By Mr. Hughes:

Q. What is the altitude of that place, compared with the country behind Dunvegan, is it not about 1,500 feet difference ?

A. It is about the same, 200 feet higher. Spirit river prairie about 2,300 feet altitude.

By Mr. Blain:

Q. You continue: 'But not one of the fourteen settlers there, except Mr. Bremner made any hay; they are paying \$5 apiece to Mr. Bremner to winter their

cattle. Why do they do that ?

A. Well, this year Mr. Bremner himself gave me the information, this year was a bad year for getting hay; the people there had all they could do to get enough hay for their horses. Mr. Bremner owns a slough, or had a right of cutting hay on it anyway, and he could make ample hay while the other people could not. Mr. Bremner has made it a custom of wintering cattle; many people go out in winter for various purposes, and Mr. Bremner has made it his business of wintering their cattle. He told me this winter he was wintering all the cattle for the Spirit river region. That was because he could make hay under better conditions than the other people.

Q. How many cattle would that be?

A. Of course, I do not know, there would be no great number; I do not suppose there would be more than 200.

By Mr. Stephens:

Q. Did they pay \$5 a head for wintering ?

A. Yes.

Mr. Davis.—That is the same price we pay in the North-west.

By Mr. Hughes:

Q. Do cattle ever run throughout the winter in the valley of the Peace river?

A. I do not think so; I think the snow is very deep in the valley, I do not think cattle run out the whole winter—the horses do. I am only speaking from memory. The Indian ponies as I said, do run, they run freely over the whole country.

By Mr. Oliver :

Q. I think you visited the Grande Prairie?

A. Yes, sir.

Q. And you say there were three acres planted by Callihow there ?

A. Yes, sir.

Q. Was that the first crop ?

A. No, he had a crop the previous year, that was the second crop ?

Q. How was the first crop, successful or unsuccessful ?

A. The first year's crop—I could tell you from my notebook.

Q. Never mind your notes ?

A. I have it here. I state what he says for the first year.

Q. On page 22 of your report you mention your inspection of the farm and operations of Mr. Louis Callihow on the north side ?

A. Yes, sir.

Q. And you say there were three acres planted there ?

A. Yes, sir.

Q. Was that the first crop ?

A. No. He had a crop the previous year; that was the second crop.

Q. How was the first crop, successful or unsuccessful ?

A. The first year's crop—I could tell you from my notebook.

Q. Never mind your notes.

A. I have it here, I state what he says for the first year, 'Mr. Callihow said that in 1902 the season was very backward, and his grain was not planted until June 10, but both barley and oats ripened.'

By Mr. Hughes :

Q. Sown when ?

A. On June 10. I will tell you the reason they could not get it earlier.

By Mr. Oliver:

Q. Tell us the reason ?

A. Mr. Oliver misunderstood me one day when I spoke about the ploughing on the Grande Prairie, he took it for granted that I said the reason was the impervious soil. The reason neither Monkman nor Callihow could do their ploughing earlier in 1902 or 1903 was that the frost was not out of the ground. That was the reason. They have chosen bad places for farming. This impervious subsoil will not allow the water to get away when there is a depression, and the water from the melted snow or the rains of autumn lies there, and therefore the soil under the sod is saturated with water and is really mud. It becomes frozen hard during the winter, and in the spring they have not been able to plough it, so that if the fall ploughing had not been done they were not able to get in their crops until late. In both these years they could not get their grain sown until June, and then they had to scratch the soil over the frozen ground. Mr. Callihow in 1903 put his grain in by simply scratching over the frozen ground, which was the proper way to put it in. Mr. Monkman waited a little longer because the frost was not out of the ground and the plough could not go through.

By Mr. Blain:

Q. Read what you say on page 23, E, of your report in respect to wheat growing?

A. 'No wheat had ever been planted before 1903, so that there is not sufficient data upon which to base any conclusions as to the future of this part of the Grande Prairie for wheat growing.' That makes a good, honest statement.

By Mr. Oliver:

Q. Barley and oats ripened in 1902, although sown on June 10, is that right ?

A. That is what Mr. Callihow told me, yes.

Q. Well, how does that date of sowing compare with the sowing dates generally throughout the Territories, might I ask Mr. Stewart?

Mr. STEWART.—It is a late date for oats.

Mr. OLIVER.—Would they likely ripen in Pilot Mound if sown on June 10 ?

Mr. Stewart.—I do not think so, it is too late, I think it is a chance. It would do for green feed.

Mr. OLIVER.—In 1903, note what you say, on August 16th barley was very fine and turning yellow, and was fit to cut about the 23rd; oats were very fine and potatoes fit to eat. That was on August 16, how does that compare with Pilot Mound?

Mr. Stewart.—Our average was about August the 16th for wheat cutting, it is ripening about three weeks earlier at Pilot Mound than when we settled there, we are three weeks earlier now.

Mr. Hughes.—This country is at this stage now that Manitoba was at in the

beginning, under the circumstances detailed by Mr. Macoun.

A. That was about August 23, that was not on Grande Prairie, that was at

Spirit river.

Mr. OLIVER.—On August 27, because we are dealing with Grande Prairie there, you have your book.

By Mr. Davis :

Q. That is all the same country ?

A. I do not think I said that at all. The only place I referred to that was at Spirit river, on August 27, what I say about the farm—on page 22.

Q. No, we are dealing with Grande Prairie now ?

A. I do not say that at all about potatoes being fit to eat, the only place I referred to that is Spirit river on August 27, what I say about farming—

Q. Excuse me, on page 22, the fourth paragraph?

- A. Oh, yes, you are perfectly correct, that is right. 'On August 23 potatoes fit to eat.'
 - Q. There is another place on which there had been cultivation at Monkman's ?

A. Yes.

Q. Three acres?

A. Yes.

Q. He had it planted principally in wheats and oats in the first week in June, 1902. If the Committee will pardon me asking Mr. Stewart, would you consider planting wheat the first week in June likely to produce a crop in Pilot Mound?

A. No, oh, no.

By Mr. Blain:

Q. Why was the wheat planted on that day ?

A. I understand the ground could not be ploughed earlier on account of the frost.

4 EDWARD VII., A. 1904

By Mr. Oliver:

Q. That is all right.

- A. But I also explained in my report on the Grande Prairie that it was very badly chosen places, that they could go to higher ground and get in their crop at least two weeks earlier.
 - Q. And you also state the oats should probably mature?

A. Yes, sir.

Q. Wheat was only in blossom and could hardly ripen, you would hardly expect it too. Now in 1902 your report says that the first severe frost was August 24, and that the oats were slightly frozen, but were used for seed next year?

A. That is so.

By the Chairman :

Q. Oats were frozen ?

A. Slightly frozen, that is what Mr. Monkman told me.

Mr. OLIVER.—No wheat had ever been planted before.

The CHAIRMAN.—I do not think you need take the witness opinion on agriculture. A. That is Mr. Monkman's opinion.

The Chairman.—Every farmer knows that oats that are frozen will not grow. Wheat will, but oats simply will not germinate.

Mr. Blain.—Might I suggest to Mr. Oliver, if I understand correctly, you are

just quoting information from the printed report ?

Mr. OLIVER.—I am bringing together the evidence in regard to the growing of crops, everything in his report. His evidence is that the country is unsuitable for agriculture, and I am bringing it forward to show that the facts he presents show it is suitable for agriculture.

Mr. Kidd.-You cannot do it.

Mr. OLIVER .- Not to your mind, I will admit.

Mr. Blain.—I would like to ask Mr. Oliver a question, I do not want to interfere. I asked Mr. Oliver a question some little time ago, and he said he would answer it later on.

Mr. OLIVER.—Yes.

Mr. Blain.—I would like Mr. Oliver to give the Committee some evidence that the country is well suited for agriculture for wheat and ranching purposes as an industry, from some person who has lived there. Every one of these reports he has presented in opposition to what Mr. Macoun has said is in respect to water, can he give us evidence, for instance, that the country is well supplied with water?

Mr. Oliver.—Oh, yes, I think Mr. Macoun will agree with me, without turning to the reports at all that outside the plateau immediately north of Dunvegan, the

country is fairly well supplied with water. Is that right ?

A. Yes, fairly well, but the sloughs and lakes are very shallow, and in very cold winter they will freeze to the bottom. North of the Peace river there are 400,000 acres where there is practically no water at all. Spirit river goes dry in the fall. On the Grande Prairie there is plenty of water if it is divided among five or six people, but there are few lakes which will furnish water.

The CHARMAN.—I have to call the attention of the Committee just here to the fact that the same statement or explanation might apply to large portions of the North-west, and many cattle raisers that are ranching do not water their cattle at all, but give them snow. They wheel it in and dump it in before them in their stalls, in their temporary shelters, the cattle do not get any water at all during the entire winter, they simply lick the snow.

By Mr. Davis:

Q. I want to ask in connection with this question of water now under discussion, has there been any test made in that country for water by boring?

A. Yes, there has been. I did not want to mention these things, unless forced to do so, but since the question has been asked tests have been made and have shown that the water is not fit to drink. While at Spirit river I tested the water, which was not fit to drink. The reason is this, that the blue clay or silt is underlaid by shale which contains bituminous or coal oil flavour; I did not see the cattle, but they told me the cattle would not drink it. I would not drink it. A man named Latimer dug a well and another man also dug one, but the water was not fit to drink. When I was there they asked that I would recommend to the government that somebody be sent out to dig artesian wells.

Q. How deep did they go ?

A. One well was 16 feet, the other 14.

Q. I was talking about artesian wells of 200 feet depth ?

A. No experiments of that kind have been made.

Q. Are you aware that in the North-west country that is the way we get water ?

A. I am aware of that.

Q. We want it to be known then that the Spirit river country is no worse than the North-west Territories in that respect.

By Mr. Blain:

Q. It is hardly correct to say that there is sufficient water for grazing purposes, is there? If that is the case, I would like the witness to give an explanation of this statement it is unsuited for two reasons: 'First, on account of the difficulty in making hay, and secondly, because the water is very scarce?'

A. That is correct, sir.

Q. What I want to know is, if Mr. Oliver can give the Committee, it is very important and I am very anxious myself, can Mr. Oliver give us some evidence to contradict this statement and that will show that the country is well supplied with water?

Mr. OLIVER.—A question Mr. Blain asked me a few minutes ago as to what information I could bring forward in regard to the agricultural suitability of the country; I have spent the time looking up this information, and I will deal with this first.

A. I might say that as regards the water of these lakes on the Grande Prairie, I have spoken of that it gets full of a small green plant, a small almost microscopic plant so that it is unfit for anything to drink at all. Mr. Monkman goes 17 miles for water for his cattle in winter to Bear lake, the water is not fit to drink, cattle will not touch it at all, where it is not so bad. At Saskatoon lake, the water is not fit. The small plant I speak of is very common in all the northern country and under any circumstances it is not fit to drink.

By Mr. Davis:

Q. Do I understand you to say that Bremner drives his cattle 17 miles for water?

A. No, he told me it was on account of the water that he winters his cattle there.

By Mr. Stevens:

Q. Would Mr. Macoun consider a well 16 feet deep was a fair test for water in any country?

A. No, in the North-west we have to dig much below that in order to get a per-

manent supply.

Q. The fact is that in the county of Kent, where it is considered that we have an abundance of good water, a few years ago we had no water in the township of Raleigh, all the wells tasted of coal oil.

A. I pointed out that I did not give this of my own accord. It was only when

Mr. Davis asked a direct question.

Q. But you are sorry to have it put in the report that they had made tests for water and did not find any when the fact of the matter was they had not made any tesis yet.

By Mr. Hughes:

Q. Have you noticed that the streams running up in this hill region, along the base of the mountains, 150 miles from the Rockies, have you noticed any peculiar characteristics of the streams there, are these waters not good ?

A. Yes, of course, but all these streams rise outside the limits of this part ready for immediate settlement, and when they reach the Grande Prairie only one or two streams find their way across the plateau, beyond this to the west in the wooded country there are many streams.

Q. At what period of the year do you find this green stuff come on the water ?

A. In the Saskatchewan district I found it from the middle of July on, and in the Peace river country from the first week in July on we could not get water fit to drink at Bear lake.

Q. The water gets low ?

A. No, it is on the surface.

By Mr. Davis:

Q. When you say there is no hay there do you not think there is a possibilty of growing hay there the same as in Ontario, and getting water, if you look for it the same as you do in Ontario and other places ?

A. I certainly think so. Mr. Davis .- But what ?

A. But the idea is as I explained the day we were speaking of it before that parties are going in there and using it as a ranching country are going to extremes. I might say about hay that timothy has been very successfully grown at Dunvegan, but the experiment has not been successful on the plateau, but I have seen growing along the trail timothy that has come up from seed. I do not think anybody thinks of going there to cultivate hay. Brome grass also does very well in the valley, but has never been tried on the upland.

Q. I was just going to say, do you think the experiments you speak of on the upland, do you think the people who have made the experiments are real farmers, men who are competent to make experiments. Now, as a matter of fact, I know in my part of the country, and in all other parts of the North-west Territories, there are scores of men have frozen grain every year. I do not care where you put them, even if you put them in Ontario, I fancy they would have frozen grain. Those who made the experiment, were they competent to make them, or were they retired army officers,

or freighters, or fishermen, or something of that kind ?

A. I would not consider them competent. I wish to point out to Mr. Davis and to the Committee that when each of these points come up to certain members it appears at once to be the most important point, but in my report I combine all these things as well as the natural vegetation of the country, which is my specialty, it is because I am supposed to be able to determine what a country is good for by the natural vegetation, I went there, and these things all combined were what forced me to form my conclusions. But when each of these points are brought out, each for the time being would seem to be the most important point. But the vegetation is my strong point and without any attempt at agriculture or any thermometer readings having been taken, I yet would have used my scientific knowledge, and I would still have formed the conclusion I hold now. Still these men might not have been good farmers. I give the experiments that were made for what they are worth, but it was not on that line I formed my conclusions.

Q. Do you not think that your conclusion that it was not a wheat growing country, and that it will never be a wheat growing country, do you think from your

knowledge of what you saw in that country, compared with what you saw in Manitoba and the North-west, that it would lead you to come to that conclusion that it will never be a wheat growing country?

A. That is my honest opinion.

Q. That is your honest opinion?

A. That is my honest opinion, I may be mistaken. Any one could form their own conclusions that wheat could not be grown as a certain crop in that country.

Q. You are contradicting everything that has happened in Manitoba and the

North-west?

A. No, the latitude of that country is so vastly different. Indian Head is the highest point in the eastern part of that country at which wheat can be grown, and it is not always safe there. The Saskatchewan is much lower than Indian Head, because the rivers all slope to the north there; altitude is the point.

Q. Well, now the latitude of Lacombe, Red Deer and several other places along the Calgary and Edmonton line, as I understand the conditions is much higher than

the part of the country you speak of.

Mr. Hughes.—Edmonton, the Horse Hills, and Fort Saskatchewan are consider-

ably higher than Indian Head.

Mr. Davis.—And still agriculture is carried on successfully there, so that the

theory of altitude falls to the ground. .

Mr. Blain.—We are confining our questions to the hay, whether the country can produce hay or not. Mr. Macoun in his evidence the other day at page 19 says, 'I wish to make it very clear when I speak of the country as being less suited for cattle raising than for wheat growing, I meant cattle raising and ranching as an industry which the people are going there to engage in, I repeat it, it is not fitted for cattle raising as an industry. I say it over and over again that people can make hay for a few head of cattle anywhere in that Peace river country, not only places which Mr. Davis has quoted, but elsewhere.'

Mr. Davis.—The same as Ontario.

Mr. OLIVER.—The hour of adjourment is 12 o'clock. I undertook to ask the witness some questions in regard to his reasons for coming to the conclusion that the climate of the Peace river was to cold for agriculture. I have done my best to bring this question to a conclusion, and I think you will bear me out that I have not been given the very best opportunity of doing so. I have dealt now with two branches of the subject, but there are others I would like to have the opportunity of dealing with at a future meeting. We have dealt with the question of temperature, compared with that of other parts of the Territories, and with the evidence of the possibilities of the country in the actual growth of the crop as observed by Mr. Macoun, and all the evidence which he received as compared with other parts of the Territories as far as I am concerned we have covered that pretty well.

A. I wish to add to that Dr. Dawson's estimate of Grande Prairie.

Q. Pardon me, I wish to deal with this subject from your standpoint; we have Dr. Dawson's reports and all these other reports which I will be very glad to have the opportunity to put in to the Committee later on, but for yourself we would like to release you from examination as soon as possible. If the Committee will bear with me, I would like to take up to-morrow, if I may be permitted to do so, the question of altitude and longitude.

The CHAIRMAN.—Not to-morrow.

Mr. OLIVER.—Well, whenever we meet, the question of altitude and latitude

as bearing on the climate, and as bearing on the Peace river.

Mr. Robinson.—I move that we adjourn, and before doing so I wish to say I think we ought to dispense with the services of Mr. Macoun, who has been here under cross-examination for four or five days, and I do not see that his evidence has been very much changed by the questions we have asked him. The country is looking to us for something else besides 'Peace river.' We have evidence by Mr. Macoun and others,

4 EDWARD VII., A. 1904

and from all I can learn the Peace river climate could not be changed very much. I think we have had sufficient of it, therefore I move that we adjourn and that we take up Mr. Grisdale to-morrow. He is not here to-day, but he has been here a good many days waiting his time, and I think it is time we commenced something else besides 'Peace river.'

Mr. Davis.—I want to say for the benefit of the hon. gentleman who has just taken his seat that while the Peace river may not be important in his eyes, it is important in the eyes of the majority of the people in this country. There is a territory there larger than the province of Ontario—more suitable land in that country, and I think we cannot discuss anything more important to the people of this country as a whole than the Peace river district. There is a difference of opinion as to the temperature and the character of the soil and so on, we want to get all the information we can about that. I think the time of this Committee could not be better occupied than in listening to the examination of Mr. Macoun on this subject, and if we want to shut it off it seems to me very strange. I cannot understand why the gentleman shoud make such a suggestion.

Mr. Robinson.—Let us shut it off when we have been five days quarreling about it now.

Mr. Davis.—It does not matter if it has been five months. If the hon, gentleman wants to transact other business we will be here for a couple of months yet, and we will have the time to do it, and if there is anything of interest that will take six, or seven, or ten days, I for one as a member of this Committee will not object. But there is a lot of other matter to bring out yet, and we want to go on with this examination and finish it.

The CHARMAN.—I would remind the Committee that we cannot meet to-morrow. Mr. Hughes.—On one point I quite agree with all that has been said. very important that this information should be brought out. I am not wanting to shut off Mr. Macoun's evidence or any other information connected with that country. There has been a misunderstanding in locating the territory we are discussing, you are speaking of the Peace river district, meaning the foothills of the mountains, but take Edmonton and I venture to say you will not get a very much better one than Mr. Macoun has given. I do not agree with Mr. Macoun, with his conclusions at all, but that is neither here nor there. What I think would be of value to the Committee would be to get the evidence of a man like Senator Perley and the Chairman. Let them be notified that we wish each of them to give evidence on the time of sowing grain in the North-west, the conditions, and all that sort of thing, and I am satisfied that Senator Perley and the Chairman here will give an hour's address to this Committee that will open the eyes of the people of Canada. Our friend Mr. Stewart also. I daresay, would be able to give us information, but these two gentleman can, notwithstanding the fact that the Chairman has been a clergyman. I suggest that instead of continuing on the Peace river and pounding away on it, that we also have the evidence produced by gentlemen like Senator Perley and yourself, sir, taken on one day and open the eyes of the people of this country as to what has been done in the Territories and in Manitoba since the early days.

By Mr. Stevens:

Q. Has Mr. Macoun given us a report on the lower Peace river country? A. Yes, I have given that.

By Mr. Oliver :

Q. I would like to point out to the Committee that only two days have been occupied in listening to the evidence from Mr. Macoun, that the previous meetings were not occupied in that work, and for the benefit of Mr. Robinson I will just say that two whole days were occupied by debating a motion whose purpose was to shut off the record all proper matter from the proceedings of this Committee.

Mr. Robinson.—It was not my motion.

Mr. OLIVER.-No, but you supported it.

Mr. BLAIN.—What motion was that ?

Mr. OLIVER.—The motion of Dr. Sproule to shut off from the records everything that took place. Another question is, here is a printed report that is in question, together with what the witness has said in evidence before the Committee, but here is a printed government report in which the conclusions are most condemnatory of that country, they are certainly as bad in the report as anything the witness has said to the Committee, except that the witness has not said so in so many words.

Mr. BLAIN.—Are they through ?

Mr. OLIVER.—They are certainly not through, although I have been called to book for saying so.

Mr. Kidd.—How are you going to prove it ?

Mr. OLIVER.—I have proved it out of Mr. Macoun's own mouth.

Mr. Kidd.—No, you have not, not to-day.

Mr. OLIVER.—Yes, I have; I have proved that Mr. Macoun did not have the evidence upon which to base those conclusions he arrived at in his report and in his evidence. He had no evidence sufficient to base such a report upon.

Mr. Kidd.—How are you going to change the report, he won't change it.

Mr. OLIVER.—I read the meteorological reports from Toronto, from his own report, and they do not bear out his assertions that the country is too cold for agriculture.

Mr. Kidd.—That will not change the report.

Mr. OLIVER.—No, but I can tell you what we can do; we cannot change the report, but by inquiring from Professor Macoun and other reputable men in this country we can show that Mr. Macoun, to put it mildly, has been mistaken, and that his conclusions are not justified by the facts. We can do that, and that is the best we can do, and I think it is an important thing to do.

Mr. Hughes.—That is all we can try to do. Mr. Oliver.—That is all we desire to do.

Mr. Kidd.—You have had five or six days and you have not done it yet.

Mr. Oliver.—We have not had an opportunity and have not had much to say, I have occupied the time of the Committee to-day, and I have made my point.

Mr. Kidd.-In your mind.

Mr. OLIVER.—I have made my point as regards the growing of crops, and I can make my point on altitude just as well if I am given the opportunity.

Mr. Blain.—I would have to have that resolution which the Committee passed read.

The CHAIRMAN.—Perhaps you were not in the house when it was before the Committee ?

Mr. Blain.—Yes, I was here, perhaps you would be good enough to turn it up. I did not understand it the way Mr. Oliver puts it, because if I may be permitted I do not think there is any man in this Committee does not wish a correct report on the Peace river district to go out to the country. If there is such a man I would like to see him, but I have not seen him yet. I did not understand that we were voting on any such resolution to keep away from the people any information.

Mr. OLIVER.—Read it.

Mr. Blain.—The resolution was, if a remember aright, regarding what should be taken down.

The CHAIRMAN.—Yes, that was the point.

Mr. BLAIN.—That was the point as I understood it and I understand it referred to what was to be taken down.

Mr. Robinson.—You will remember I suggested that Mr. Oliver be given a day so that he might have an opportunity of not only making any statement, but to tell all he knew about that country, so hat if there was anything contrary to what Mr.

Macoun has said he would have the opportunity of having it recorded. What I said there on the first day was that I wanted Mr. Oliver to have an opportunity.

Mr. OLIVER.-Mr. Macoun is all the evidence I want.

The CHAIRMAN.—The clerk will read the resolution from the minutes.

(Extract from minutes of April 21 read.)

Mr. Robinson.—Is that shutting off evidence ?

Mr. OLIVER.—Certainly.

Mr. Davis.—You may as well have his report in without a supplementary report.

We all know that his first report condemned the country.

Mr. Blain.—I understand this motion that Mr. Oliver has referred to does not warrant any such statement, the motion was altogether dealing with what should be taken down by the reporters to be printed, not as to whether any member of the Committee wished to keep back any statement in reference to the Peace over district or not.

The Chairman,—The resolution, you can easily observe, shut out any argument

or any speech that might be made.

Mr. Blain.—No, it was a question as to what should be taken down to be printed

in the report, that was what the resolution dealt with and nothing else.

Mr. Oliver.—If only what was taken down was printed, then those who made their arguments which were not taken down were certainly misrepresented by the printed report.

Mr. Blain.—You agree it was the question as to what should be taken down was

in discussion, not as to what was calculated to hurt the Peace river ?

Mr. Oliver.—It was a question as to whether only what Mr. Macoun said should be taken down, or only the question which brought out that evidence.

An Hon. Member.—Not the questions.

Mr. Ross (Victoria).—Here is the resolution which the Committee passed judgment upon—is this the time to begin a discussion as to the meaning of the resolution again?

The CHAIRMAN.—The time for adjournment has come.

Mr. Hughes.—I will move that the Chairman take into consideration the calling of Dr. Douglas, member for Assiniboia, and Senator Perley to address the Committee.

Mr. Kidd.—Has he ever been in the Peace river country?

Mr. Hughes.—I am not talking of the Peace river, but about the conditions of the North-west, and I ask that these gentlemen b erequested to give this Committee at some future date their views on grain growing in the North-west in relation to the seed, climate and all that sort of thing.

Mr. BLAIN.—What will we have next day ?

The CHAIRMAN.—On Friday—it is for the Committee to say whether Mr. Macoun will be here or not?

The Committee adjourned.

Having read over the foregoing transcript of my evidence, I find the same correct

J. M. MACOUN.

House of Commons, COMMITTEE ROOM 32, FRIDAY, May 6, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m. Mr. Ross (Ontario), in the absence of the Chairman, presided.

The CHAIRMAN.—The unfinished business this morning is the continuation of the examination of Prof. Macoun.

Mr. Sproule.—I would like to say one word with regard to this examination, because it seems to me that it is dragging out and it has already occupied a long time. There is a great deal of important work for this Committee to do, and surely we ought to be able to get all that Mr. Macoun has to tell in one or two meetings without keeping it going from time to time. It seems to me it is getting to be somewhat of a farce,

and I think we ought to get on to something else.

Mr. Henderson.-Mr. Chairman, I very heartily endorse what Dr. Sproule has said. I think we have important subjects that we could consider of very much greater interest than the one which has been before the Committee now for about three weeks. Foro my part, I have not attended these meetings for several weeks, and I realize that the Committee will very soon dwindle down altogether with the repetition of one thing day after day, and a matter that does not properly belong to the work of this Committee at all. I do not know that we should ever have had Mr. Macoun before us. I understand the work of the Committee to be of a very different character from the work that Mr. Macoun is engaged in. It is not really colonization, what we understand by colonization, the bringing of people into this country. I think that it is more the work of some special committee that might be appointed for the purpose of taking evidence with regard to that country, and I desire as one to protest against continuing this kind of work from day to day to the entire exclusion of men that the Committee want to hear. I do not know who is responsible for the continuation of these wrangles from day to day. I am sorry the regular chairman is absent, but I hope, sir, that you will take some steps to bring this matter to a close and that the Committee will get down to its usual work and deal with the questions that properly come before it.

Mr. Davis.-Mr. Chairman, I do not know who is responsible for bringing Mr. Macoun before this Committee. The fact remains that the gentleman has been before the Committee, and that we have entered upon an investigation of importance which has not been finished, and I do not think that it is the proper thing to leave this matter half done. We want to get to the bottom of it. Mr. Macoun has made a report reflecting as I understand it on the Peace river country and the representatives of the people from the west think that Mr. Macoun has been misinformed in many cases, or to put it in short, that his conclusions are wrong, and we want to try and prove that if we can. I do not think the attention of the Committee should be taken up with anything of more importance to the people as a whole than this very subject. That country is very large and has as large an area of arable land as there is in the province of Ontario, perhaps more. I think that this country is fit for agriculture, and I am satisfied we will prove that before this investigation is over. I expect that to-day we will be able to pretty nearly close the thing up. remember the meetings are short. We have only an hour every day, and this morning we must adjourn at eleven, so that we have not very much time to take up Mr. Macoun with all the interruptions and that sort of thing. Therefore we had better go on and dispose of the matter as fast as possible. I think to-day will pretty nearly wind it up.

Mr. Sproule.—It seems to me that perhaps Mr. Davis misunderstands the objects and functions of this Committee. It is not our duty to settle any differences in the report made to a department as to its truthfulness or otherwise. We have nothing to do with that at all. The department have to do with that. We want certain evidence which Mr. Macoun presented to this Committee as to the facts that he learned in that country. We require those for the purpose of making a report to parliament containing that evidence and our observations or recommendations thereon, simply for the benefit of the government to devise their policy in the future. It is not the object of this Committee to get out a report for distribution, and if that is done afterwards it is a different thing. But when we have taken Mr. Macoun's own personal evidence that is all we have to do with it and hand it over to the House, Afterwards it will be examined by the Minister to whose department it belongs and he can shape his policy on it. But we got that evidence long ago, and now Mr. Macoun's report is taken up and an effort is being made to prove that his report is false. If that is the duty of this Committee, then of course we might use up an interminable length of time by calling witnesses from different other sources, and bringing any documentary evidence, but as I understand it is not the duty of this Committee at all. The duty of this Committee is to ascertain what we can regarding the various subjects and present them to the House and then they will be examined by the government officials and upon the basis of that information they will direct their policy in the future.

Mr. Ross (Victoria).—I submit, Mr. Chairman, that Mr. Oliver established the two points that he desired to make, and that there is only one more point he intends to cross-question the witness upon, as we may call him, and after that the labours of the Committee in this matter will be pretty well finished to-day. I do not know that there are other committees meeting here to-day, and I think we will be able to conclude this subject.

Mr. Sproule.—There is another committee at eleven o'clock.

The CHAIRMAN.—Yes, the Public Accounts Committee meets here at that hour.

Mr. INGRAM.—I would suggest to the Chairman that if Mr. Oliver would confine himself to the questions and let the witness answer them, and do away with these arguments, we would get on very much quicker.

Mr. OLIVER.—As it seems that I am the criminal in this case, I would like to say that Mr. Macoun was brought before this Committee, I don't know by whom, or at whose request, but I am rather under the impression that it was at the request of the very gentlemen who are so anxious to dispense with his services now. However, the fact remains—

Mr. Sproule.—None of us were instrumental in bringing him.

Mr. OLIVER.—Well, I was not either, but the fact remains he came before the Committee and outside of this report he gave what purported to be evidence before the Committee absolutely condemning an area of country, which is estimated by one of the greatest scientists of Canada to be over fifteen million acres of wheat growing lands, as a country not suitable for agriculture at all. Now if that is not a question which is suitable for discussion by the Agriculture Committee, I don't know what the Agriculture Committee is here for. However, it is for the Committee itself to decide. The point is this: That as a representative of a part of the very territory so reported on by Mr. Macoun, and as the representative of the people upon whom he cast very serious reflections at the time he was giving his evidence, unjustifiably without cause or provocation, and from the fact that any reflection made with regard to that particular country necessarily reflects on the adjacent portions of the organizad territories, I felt it to be my duty by questioning Mr. Macoun to inform the Committee that his conclusions were at variance with the facts. Now I have been at the meetings of this Committee ever since Mr. Macoun appeared, and this gentleman, Dr. Sproule, who deplores the loss of time in questioning this witness, was responsible for the occupation of two days of this Committee's time in arguing a matter which he

brought before the Committee, but which had no bearing whatever upon the question at issue.

Mr. Sproule.—I deny that emphatically.

Mr. OLIVER.—Very well.

Mr. Sproule.—Towards the close of one meeting I moved a resolution that was left over until the next day and it was finished at the commencement of the next meeting.

Mr. OLIVER.—It is so stated in the record.

Mr. Sproule.—I say it is not true.

Mr. OLIVER.—Very well, you-

Mr. Sproule.—You cannot choke anything down my throat in any such damn cow-boy style.

Mr. OLIVER.—I am not swearing. Mr. Chairman, am I to be protected ? I ask for your protection ?

Mr. Robinson.—I rise to a point of order.

The CHAIRMAN.—I would say to Mr. Oliver to go on with his questions as promptly as he can and let the witness give the answers as briefly as possible, and keep these speeches for some future time.

Mr. Davis.—See that the witness does not make speeches every time he is asked a question.

Mr. Cochrane.—I have been a member of this Committee for twenty years, and I must say to you, Mr. Chairman, that we have never had such a, what shall I call

An Hon. MEMBER.—A bear garden.

Mr. Cochrane.—Members who wanted to get information as regards agricultural subjects before this Committee have got disgusted, I have for one. Now, I do not object, I think every member of this Committee has the right to ask questions, but I never thought that a member of this Committee should be allowed to ask questions and make a speech and lecture on it before this Committee. I think that the better way, Mr. Chairman, would be if Mr. Oliver wants to give evidence to the Committee, and the Committee is willing to hear it, to let him give his evidence. It would be mere satisfactory, and we would not have this hullabaloo every time questions are submitted. I do not know what Mr. Macoun's capabilities are. I know he is an official of the government, and he is here to give us information that he acquired in that section of the country. If Mr. Oliver doubts whether his information is correct he has his remedy, because the report is under the control of the government, and if they think the report ought not to be issued, they need not do it. I think we had better go on and get some intelligent information with regard to subjects which should come properly before the Committee.

The CHAIRMAN.—Gentleman, if you will allow me to rule in connection with this matter, I think from what I hear several members of the Committee say that we have had this matter before the Committee quite long enough. Under the circumstances, everybody is willing to have it wound up as soon as possible. Now in order to help that matter on and facilitate it, it will be well for Mr. Oliver to get through his questions if he possibly can this morning. I understand he has two questions about the matter of climate. Let him confine himself to the hour we have this morning, if possible, and in that way wind the matter up so that the Committee will be through

with it.

Mr. Taylor.—I suggest that he confine himself to question and answer.

The CHAIRMAN.—Question and answer, and every member of the Committee do the same thing as near as possible.

Mr. TAYLOR.—If he wants to refute the evidence, let him call some other witness. Mr. OLIVER.—The witness has been repeatedly allowed to make speeches to the Committee.

The CHAIRMAN.—Go ahead with your questions.

Mr. Henderson.—Before Mr. Oliver proceeds with the question, let us reach some definite conclusion as to when the matter will be wound up.

The CHAIRMAN.—I think Mr. Oliver knows the feeling of the Committee and will

wind it up to-day.

Mr. Henderson.—I will move a resolution that will bind the Committee and we will hear no more of this question before the Committee during this session. I move that the examination of Mr. Macoun be discontinued.

The CHAIRMAN.—At the close of this meeting.

Mr. Henderson:—I would rather discontinue it now. I do so for this reason. I find in travelling through the country that the work done in this Committee is rather severely criticized. At any rate it gives a very unsavoury appearance in the country, and even in Winnipeg last week I found the matter talked of there. They talked more of the work of the Agriculture Committee and the examination of Mr. Macoun than they did of the Grand Trunk Pacific Railway. They seem to take more interest in reading the reports of this Committee on account of the particular way in which the business was carried on. Now I fear that if this evidence is to go into the report of the Committee of Agriculture and Colonization that very few members indeed will undertake to distribute that report through the country. For my part, I would be ashamed to send a single report out, and I think the sooner we stop this discussion the better. I would prefer to drop it here and now, and have no more of it. If Mr. Oliver or Mr. Davis wants a committee to investigate the matter of altitudes, &c., in the Peace river country, they have surely influence enough in the government to insure the appointment of a special committee for that special work. It is not pertinent to the work of this Committee at all, and should not interfere with our regular programme. I hope, therefore, Mr. Chairman, that the Committee will accept my suggestion and that here and now we will discontinue this examination and let there be no more of it. Personally, I should be very glad indeed if the Committee would authorize some one to go over the whole of Mr. Macoun's examination and have all that is not pertinent to this particular question struck out of the report before it goes to the general public. If there is anything wrong with what has been read that is not creditable to the Peace river country—I am not expressing an opinion one way or the other—but, if it is necessary to contradict statements that have been made by Mr. Macoun, as these gentlemen say, let them get a committee with power to bring before it not only Mr. Macoun, but other people from the west who know this country well and so get a thorough knowledge of the region before any further evidence is sent out with respect to it. I would move that the examination of Mr. Macoun be discontinued.

Mr. Stevens.—Let me say a word before you put the motion Mr. Chairman. I think the Committee was called together this morning for the purpose of hearing the evidence of Mr. Macoun. That was the object of the meeting and I would suggest that you go on and bring Mr. Macoun's examination to a close.

Mr. Maclaren (Huntingdon).—Move an amendment.

Mr. Stevens.—I would move an amendment that we go on with Mr. Macoun's examination.

Mr. Davis.—We cannot close to-day. Mr. Chairman, I desire to say in speaking to that motion that I do not know who brought this question before this Committee. I understand that some hon, gentlemen who now want to choke the matter off had something to do with it, at least as any person else. They took part in it, and now that it is before the Committee we want it to be threshed out to the end, we want to establish the fact that that country is not what these gentlemen would like people to understand that it is, and I object to this motion.

Mr. Ross (Victoria).—We are spending the precious time of the Committee in wrangling when it might be used to a better purpose. It was never intended that all the evidence that has been taken down should be printed in the report. The Chairman of this Committee is disposed to select a committee of intelligent men to study

the matter and decide what should be published, and what should not be published. Now let us go with this evidence and try to make as much use of our time as pos-

sible and, let there be no more wrangling. I am sick of it myself.

Mr. Hughes.—I would suggest, Mr. Chairman, I do not think Mr. Henderson is possibly serious in his proposition. I think he will excuse me for making that reference to him. I would like to see this question of altitude settled. It is very important and if the business could be gone on with, as Mr. Ross suggests, in a business-like way, I think that a great deal of useful information would be obtained. As I said before, I want to see Mr. Macoun get fair play and as long as I am here he will get it as far as I am concerned, although I did not agree with his conclusions I want to see the Committee proceed in a business-like way and information brought out.

The CHAIRMAN.—The motion is not seconded.

Mr. Henderson.—Supposing you add to it 'discontinued after the present sitting.'

Mr. Sproule.—I will second Mr. Henderson's motion, because by going on in this way it will be simply interminable and it would be better for all concerned to reach some conclusion.

The CHAIRMAN.—Let us get on and see whether we cannot conclude.

Mr. Sproule.—From the information given us there will be a special committee appointed to revise the report. It may be all right, but that is not the intention. My original motion was only to take down the evidence in the first place, but that was defeated by the Committee and everything will be taken down, and it will be for the Committee afterwards to say what kind of report shall be presented to the House. But unless we go on to some other business, for we have a lot of important work to do, it seems to me we will be able to accomplish very little in this Committee this year. Another question I want to ask is, who is responsible for bringing Mr. Macoun before the Committee. I understood Mr. Davis to say it was some of our friends. I don't know who it was. I would like to know from the secretary.

Mr. Boyn.—I ask the chairman's ruling. The motion was not seconded.

The CHAIRMAN.—Mr. Boyd asks for a ruling. He says the motion is not seconded, and therefore out of order.

Mr. Sproule.—It is seconded.

The CHAIRMAN.—The motion I have is that the further examination of Mr. Macoun be now discontinued for the present year.

Several Hon. Members.—Lost.

The CHAIRMAN.—Lost. Will you kindly go on and make your examination.

Mr. Wilson.—I understood Mr. Oliver would be able to get through at the last meeting. Perhaps he could tell us if he can finish up between now and 11 o'clock this morning.

Mr. PARMALEE.—You won't allow him.

Mr. Wilson.—I think that is fair, because Mr. Oliver I understood at the last meeting to say he could get through by noon.

Mr. Maclaren (Huntingdon).—At the close of the examination the Committee have the right to say who will appear at the next sitting.

The CHAIRMAN.—Yes.

Mr. MACLAREN.—That will be the point to decide.

Mr. OLIVER,—I don't wish to be held up to any promise to get through when I don't know what time I will be permitted. I call the attention of the Committee to the fact that half an hour has been consumed, and I have not asked a single question.

The CHAIRMAN.—Go ahead.

By Mr. Oliver:

Q. In your report, Mr. Macoun, I mean your evidence, you say: 'To sum it all up, there are three reasons why I consider this country is not suited for agriculture.

I say it is too cold, another is that it is too far north, another is that it is too high.' You said that ?

A. Yes, sir.

Q. We discussed at the last meeting the actual temperature and the result of agriculture as you saw them ?

A. Yes, sir.

- Q. Would you kindly give us your reasons for considering that the latitude is too far north.
- A. A moment. Before leaving the question of climate—I am not going to make a speech now—I would like two extracts from my report to be printed on the minutes.

Q. If I am to be tied to time in bringing out facts, I must be given that time——

The CHAIRMAN.—Answer yes or no.

The Witenss.—Mr. Chairman, as part of my evidence there are two short extracts from my report bearing on the last day's examination which I would like to have go on the evidence.

Q. Pardon me, Mr. Chairman-

Mr. PARMALEE.—It is not for you to say what should go on the evidence.

Mr. OLIVER.—I have no objection whatever to Mr. Macoun reading anything he likes, or any gentleman asking him anything he likes, but I ask from the Chairman and from the Committee that when I ask Mr. Macoun a question that he should answer that question.

The CHAIRMAN.—Kindly do so.

Mr. OLIVER.—Some other time he can do what he likes.

Mr. TAYLOR.—The witness wants to correct some of his evidence of last day.

By Mr. Oliver :

Q. Does he want to correct some of his evidence ?

A. No, I do not.

Q. Very well, then.

A. I wish to correct some of your statements of last day.

Q. If I am in charge of this business, I want to be in charge of it?

A. Except that we are leaving some part of the subject that is not completed.

Q. We can complete it again. I am trying to do a certain business now, and I want to do it now. I did ask you what are your reasons for deciding that the altitude is too high, too far north for successful agriculture?

A. I never stated that the latitude is too far north. I stated that the altitude

was too high for the latitude.

Q. Then it is not a question of latitude at all?

A. Not of latitude alone—neither one or the other.

Q. Of course, you are aware, I suppose, that a statement that the climate is too cold, that the locality is too far north, and that the alitude is too great absolutely condemns that whole country?

A. As a wheat growing country, yes.

Q. As a country for successful agriculture ?

A. No, I didn't say that.

Mr. PARMALEE.—He said wheat growing.

By Mr. Oliver:

Q. Pardon me, that's what you said and what you stuck to.

- A. Well, I corrected that twenty times, that I used the word agriculture on that one single occasion, and in every other case it was wheat growing and cattle raising as an industry.
- Q. Pardon me, Mr. Chairman and gentlemen of the Committee, when the gentleman drew his conclusion in his report—

Mr. TAYLOR.—Give us question and answer.

A. That is the very point I want to read; I drew my conclusions—I have the place marked that I wish to read.

By Mr. Oliver :

Q. He drew his conclusion which I read on the previous day, which does not need to be read to-day—

A. I would like very much to read it.

Q. —in which he declares that the country is not suited for successful agriture?

A. I say that no country-

Mr. TAYLOR.—I move that the Committee adjourn.

Mr. Henderson.—I second that. We are getting into a disagreeable wrangle.
Mr. Oliver seems to be here giving evidence instead of Mr. Macoun.

Mr. TAYLOR.—And contradicting the witness.

Mr. Henderson.—I think to the credit of the Committee and the country that we had better adjourn and select some other subject to be taken up, and allow this whole matter to be dropped.

The CHAIRMAN.—I have put your motion to adjourn, but I would rather think that in half an hour Mr. Oliver will wind up if he keeps to the point. Let us have

a little patience.

Mr. TAYLOR.—The witness is called and the first question is submitted to him—

Mr. OLIVER.—He refuses to answer.

Mr. TAYLOR.—Mr. Oliver contradicts his answer. If he calls a witness and asks a question the answer must be accepted, without him as much as saying, 'you are not telling the truth.' If this is to be the progress we are to make here to-day we are not going to do much. We had better adjourn, and take up some other subject some other day.

Mr. OLIVER.—Might I say in explanation that the witness—

The CHAIRMAN.—We will have to put the motion, I suppose. Do you want to speak to the motion?

Mr. OLIVER.—I want to speak to the motion.

The CHAIRMAN.—Mr. Taylor moves, seconded by Mr. Henderson, that the Committee adjourn.

Mr. Ingram.—Perhaps Mr. Oliver will confine himself to the question and answer?

Mr. OLIVER.-I am very anxious to do that.

Mr. TAYLOR.—If he will do that, I will withdraw the motion and give him another opportunity.

Mr. OLIVER.—I must get answers in accordance with the plain facts.

Mr. TAYLOR.—Let the witness answer.

Mr. Henderson.—Before the motion is withdrawn, I would like to know your ruling on this point. Will another motion to adjourn be in order, say in five or ten minutes?

The CHAIRMAN.—A motion to adjourn is always in order.

Mr. Henderson.-If we are compelled to sit here till 12 o'clock to-night.

The CHAIRMAN.—We are in session again.

The Witness.—Might I ask for information for my further instruction? When I am asked a question, I will do my best to answer it. When a statement is made by a member of the Committee as to evidence of mine, or any other person which is not correct, which is not absolutely correct, must I remain silent and allow that to go on

Mr. Hughes (Victoria).—No, you will not.

Mr. OLIVER.—Must I remain silent if the witness makes a statement that is not correct? Assuredly not.

4 EDWARD VII., A. 1904

The CHAIRMAN.—I think Mr. Macoun had better sit down. Now Mr. Oliver will you proceed?

Mr. Ross (Victoria).—Take it down without comment.

The CHAIRMAN.—Mr. Oliver, will you proceed with his examination, and do it as nice as you can.

Mr. Oliver.—I am doing it, certainly, I am doing it as nice as I can, but if I am interrupted, if I am contradicted, I must defend myself assuredly.

Mr. TAYLOR.—Call another witness.

- Mr. OLIVER.—This witness is good enough for me, if I am allowed to proceed with him.
 - Q. You say that the latitude is not the objection to the climate of that country?

A. Not the latitude alone, but the altitude in that latitude.

Q. You are aware that the statement which you make in your own evidence, on page 64 of the evidence of the first day, describes a universal and irremediable condition of unfitness for the country for wheat growing?

A. As a general industry—that is what I intended to convey ?

Q. That was what you intended to convey ?

A. Yes.

Q. That the condition was universal and irremediable?

A. As a wheat growing country, yes.

Q. By reason of the altitude in that latitude?

- A. Yes. I don't wish to convey the idea that the wheat would not ripen in any year or two years, but as an industry wheat growing could not be successful in that particular district.
- Q. The witness has volunteered an explanation of this case which I don't think is pertinent to the point or pertinent to the question I asked.

Mr. Hughes (Victoria).—Let the Committee draw their own conclusions. Ask a question?

Mr. HENDERSON.—I guess the country is no good, you had better stop it.

Mr. OLIVER.—That is what you think, but I don't think that.

Mr. Cochrane.—You are not giving evidence.

By Mr. Oliver:

- Q. What is your estimate of the altitude of the Peace river?
- A. The upper plateau of the country that you are talking of ?

O Yes

- A. From 2,200 to 2,300 feet it averages. Q. Where do you get your information?
- A. From the various reports that have been published.

Q. Quote them.

A. The Peace river at Dunvegan according to Dr. Dawson's map which I have here, is 1,300 feet. The bank of the river—the immediate bank of the river—is 700 feet above that, making 2,000 feet above the sea. In the next two or three miles the country rises 200 or 300 feet. Then you reach the upper plateau of the country. The plateau of the country, the Upper Peace river, the general altitude of the whole of this region is from 2,200 to 2,300 feet. Very much of that is above 2,500 feet. The great bulk of it is shown on Dr. Dawson's map of the large area south of Dunvegan as 2,500 and a considerable part 2,600 feet, as Dawson describes it.

Q. What does he give as the altitude of Grande Prairie? A. He does not give the altitude as far as I can find.

Q. You have no means of forming an estimate of that, have you ?

A. Yes, I travelled through the country, I know that the Grande Prairie, as Mr. Hughes pointed out the other day, is not of the same altitude. The western part runs 2,500 feet as shown by Dawson. I consider that 200 feet is a very reasonable allowance for the streams running east across the Grande Prairie.

Q. Tell the Committee what the height would be of the Smoky river at the junction of the Wapitae at the corner of the Grande Prairie. It is marked on the map ?

A. I don't think it is marked on the map.

Q. Yes, it is.

A. (After referring to the map.) 1,524 feet.

Q. And do you know if there is any record of the height of the plateau above the Wapitae at that point?

A. Not that I am aware of, sir.

Mr. Hughes (Victoria).—Do you mean to say that the Grande Prairie is marked at 1,524 feet ?

Mr. OLIVER .- No.

The WITNESS.—The crossing of the river. I would like to look at Dr. Dawson's map to see if it is there, to see if he was there at that time. (After referring to the map). Yes, that is correct, 1,524 feet for the river valley itself.

Q. Well, Dr. Dawson-I am not just able to turn up here at the moment-Dawson gives the height of the plateau at that point at 400 feet. Would you contradict

that ?

A. The height of the river ?

Q. Yes.

- A. I would contradict that. I certainly would not agree with 1,524 feet as correct on the river.
 - Q. That is what the map says, 1,524 feet on the river?

Q. That is by authority of some kind or other?

A. Yes.

- Q. Scientific authority?
- A. I don't know where it came from ?
- Q. Did you measure it yourself?

A. No.

Q. You don't know then, of your own knowledge ?

A. No.

Q. You make the bald statement that it is not correct?

A. No, I don't know that it is correct, I don't believe that it is correct either.

Q. Well now, did you ever read—have you Dr. Dawson's report there. Would you kindly turn up page 55 (b) of the report of 1879-80 ? If the Committee desires to have it turned up I have the quotation here which I could read, of course ?

A. I have the report here?

Q. You find in that page the following words: 'The Wahpitae valley is dopressed 400 feet below the plateau bordering it.'

A. I do not find that. Yes, I have it, that is all right.

- Q. Then Dr. Dawson's estimate of the level of the plateau at the junction of the Wahpitae with the Smoky at 1,524 feet, plus 400 feet would make it 1,924 feet.
- A. I have just one correction to make: It is not at the junction of the Smoky and the Wahpitae that Dr. Dawson estimates it at 400 feet.

Q. Where is it?

A. I do not know where it is, he does not say it is at the junction, and that it is not at the junction of the Smoky and Wahpitae is made plain by the statement.

Q. Then, where is it ?

A. I do not know, but it is made plain that it is not there.

Q. If it is not at the junction of the Wahpitae with the Smoky which is naturally the most depressed part of the plateau, it must be at some other and higher part of the plateau. Is that not right?

A. Certainly.

Q. Therefore, the high plateau according to Dr. Dawson's estimate is less than 2,000 feet ?

A. I would point out to Mr. Oliver-

Q. That is argument, that is not answering my question ?

A. I will answer your question directly. All these streams, the valleys become deeper, as they progress, the Wahpitae and the Smoky and these rivers, had comparatively low valleys. All these Grande Prairie rivers have practically no valley at all on the Grande Prairie, as they go north or east they sink very, very rapidly. These two points you have quoted have no connection with one another at all.

Q. I think we will take that as your evidence on the subject ? A. If you will allow me to read Dr. Dawson's statement-

Q. I do not think it is necessary at all, inasmuch as you ignore his conclusions, there is not much use in reading his statement. What do you estimate the height of the plateau in rear of Dunvegan at ?

A. At from 2,200 to 2,300 feet.

Q. The height above the river at Dunvegan ?

A. The bank itself is about 700 feet, the edge of the bank.

Q. And what is the height of the river valley mentioned on the map?

A. 1,320 feet.

Q. If you add 700 feet to 1,300 feet, what does it make?

A. 2,000 feet at the edge of the bank. On the plateau, as I said, Dr. Dawson puts it at 200 or 300 feet higher, which will make it 2,300 feet on the plateau. Mr. Ogilvie, who measured it, put it at 1,000 feet.

Q. You say Mr. Ogilvie makes it 1,000 feet ?

A. He says that the plateau is from 700 to 1,000 feet, yes.

Q. Have you Mr. Ogilvie's report there ?

A. I gave it to the stenographer the other day, and he has not brought it back.

Q. Would you make a quotation from the report ?

A. Yes.

Q. To save trouble, on page 51 of Mr. Ogilvie's report, Mr. Ogilvie says as follows: 'The banks of the Peace river at the Battle river are from 500 to 700 feet on both sides. At White Mud creek and above, where the banks fall 700 feet, above the river, between Battle river and Dunvegan, the banks are from 600 to 800 feet on both sides.'

A. 700 feet was what I said.

- Q. 700 and 1,300 makes 2,000 ?
- A. Mr. Ogilvie said the plateau itself is from 700 to 1,000 feet apove, that is-if you will allow me to see the report I will quote—the plateau is 2,300 feet.

Q. Mr. Ogilvie says what I say?

A. I agree with that, 600 to 800 feet.

- Q. Therefore, the plateau is 2,000 feet, or is higher just as you like to make it?
- A. The edge of the bank, the edge of the valley not the plateau, the plateau is again 200 or 300 feet higher than that, making 2,300 feet.

Q. What does Dr. Dawson estimate the height of the plateau at ?

A. I do not think he estimates it.

Q. Will you turn to Dr. Dawson's report, 1879-80, turn to 140(b)?

A. 2,300 to 2,500 feet from the east to the west. He says: 'The average elevation of the plateau is somewhat greater than 2,000 feet '-that was in one place, but in another place and above that, speaking of river he says 2,300 to 2,500 feet, but somewhat over 2,000 feet is his general estimate?

Q. That is his estimate? A. Yes.

Q. You do not think Dr. Dawson is a good authority ?

A. Certainly, I do, I think myself it is something over 2,000 feet.

Q. How much over ?

A. 2,300 feet.

Q. And you think that Dr. Dawson knew it was over 2,000 feet, 2,300 feet?

A. He says it is somewhat over 2,000 feet.

Q. Dr. Dawson has made a report which is a standard authority on the question of the Peace river. Was not he responsible for what he says?

A. Certainly.

Q. And his report is likely to be correct?

A. Certainly.

- Q. And Dr. Dawson says it is somewhat over 2,000 feet?
- A. Yes, I say that myself, I say it is over 2,000 feet. Q. You have unfortunately said that it is 2,300 feet?

A. That is the same thing, it does not matter.

Q. We will give it to the Committee, just as you say it, it does not matter whether it is 2,000 or 2,300 ?

A. I say it is no difference between 'over 2,000,' and 2,300 feet, I say it is over 2,000 when I say it is 2,300 feet altogether.

Q. You think that the general characteristic of Dr. Dawson's report is inaccuracy—incorrectness—

An Hon. Member.—Is that a question?

A. The general characteristic of Dr. Dawson's report is that from one end to the other he doesn't make a single positive statement—not a single one. He doesn't say that there are 15,000,000 acres in that country suited for wheat growing. He gives no area in his report.

Q. The point I want to get at is, we want to accept Dr. Dawson or reject him.

Do you reject him ?

- A. No, I do not. Dawson makes no definite statement.
- Q. Do you accept him ?

A. Certainly, I accept him.

- Q. Very well, Dawson says that the height of the plateau is somewhat over 2,000 feet?
 - A. Certainly, I accept that. That agrees with me, certainly.

By Mr. Blain:

Q. Is there any difference between your report and Dr. Dawson's in respect to the height there?

A. Not as far as I know, because I took no altitude myself; I had to use Daw-

son's report for my altitude.

Q. That is what I understand; Mr. Oliver is trying to make the members of the

Committee believe there is, and I want to understand it.

A. I used his maps and reports for the figures in my report. I made no measurements myself, I took no altitudes of my own. If I am mistaken Dr. Dawson and the others who put up the figures of altitude on the map are responsible, and are to blame if there is any blame?

By Mr. Oliver:

- Q. The fact is that Dr. Dawson reports that the altitude of the plateau is a little over 2,000 feet ?
 - A. Not at all, 'somewhat over 2,000 feet.'

Q. And you say, you put in your report that it is 2,300 feet ?

A. Taking Ogilvie's statement. He was sent there for the special purpose of determining the altitude. I will read what Mr. Ogilvie says—

Q. Never mind. Did you ever read Horetzky's report ?

- A. Yes.
- Q. Who was he?
- A. An engineer who was sent out-
- Q. A railway engineer ?

4 EDWARD VII., A. 1904

A. Yes, a railway engineer.

- Q. Was he likely to be a man who was inaccurate about measuring levels or heights?
- A. He was not, except that he did his levelling with an aneroid. My father was with him at the time.

Q. He never travelled on the upland?

A. Except on the trails to St. John. He never travelled on the plateau itself.

Q. None at all ?

A. Not as far as I know.

By Mr. Blain:

Q. I would like Mr. Macoun to give us what Mr. Ogilvie says in respect to the height there as I understand it?

A. He says: 'The difference in altitude between the river bottom and the plateaubeing about 1,000 feet generally, this alone would account for the results of frosts.' This is Ogilvie's statement generally. The difference is about 1,000 feet. The river is 1,300 feet, and the 1,000 feet added would make 2,300 feet.

Q. Is there any special difference between yourself and Dr. Dawson and Mc.

Ogilvie on that point?

A. None whatever, so far as I know.

By Mr. Oliver:

Q. Mr. Ogilvie on page 51 gives the height of the bank at 800 feet.

A. I have pointed out that the bank slopes 200 or 300 feet.

Q. Slopes rapidly ?

A. Yes, for two or three miles there are little short benches—steppes—

Q. You have some confidence in Mr. Horetzky ?

A. I have, yes.

Q. Do you know what he estimates the elevation to be ?

A. At what point ?

Q. The general elevation of the plateau?

A. I have his report here, if you will quote the page, please ?

Q. I have not got his official report. Would you find what Horetzky says about

the height of the upland prairie?

A. Yes, sir. He says he reached Peace river at Peace River Landing. He says, 'Here the scene which met my view was really magnificent. The elevation was very little less than the Lesser Slave lake.' That is going across the country. 'The difference two miles wide.' That is the very point that we are talking about. 'The Peace river was 750 feet below the level of the country.'

By Mr. Blain:

Q. How much do you put it at ?

A. I put it at 700 feet. The height of the country behind and around Dunvegan is about 700 feet above the river.

By Mr. Oliver:

Q. That is not the immediate bank of the river. You say that he says, 'country around and behind.'

A. Yes, it is the immediate bank. As I told you, my father and Horetzky went out with an aneroid in their hands, climbed up and measured the bank above the river and found that it was 700 feet. That has nothing to do with the plateau.

Mr. OLIVER.—I am astonished to hear the witness make such a statement.

Mr. Sproule.—Surely the witness may be allowed to give his own statement, and the Committee will accept whatever they like.

Mr. OLIVER.—When the witness states that Horetzky never travelled on the plateau he states what is absolutely untrue from his own evidence.

Mr. Sproule.—Let the Committee judge of that statement. He is the witness that is before us now, and not Mr. Oliver.

Mr. OLIVER.—Allow me to put in my evidence on that point. I guess I can get the witness to give the evidence himself.

Q. You would take Horetzky's report ?

A. That is not his report.

Q. Do you contradict the correctness of his report ?

A. What do you wish me to read?

Q. Read on page 42, the words beginning, 'behind it-

A. This refers to Dunvegan.

Q. Yes.

A. 'Behind it the ground rises to a height of 700 feet and is chiefly of a prairie character.' Shall I read further ?

Q. Yes. A. 'The Fort, a mere assemblage of some half dozen houses, is estimated to be 1,000 feet above sea level'—that is only estimated.

Q. Yes. Just read it ?

A. 'Hence the general elevation of the surrounding country is 1,700 feet, which is on the same level as that of Lesser Slave lake. The same elevation holds good on the south side, which is partially covered with a scattered growth of poplar and spruce trees.'

Q. Then this railway engineer estimates the general elevation of the country

at 1,700 feet ?

A. On the misconception that the plateau is 700 feet above the river, and the river is one thousand feet above sea level.

Q. The point I want to bring out is that he estimates the general elevation of

the country above the Peace river at 700 feet?

A. Certainly, as I said, he went up to the edge of the bank with my father, they went up while the meal was being prepared, with an aneroid to see how high the bank

- Q. I don't want to take up the time of the Committee. If the Committee will pardon me I could bring all this out from this book here, Horetzky's own statement of his own travels. He travelled on the plateau, from the mouth of the Smoky river to Dunvegan. He lay at Dunvegan for four or five days before he left there in company with Mr. Macoun. He had all that opportunity to decide as to whether the plateau was level or otherwise, and his conclusion is that the general level of the plateau is 700 feet above Dunvegan. There can be no question therefore as to Horetzky's statement. If Mr. Macoun contradicts him, of course we will have to take th · time to prove it ?
- A. If Horetzky says that we will take it. If he says it in his report we will take it, but he doesn't say that.

Q. We have established the fact that the general elevation of the plateau behind Dunvegan is about 2,000 feet?

A. According to Horetzky, but nobody else. That is 32 years ago, and everybody says-

Q. Has the country risen any since then ?

Q. Were the scientific men capable in those days ?

A. All the surveyors and engineers who have gone over that country in the last 30 years have agreed that the elevation is 2,300 feet. Horetzky puts it at 700 feet to 1,000 feet.

Q. The plateau has tilted since then ?

A. As I told you Horetzky used an aneroid. He stands alone in the matter, and the fact that he was 400 feet out in the height of the river itself shows he was not to be relied upon in his figures for the plateau.

Q. Your respected father was with Horetzky?

A. At the time, yes.

Q. Your father said that he had examined that plateau ?

A. I don't think he ever said that.

Q. He said that to the Mackenzie Basin Committee. Would you kindly read this, read this, the last part of that paragraph, please?

Mr. BLAIN.—What is this from ?

Mr. OLIVER.—From the report of the Mackenzie River Basin Committee.

A. Yes. May I point out before I read this, that this was at St. John and not at Dunvegan. I will read the whole of it if you don't mind my reading what precedes it ?

Q. I don't mind.

A. Speaking of the Peace river country, he says—speaking of the portage, that is, the portage from Hudson's Hope, to St. John, he is asked, 'what is that portage,' and my father says: 'Dr. Selwyn made it ten miles, I made it twelve. When you get there you are a thousand feet above the river, and that character the river retains all the way down. It runs in that deep gorge. That is why the old explorers coming up the stream marked along the Peace river, "here mountains." But the gentleman never climbed up to see what was above. They were all the time looking at the bank of the river, because when we climbed up we found from where the river left the mountains it was getting lower and lower, and at the end of 500 miles, it was not more than 500 feet—that is, where it came out of the mountains—below the level of the country, but at Dunvegan at was 700 feet. Mr. Horetzky and I measured it and found it that distance from the level of the prairie. The country above that was found to be level as a floor.'

Q. Level as a floor—not tilted up?

A. 'The Peace river country is without hills'—that is correct. 'I never saw a hill near the river in its course east of the mountains. Looking up from the bed of the river it is like a mountain chain on each side for 500 miles.'

By Mr. Blain :

Q. Wherein does your report differ from that ?

A. Not at all, as far as I know.

Mr. OLIVER.—Might I point out that the witness has said—

Mr. WADE.—I move that we adjourn.

Mr. Davis.-I second that.

Mr. Maclaren (Huntingdon).—What about next day ?

Mr. Davis.—We will go on with the same business.

Mr. Henderson.—I submit that the motion to adjourn is not in order. The the last part of that paragraph, please? order according to the ruling of the Speaker on that point. I contend that you are

obliged to sit here until some other business has been transacted.

The Charman.—Might I say that the seconder of the first motion withdrew the motion on the promise that the same motion could be moved again within five or ten minutes.

The Committee then adjourned.

Having read over the foregoing transcript of my evidence, I find the same correct.

JAMES M. MACOUN.

House of Commons, Committee Room 34, Tuesday, May 10, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m. Mr. Ross (Ontario) in the absense of the Chairman, presiding.

The CHAIRMAN.—We have to take up unfinished business.

Mr. Davis.—Does the examination of Mr. Macoun come up as unfinished business?

The CHAIRMAN.—Well, it was not ordered by the Committee that it should be continued or discontinued; there are no instructions whatever. The Committee can, if it choose, consider it unfinished business and take it up.

Mr. Maclaren (Huntingdon).—We are summoned here to hear Mr. Grisdale, are

we not ?

The CHAIRMAN.—That is on the Order Paper, and Mr. Grisdale has been here for a couple of weeks.

Mr. Henderson.—I think we had better hear Mr. Grisdale.

The CHAIRMAN.—It possibly may be the wish of the Committee to hear Mr. Grisdale today.

Mr. Henderson.—New business comes first at any rate on the Order Paper after receiving communications.

The CHAIRMAN.—Would that come under new business ?

Mr. Henderson.—I assume that it is new business.

The CHAIRMAN.—If you would look at the programme you will find under No. 3 examination of Mr. Grisdale.

Mr. Henderson.—No. 3 is unfinished business.

Mr. Davis.—Mr. Chairman, if Mr. Grisdale is here, and wants to get through, I do not know that we should have any great objection to it.

The CHAIRMAN.—He has been here two or three weeks before the Committee.

Mr. Davis.—But we want it understood that the examination of Mr. Macoun is not concluded.

The CHAIRMAN.—I should think that is in the hands of the Chairman entirely.

Mr. Maclaren (Huntingdon).—At the close of the present meeting the Committee can decide who shall be heard next. I do not think that unfinished business has reference to the examination of a witness. If it was new business, it would not come before unfinished business. I do not think that has any reference as to who shall be heard.

The CHAIRMAN.—If that is the Committee's opinion we will go on with Mr. Grisdale's examination this morning?

Mr. Henderson.—If we went on as we have been doing with unfinished business, we would never reach any new business. Leave unfinished business until the session is over.

Mr. OLIVER.—I have no wish at all to in any way press this upon the Committee, or force the hands of the Committee, but there is a very important piece of unfinished business. Of course I am perfectly willing to bow to the decision of the Committee, and if it is the wish of the Committee to let this business drop, of course I have no more to say. But I wish to be understood as having made a statement at a certain time before this Committee on my responsibility as a member of the House, and I stand here to make that statement good at any opportunity that may be given me. I have availed myself so far of such opportunity as has been given, and I am

2-48

here to-day for the purpose of further doing so. I am quite willing to give way to-day, and am quite willing to forego any privilege I might claim in order to allow Mr. Grisdale's examination to proceed, but I would like in all fairness to the Committee to still have the opportunity to make good the statement which I made, and which was challenged by several members of the Committee. If I am not to have that opportunity, well then all I desire is that that shall be the definite understanding.

Mr. Maclaren.—Mr. Chairman, I would like to know—I am a little confused over the Order Paper—I would like to know from you or from the secretary what that means. Does the wording of the Order Paper mean that we should take up new business and then take up unfinished business, and then proceed with the examination of Mr. Grisdale. I would like to have your ruling or the understanding of the

secretary as to what is meant by new business and unfinished business?

The Charman.—The secretary will perhaps explain.

The Secretary.—It is the reading of communications, that is, communications bringing up something new—

Mr. Maclaren.—That has nothing to do with the examination of any party be-

fore the Committee.

The Secretary.—Not what is before the Committee, no.

Mr. Maclaren.—Then that unfinished business does not refer to the completion of the examination of anybody, does it?

The Secretary.—Oh, no. You can call a witness here until you have discharged him or suspend his examination.

Mr. MACLAREN.—Would you call that unfinished ?

The Secretary.—Yes.

Mr. Maclaren.—We should have these things in order. What I point out, Mr Chairman, is this: that if the two things are on a parity, that is new business an unfinished business, the unfinished business should come before the new business.

The Secretary.—We have none here. We have no new business to-day.

Mr. Maclaren.—This is new business the calling of Mr. Grisdale.

The SECRETARY.-No.

Mr. Maclaren.—Then unfinished business is not the examination of Mr. Macoun?

The Secretary.—It is not new business.

Mr. MACLAREN.—Then unfinished ?

The Secretary.—Certainly.

Mr. MACLAREN.—Then new business comes before the unfinished?

The SECRETARY.—Yes.

Mr. MACLAREN.—Then I am bewildered.

Mr. Ross (Victoria).—You bewilder everybody else.

Mr. Maclaren.-Will you explain it yourself, Mr. Ross, and I will sit down ?

Mr. Ross.—I cannot explain it.

Mr. MACLAREN.-No, I do not think so.

Mr. Ingram.—How long will it take Mr. Oliver to conclude ?

Mr. OLIVER.—I do not think it would take me very long if this witness would answer my questions, and if hon members would not interrupt, but of course as it is the freedom of the Committee to do so, I cannot put a limit to the time that I will require to bring out the evidence that I want. However, if it is the desire of the Committee to have Mr. Grisdale here to-day so that he may be discharged if the Committee will agree—

Mr. Wilson.—He will not be discharged, because his report is not yet out with

reference to the 200 acre plots. He will have to come up later.

Mr. OLIV.ER—I wish to be agreeable with all parties, and if it is understood to-day that at the next meeting Mr. Macoun's evidence will be taken up again I shall be very glad to give way as far as I am concerned to-day on behalf of Mr. Grisdale.

Mr. INGRAM.—I was going to suggest—we have had Mr. Macoun here several days now—that if Mr. Oliver could conclude to-day it would be decidedly better. Then we could proceed with other business.

Mr. Sproule.—We have already had some five or six meetings of the Committee

for the same purpose.

Mr. INGRAM.—I think the patience of the Committee will be pretty well exhausted with to-day's trial.

Mr. Ross (Victoria).—I think it would be refreshing to the Committee to have a

change of subject and of ideas for a day; we want a little variety.

Mr. Sproule.—We have been over two months in session and we have not touched the important business. Now it does appear to me to be desirable that we should get to that business as soon as possible, and if there must be another day between Mr. Macoun and Mr. Oliver let it be some time after we get through the important work.

Mr. Robinson.—Mr. Chairman, there is just another point. Mr. Grisdale has been here dancing attendance on us for the last two weeks. His time at the farm is valuable and he should be there about his business. I think we should consider that.

Mr. Davis.—We have only got three-quarters of an hour left, and I think we should proceed with Mr. Grisdale to-day. Now Mr. Oliver could not possibly get

through in three-quarters of an hour.

Mr. WRIGHT.—I would put an end to this thing perhaps by moving that Mr. Grisdale be heard. I must say that I refrained from coming to the last meeting of the Committee, because I got thoroughly disgusted with this tempest in a teapot which is doing no good to the Committee or to anybody else. I move that Mr. Grisdale be neard.

Mr. Lennox.—I have said nothing in this discussion, although I have been here several days. I think it is unfortunate to occupy so much time in reference to the matter, but having got into it I believe it would be better to end it now. I would be very much in favour of Mr. Oliver being allowed reasonable latitude in asking questions and perhaps not explaining, unless it is unavoidable, and try and finish this matter to-day. I therefore move that we go on and try and finish it up to-day.

Mr. INGRAM.—I second that motion.

The CHAIRMAN.—The motion of Mr. Ross has not been seconded.

Mr. HENDERSON.-I second that motion.

Mr. Armstrong.—Do I understand that Mr. Oliver will complete his work to-day? I must say that I am one of those who think that in coming here we are losing a lot of valuable time over this Peace river matter. It is necessary to investigate it to some extent, but is it necessary that it should be spread as this is being spread throughout the newspapers in our country. It is doing more damage to the country than it will be possible to overcome. I would like to know before voting on the question whether Mr. Oliver will be able to complete his work to-day?

Mr. Oliver.—As I said I would be very glad to take the half hour or the threequarters of an hour that remains and do the best I can. I am just in the hands of the Committee. If hon, gentlemen see fit to refuse to allow the investigation to go further, of course I cannot help it, but I shall be very glad to have the present oppor-

tunity.

The CHAIRMAN.—Shall the amendment be carried ?

Several Hon. MEMBERS.—Carried.

The CHAIRMAN.—I rather think it is carried.

Mr. Wright.—Take a show of hands. I think we have had enough of this thing.

Mr. Sproule.—As I understand the statement of Mr. Oliver he will go on and do what he can to-day but this Committee is to discuss afterwards a future programme. Now, we had practically the same statement at the last meeting of the Committee.

Mr. WRIGHT.—Two or three meetings before.

2-481

Mr. Sproule.—Yes, at two or three meetings. He had the same statement that he would finish it, but it has never been finished. We have the same thing going on now. That is what I wish to avoid, and I think the majority of the Committee will say it is better to go on and hear Mr. Grisdale.

Mr. WRIGHT.—Take a vote.

An Hon. Member.—I understand that to finish it to-day is in the motion.

The CHAIRMAN.—That is not in the motion.

Mr. Davis.—Not as far as Mr. Oliver is concerned.

A show of hands having been taken, the Chairman declared:

The amendment is carried, Mr. Oliver, you proceed with your examination to-day, and let me say the sense of this Committee is to endeavour to get through to-day, if possible.

Mr. OLIVER.—Certainly, but I must have the privilege of the Committee to do

so. The time that is given to me must not be taken up by other parties.

Mr. Henderson.—I want to know on what authority the time of the whole Committee is given up to Mr. Oliver and the rest of us are excluded. I submit I have as good a right to address questions to Mr. Macoun as Mr. Oliver has, and I protest against Mr. Oliver being allowed the whole time of this Committee on any consideration whatever.

The Chairman.—In reply to Mr. Henderson I may say that in speaking with the members it was thought that as this matter concerns a part of the district that he represents, and he felt himself aggrieved as a member of the Committee, it was a matter of courtesy to extend whatever privilege the Committee could in order for him to satisfy himself that a section of this country had not been spoken of in a derogatory manner. That is all there is. It is a courtesy this Committee has or any other member if they felt he had a grievance.

member if they felt he had a grievance.

Mr. Henderson.—This is a view I cannot agree with. I consider I represent the Peace river country just as much as Mr. Oliver.

The CHAIRMAN.—Yes.

Mr. Henderson.—And every member of parliament not only represents his own constituency, but every constituency in the Dominion of Canada.

The CHAIRMAN.—That is right, of course.

Mr. Henderson.—And I know the manner in which we are proceeding now is doing more injury to the Peace river country than will be recovered for many a year. I heard it commented on in Winnipeg last week that there was more talk there about this squabble in the Agriculture Committee over the Peace river country than there was about the transcontinental railway, and I think we are doing an irreparable injury to that country.

Mr. OLIVER.—I think you are.

Mr. Henderson.—And the hon. gentleman is largely responsible for it. Let us drop it and say no more about it.

Mr. Ross (Victoria).—If we remove the frost we are doing good to that country. Mr. Henderson.—I think you are doing a good deal more harm than frost does.

The CHARMAN.—May I suggest to the Committee as we shall adjourn at eleven o'clock in order to permit some of us to go to the Railway Committee that a motion be placed before the meeting to test the voice of the Committee, I am simply making a suggestion, as to whether this matter shall go on after to-day's meeting.

Mr. OLIVER.—Take that up later.

The CHAIRMAN.—The Committee could decide that five or ten minutes before the hour of adjournment is reached. Now, go on with your examination.

Mr. OLIVER.—Mr. Chairman and gentlemen—

Some Hon. Members.—Put your questions.

Mr. Wright.—For goodness sake, let us give him a chance.

Mr. OLIVER.—To make the matter short, at the last meeting we were discussing the question of the altitude—

Mr. Henderson.—Submit questions and do not give us a lecture. I would suggest Mr. Oliver confine himself to questioning the witness and not making any comments.

Mr. OLIVER.—Pardon me, if I simply question the witness I will have to ask him ten or a dozen questions in order to bring out my point.

Mr. Cochrane.—You will do that quicker than you could by talking all the

time.

Mr. Oliver.—Whereas, by stating the thing in the way I am, one question will answer the purpose.

Mr. WRIGHT.—If we are so stupid that we cannot follow the matter, we will have

to stay stupid that is all.

Mr. OLIVER.—I am not suggesting the gentlemen are stupid. Mr. Macoun, will you read your authority for the statement that the upland of the Peace river country

is 2,300 feet high?

Mr. Henderson.—I submit that it is not a proper question to put to the witness. The witness is here to give evidence on the facts that he knows, not the statements of other persons. He is no use as a witness if he is simply going to tell us what Ogilvie or some other man said. We must have from the witness information that he knows himself. His own measurements, for example, will be accepted as evidence here, but it is no evidence for him to give the measurements of other people. I submit that no question should be allowed unless it is to bring out a fact that the witness himself knows.

Mr. OLIVER.—I am quite willing to be bound by that. Mr. Macoun, what do you you know to be the height of the upland of the Peace river by actual measurements?

A. 2,300 feet by the reports of people who examined it.

Q. Do you know that of your own knowledge ?

A. As I told you the other day I did not measure it. I accepted the reports of the people sent there for that specific purpose. Mr. Ogilvie was sent there.

Q. Give us what Mr. Ogilive says?

Mr. Henderson.—I submit you have no right to ask the witness what Mr. Ogilvie says. You can only ask the witness what he knows himself by actual measurement. Then drop the question he cannot answer.

By Mr. Oliver:

Q. All right; I am agreeable. Mr. Macoun, you do not know anything about the heights of the Peace river upland.

A. Mr. Ogilvie was sent there for that purpose to take the altitude.

Mr. OLIVER.—I think whenever the witness is asked a fair question he should answer it.

By the Chairman:

Q. Did you measure it, or not ?

A. No, I did not.

By Mr. Oliver :

Q. Can you give me an idea of the influence a degree of latitude has on the climate, other things being equal?

A. Not in general terms, because the influence of a degree of latitude on the climate varies immensely according to the district in which the country is situated

Q. What about the Peace river country?

A. In the Peace river country it has more effect than in any other part of the country. We know that in the foot hills of the Rocky mountains a degree of latitude has no more effect than any other place.

Q. What is the difference in latitude between the Peace river landing and Vermilion ?

A. About two degrees.

Q. What is the difference of altitude ? A. The difference in altitude is 1,400 feet.

Mr. HENDERSON.—I do not think that question can be allowed, because he has stated that he did not measure it.

An Hon. MEMBER.—Order.

Mr. HENDERSON.—I submit I am quite in order, and there is no use in putting in reports information that is not worth a button. Now I have the floor. Mr. Oliver has no right to the floor all the time. I rise to a point of order. I say he has no right to ask that question, because the witness has already confessed that he cannot possibly answer that of his own knowledge.

The CHARMAN.—If you want me to rule, I have to say that the other question was not in order, but this one perhaps is in order. Mr. Oliver has put a question to see if there is any difference in altitudes between such a place and such a place, and

the witness said how much. He gives that of his own information.

Mr. Henderson.—He told us before that he never measured. The CHAIRMAN.—He might know from his own knowledge.

Mr. Henderson.—This must be actual knowledge.

Mr. OLIVER.—The heights which I have asked Mr. Macoun are marked on the maps which are published, and I merely wish to bring them to the attention of the Committee. Would that be in order ?

Several Hon. Members.—Oh, yes. The CHAIRMAN.—Yes, go ahead.

By Mr. Oliver:

" Q. It is a matter that anybody can see by looking at the map. What is the height at Vermilion and Peace river landing.

A. The height at Vermilion as I undersand it is about 950 feet. The height of

the plateau at Peace river landing is 2,100 feet.

Q. No, I say the river valley ?

- A. The river valley, I think, is about twelve hundred and some odd feet.
- Q. The difference then is about—
- A. 300 odd feet in the valley.

Q. Something about that ?

A. Something over 1,000 feet on the plateau.

Q. Do you find any great difference between the climate of the valley of the Peace river and the Vermilion ?

A. Not in the valley, no. The upland is very different.

- Q. But the climate of the valley and the uplands at Vermilion is very much the same ?
 - A. There is no upland at Vermillion. It is a level country.

Q. There is no valley at Vermilion?

A. No valley at Vermilion—no high valley, it is 30 or 40 feet.

Q. The level country at Vermilion is 300 feet lower than the valley at Peace river landing ?

A. At Peace river landing.

Q. And the climate is about the same?

A. Yes, so far as I know.

Q. The results of agricultural tests have been about the same ?

Q. This difference of 2 degrees latitude does not make very much difference, the altitude being about the same ?

A. Not very much.

Q. What is the difference in latitude between the Edmonton district with which you make comparison in the report and evidence, and the plateau of the Peace river?

A. It is about 2 degrees—I think it is something like that—it all depends on what

part of the country you are in.

Q. Not of latitude, but of altitude ?

A. The altitude about 300 feet between the plateau and Edmonton.

Q. What is the height of Edmonton ?

A. 2,100 feet, I think. I have the altitude here.

Q. You think it would not be 2,200 feet?

A. Well, it might be.

Q. What would you think about it being 2,300 feet?

A. It might be.

Q. 2,400 ?

A. The altitude of Edmonton is 2,100 and some feet.

Q. How many ?

A. I can tell you right off.

Q. I guess Mr. Henderson would not object to that-

Mr. Henderson.—He doesn't know anything about that. He never measured it.

By Mr. Oliver:

Q. It is a government report the same as the map. It does not depend upon any single person's evidence ?

A. So are all the other altitudes given by government people.

Mr. Henderson.—That is a poor kind of evidence. This is evidence that would never be accepted in any court.

By Mr. Oliver:

Q. I have the altitude here ?

- A. I guess you would probably have it correctly—(Reading from report)—Edmonton is 2,188 feet.
 - Q. Very nearly 2,200 feet?

A. Yes, very nearly 2,200 feet.

Q. Where was that elevation taken?

A. I copied that out of this book,—I suppose at the town of Edmonton.

Q. That is on the brink of the valley—the brow of the hill ?

A. It is very level.

Q. I say it is on the brow of the hill?

A. I suppose so.

Q. Is there any elevation—does the country rise higher than that ?

A. For a short distance. Of course, it falls back to the north, does it not ?

Q. Does it immediately fall back to the north?

A. North and east.

Q. Do you know the height of the elevation between Edmonton and Athabasca landing?

A. I find the latitude of Edmonton is 52-53, and the latitude of Peace river landing is 56'15.

Q. Yes.

- A. No, I do not.
- Q. It is given in that book ?

A. I don't know where to find it.

Q. Do you suggest that the country falls away towards the north from Edmonton?

A. North and east, falls away to the east.

Q. It could not fall before it reaches the height of land ?

A. No, it could not fall before it reaches the height of land.

Q. That is what I thought. Now, then the difference between the latitude of the Peace river and Edmonton is how much?

A. About two degrees ?

Q. The map is there?

A. I find the latitude of Edmonton is 52-53, and the latitude of Peace River Landing is 56'15.

Q. Peace River Landing is north of the district we are discussing ?

A. It is 56'15, which is 3 degrees and 30 miles north of Edmonton.

Q. What is the distance between the southern point at Grande Prairie and the mouth of the Smoky river-how many degrees is that ?

A. In a straight line?

Q. Yes.

A. About 35 miles in a straight line.

Q. Only 35 miles from the mouth of the Wahpitae to the mouth of the Smoky?

A. In a straight line, perhaps 40. I cannot tell you without measuring it.

Q. About 2 degrees? A. Yes.

Q. I would like the witness, if possible, to measure it—the map is there on the wall, because I think the statement of the witness is very far out. The map is there and we can very easily verify it. He says there is no great difference in latitude between Edmonton and Peace river landing than between Peace river landing and Vermilion ?

A. No.

Q. Then there is no serious difference between the altitude that you claim for the plateau and the altitude you claim for Edmonton ?

A. No great difference.

Q. And no difference in the climate practically between the Peace river valley at the mouth of the Smoky river and the level country at Vermilion ?

A. Not in summer, not on the height of land. I would like to explain, there is

a great deal of difference in another way.

Q. Why is there no particular difference between the climate of the upland of the Peace river at the same altitude as Edmonton, and Edmonton in practically the

same altitude as the Peace river?

- A. The reason for the great difference is explained in very great detail by Dr. Dawson. I could explain it myself, I think, in a few words. The climate of the Peace river plateau is peculiar in this respect, that it is what we call subalpine, that is, although its altitude is only, we will say 2,300 feet—that is, whether Mr. Oliver agrees with it or not-the air is clear, the radiation is great and there is a wide range from the considerable heat in the day time to the minimum of the thermometer at night, and in every respect the climate of the Peace river plateau is almost identical with that of the country around Morley, west of Calgary, which has a subalpine climate, while at Edmonton we have the characteristic climate of the prairie country, a very, very different climate from that of the Peace river country from a meteorological point of view. The reason that Vermilion is so different from Edmonton and the plateau country is that an isothermal starts at the north end of Lake Winnipeg, and the climate does not vary from that across Saskatchewan, and that includes the Vermilion district and down the Mackenzie valley, excluding the upper part of the Peace river country.
- Q. Then the reason of the disabilty of the climate of the Peace river country is not its altitude?

A. Yes, it is the altitude in that latitude also.

Q. Pardon me, I think you said the altitude, because of its subalpine situation, and not because of its latitude ?-

A. I stated distinctly the first day, and I will repeat that to my mind, in my opinion, the altitude of the plateau of the Peace river country is too great in that latitude for successful wheat growing. That is my bald statement, and I am giving some reasons why I said so.

Q. Which reasons, of course, contradict your bald statement ?

A. I didn't say that.

Mr. Henderson.—No comments.

Mr. OLIVER.—That's all right.

Mr. Ross (Victoria).—Never mind, get the evidence.

The Witness.—I may say for Mr. Oliver's information, and this is in answer to your question, that when I got home from that country I said to my father, 'Did you ever consider the altitude of that country in its relation to wheat growing.' He said, I never did.' I said, 'I have got to consider it in my report, and I wish you would do it too.' When he had done so, he said, 'You cannot be too emphatic in your report that the altitude of that region is too high for the latitude.' I am using his identical words. Each day that I have come up here he has said the same thing. My father and I are the authorities—whether Mr. Oliver or any other members of the Committee accept it or not—we are the authorities in Canada on the question of judging the country from its natural characteristics, and we have put ourselves on record. I don't see any reason for discussing the why and the wherefore. I have put myself on record, and I have put my father on record as considering that that region is too high for its latitude for wheat growing, and my reputation stands on that.

Q. Or falls ?

A. Yes, or falls, naturally.

Q. Then the fact remains that the altitude of the Peace river is not greater than that of Edmonton?

A. Very little greater.

Q. Practically not greater.

A. Very little greater.

Q. If it is, as I have contended from other authorities, it is less, is it not?

A. According to your statement, certainly.

- Q. The difference in latitude is not sufficient to make any material difference in the climate?
- A. Oh, yes, it is. Two degrees at Ottawa would make a tremendous difference. No one would think of growing wheat two degrees north of Ottawa.

Q. Three degrees in the Peace river country doesn't make any difference ?

A. The Peace river valley has local conditions vastly different from Edmonton. The Peace river at Dunvegan and at the Smoky river has a narrow gorge 700 feet deep, with almost tropical plants, with cactus growing in the hot valley, and that hot valley, it is not different from Vermilion, but it is not at all comparable with the plateau country.

Q. We agree that the elevation is the same as that of Edmonton ?

A. Nearly the same.

Q. And the latitude is not seriously different ?

A. Not very greatly different.

Q. Therefore, you say that the latitude and altitude of the Peace river country prevents the growing of grain?

A. I don't say that.

Q. You didn't say that ? I think you did ?

A. I said the successful growing of wheat as a crop. Wheat will ripen some years on the plateau.

Q. And you admit that the altitude and latitude will not prevent the successful growth of wheat?

A. No, I don't admit that. I mean as a business, or as an industry.

Q. Are you in a position to judge whether it will be successful as an industry by reason of your experience?

A. I consider I am. Nothing will show that I am not, but the successful growing of wheat year after year as an industry, and when that is done my reputation is gone. Until that has been determined, each man will have to take his own opinions. I stand by the opinion that wheat will never be grown as a successful crop on the Peace river plateau.

Q. We have established that point as to the latitude and altitude being practically the same as that of Edmonton. Perhaps you don't admit that wheat is raised

successfully at Edmonton?

A. Yes, but I don't think anybody would grow wheat as an industry at Edmonton with nothing else back of him.

Q. Don't you ?

A. No, I think he would be in a bad fix there last year.

Mr. Johnston (Cardwell).—And more than last year, too. A. I know the Edmonton country as well as Mr. Oliver.

By Mr. Oliver:

Q. Do you, indeed. Did you ever hear there are flour mills at Edmonton?

A. Yes, I believe there are.

Q. The witness has made a distinct declaration that the altitude and the latitude were too high. Unless he can establish by comparison that the altitude and latitude is inimical to the growth of grain—that has not been done with regard to the Peace river. And as he has brought Edmonton into comparison, I want to ask one or two questions. You suggested it was not a good place to grow wheat?

A. In Edmonton ?

Q. Yes.

- A. No, I do not know. I said a man who went there to grow wheat as an exclusive crop or chief crop would make a mistake. I have always said that.
- Q. You are not aware that there are a large number of people there who do that ?
- A. No, I don't think there are a large number who depend on wheat growing. They depend on mixed farming.

Q. Not a large number depend on wheat growing ?

A. Not as the chief crop.

Q. Do you know how many flour mills there are there ?

A. No, I know there are a good many. Q. Do you think they were built for fun?

A. No, I think to grind wheat. There are also oat mills there to grind oats, but they are not grinding many Edmonton oats there this year.

By Mr. Ross (Victoria):

- Q. Where did the wheat grow which is ground at Vermilion ?
- A. At the Hudson Bay post at Vermilion.

By Mr. Oliver:

Q. Are there any mills ?

A. They are grinding wheat grown in the valley. I may say with respect to the wheat at Vermilion and in the valley, they don't count upon grinding each year's wheat.

By Mr. Ingram:

Q. They grind a barrel an hour at Vermilion ?

A. Yes. The mill at Vermilion is a big mill, they could increase at a little expense.

By Mr. Oliver :

Q. A 50-barrel mill ?

A. Although it only grinds a barrel an hour, it could be made to suit the growth of the country.

By Mr. Oliver:

Q. Now, we will make a comparison, I think you have based your whole statement upon the differences between the climate on the plateau and in the valley. That is the opening statement of your report here?

A. Yes, that is the chief thing.

Q. The valley is, I think you say in your report and in your evidence, that the climate of the valley is quite suitable for the growth of grain?

A. Yes, sir, they suffer from drought in a good many years.

Q. But not from frost ?

A. No, very little.

Q. In your meteorological report you give the temperatures which you observe, or which were observed on your behalf during your stay at Peace river. Where were the temperatures during June and the early part of July taken?

A. At Peace river landing.

Q. Was that in the valley, or on the hill ?

A. That was in the valley, all in the valley up till July 6.
Q. Where were your temperatures marked 'Dunvegan' taken ?

A. That was on the Bench, seven miles from Dunvegan. Right on the plateau

where I consider it was 2,300 feet high.

Q. How does it happen that the temperature on June 13, under the hill in the valley showed 28 degrees—on June 14—

Mr. INGRAM.—This was all gone over the other day.

By Mr. Oliver:

Q. No, pardon me, this is a distinct different point. How does it happen that—the valley being warmer than the hills—that the temperature on June 14 showed 28 degrees in the valley, and on the hill at Dunvegan from the 21st to the 31st of July the lowest reading of the thermometer was 38, a difference of 10 degrees?

A. One was in July, the other early in June; June is spring there; one was the early spring frost, the 14th of June is the spring, whereas July is the hot month all over the North-west. There is no comparison between July and June in any part of

Canada.

- Q. Do you consider that the meteorological record taken on the plateau behind Dunvegan during these weeks was indicative of coolness or unsuitability of climate of the uplands.
 - A. During these weeks in July ?

Q. Yes.

A. No, I do not, no. I have repeatedly said that I considered my observations exceptional, and I think as compared with the North-west last year the Peace river shines. I think there is no doubt about that. I stated repeatedly before this Committee that my observations are not based on that single year, but they cover every year.

Q. Anyway coming to the point of difference between the valley and the uplands, that is what I want to get at. At the same time Mr. Ingram will pardon me for discussing the point of the effect of the location at which you placed your thermometer?

A. Yes.

Q. I think you said you placed it 18 inches above the ground ?

A. Generally that, yes.

Q. That is how you got your record ?

4 EDWARD VII., A. 1904

Q. I think we discussed the point as to whether the thermometer placed five or six feet above the ground conduce to have a colder or warmer record?

Q. On that point, for the information of the Committee, will you kindly read this letter?

A. 'Frank Oliver, Esq., M.P.

METEOROLOGICAL OFFICE, TORONTO, April 19, 1904.

FRANK OLIVER, Esq., M.P., House of Commons, Ottawa.

DEAR SIR,—In compliance with the request contained in your letter of the 16th inst, I have much pleasure in inclosing herewith a table of dates on which the temperature shown by our thermometers at Winnipeg, Regina, Calgary and Edmonton fell to or below the freezing point.

I would remind you that frost will sometimes occur near the ground, when the thermometer placed at the regulation height, namely four feet above the ground, indi-

cates a temperature several degrees higher.

A temperature of 32 degrees by our thermometers usually means a fairly sharp frest near the ground.

I am, dear sir, Yours truly,

> (Sgd.) R. F. STUPART.

Q. I wish to have that placed on record to show that the records taken by the witness in the Peace river district were not on the same basis, for purposes of comparison, as the records taken outside.

Mr. Lennox.—This is not fair. We should not make speeches about lettres which are brought in.

A. I may say that the observations, that as I pointed out in my report these frosts were general all over the country. They were not local frosts as Mr. Oliver is trying to show you which were due to the location of our camps. They were general frosts all over the Peace river country. Frosts in the Peace river country, as members of this Committee should know, are very different from frosts in Manitoba, although many people say that conditions generally change with time, they are general frosts due to altitude and latitude, not local conditions such as swamps and wet places and things of that kind.

Q. Now, would the Committee have any objections to reading Dr. Dawson's observations on this question of the difference between the valley and the upland ?

Mr. COCHRANE.—We can read that.

Mr. WRIGHT .- We can read that; we can read that at our leizure, give us the

A. I think it is very important to read it, it is only a paragraph.

The CHAIRMAN.—Supposing you refer to it in the evidence?

By Mr. Oliver:

Q. Page 70 'B,' would you kindly read from there to there, at the end of the paragraph in regard to the effect, the respective effect of certain frosts on the upland and in the valley ?

A. 'We found some rude attempt at cultivation also at the Cree settlement,'that is at Sturgeon lake—'previously referred to, which is at the average level of the plateau, with an elevation of about 2,000 feet. Here on September 14, the potato plants were slightly effected by frost, but not more so than observed at Dunvegan two weeks before.' Shall I read the whole of this paragraph which is marked?

Q. Certainly.

A. 'The tubers were quite ripe, but the Indians did not intend to dig them for about ten days. The turnips were very fine, and carrots, beets and onions were good, though evidently cultivated with very little care. Two or three very small patches of barley had been almost completely destroyed by mice, but a few stalks remaining were quite ripe and with fine head.'

Q. You observe there that he is speaking about frosts which occurred at Dun-

vegan, and did not occur on the upland, certain fall frosts.

A. As I pointed out that is quite a common thing in the autumn when the vailey is quiet and the upland is windy. Those are very ordinary conditions up in that country.

Q. Would you kindly read here, that conclusion of Dr. Dawson in regard to this

same point, on page 72 'B' of Dr. Dawson's report from here to there ?

The difference between the valley and the plateau being thus very small, I have not treated separately the observations for temperature taken by myself in the different situations. Most of the observations, however, refer to the plateau, and including the whole time spent in the country, from the middle forks of Pine river to the bank of the Athabasks, cover a period of nearly two months. The mean minimum temperature for the month of August, deduced from observations extending from the 6th to the 31st of the month, is 39'9 degrees.' May I read the paragraph before that?

Mr. OLIVER .- No.

Several Hon. MEMBERS.—Yes.

The WITNESS.—May I read the paragraph before that—I read this because I wanted to read the one before it.

By Mr. Oliver:

Q. Pardon me-

A. It explains—the one before this explains this one.

Q. May I be permitted, Mr. Chairman-

The CHAIRMAN.—You have the examination in hand.

The Witness.—I submit it is absolutely unfair, this paragraph is explained by the one before it.

Several Hon. MEMBERS.—Read it.

Mr. OLIVER.—I wanted to ask certain questions, and I wanted the witness to read this in order to bring out a certain point.

Mr. Blain.—We do not propose to give Mr. Oliver all the time. I understood the witness wants an opportunity to read this, and I think Mr. Oliver should have most of the time.

The Chairman.—Is it the desire of the Committee to hear the previous paragraph read?

Several Hon. MEMBERS.--Yes.

Mr. OLIVER.—I will give the gentleman the book to read. What I wanted to do was to save time.

Mr. Cochrane.—You are not saving the time now, you are taking up the time now.

Mr. OLIVER.—Pardon me, I was going to have the gentleman read that paragraph later, I have it marked for the purpose. Read it, please—pay careful attention to it

gentlemen, please ?

A. Dr. Dawson commences the paragraph which I have just read by saying, 'the difference between the valley and the plateau is very small,' and this is what he bases at on. 'In October, 1872, Mr. Horetzky writes: "We observe that, curiously enough, the vegetation upon these uplands did not appear to have suffered so much from the effects of frost, probably due to the fact of the air in these upper regions being constantly in motion, while in the deep and capacious valley of the river the winds have no effect." That was in October, 1872, and Dr. Dawson follows, 'the difference

between the valley and the plateau being thus very small.' He bases all observations on October 16, which have nothing whatever to do with summer conditions. That was on October 16, when it was really freezing hard in the valley, and had no bearing whatever on the question.

Q. I think that is satisfactory? A. Certainly, it is satisfactory.

An Hon. MEMBER.—They are both satisfied.

By Mr. Oliver:

- Q. Will you kindly read from the beginning of the paragraph down to where you started?
- A. 'With regard to the probable difference between the actual valley of the Peace and the plateau forming the general surface of the country, Professor Macoun observes, speaking of the vicinity of Fort St. John.' That is outside our range and in the foothills of the Rocky mountains.

Q. That is right.

A. 'That notwithstanding the difference in altitude the berries on the plateau ripened about a week only later than those on the river, while he was informed that there was about the same difference in the time of disappearance of the snow in the spring.' That is, the plateau was one week later than the valley. 'While at Dunvegan I tascertained that a similar difference was observed there, but it was added that this obtained chiefly with the wooded parts of the plateau, the snow disappearing on the prairies much about the same time as in the valley. In my diary, under date of September 5, I find the following entry: 'Aspens and berry bushes about the Peace river walley now looking quite autumnal. On the plateau, 800 or 900 feet higher, not mearly so much snow. Slight tinge of yellow only on some aspen groves.' May I read the paragraph explaining that, please?

Q. You are quite welcome.

A. If you will just allow me to read the paragraph in the same report it will take me only a minute. This was in the summer of 1879, and was written of the plateau by Dr. Dawson's assistant, Mr. McConnell. 'Although it was but August 24 when we were there, yet the leaves of the aspens were already yellow and were falling off.' That is the Battle river, north of Dunvegan.

Q. That is where?

A. At Battle river.

Q. How far is that north?

(A. About 35 miles north. Mr. McConnell says this appears to have been due to the cold of the night of the 20th of August, when the thermometer registered 12 degrees of frost.' On the same day Dr. Dawson had 6 degrees of frost on the plateau to the south. 'As before that they were quite green, and on our way back after trecrossing the hills, we found them again comparatively green.'

Q. You will observe, gentlemen, that this frost occurred on a certain hilly tract

of country.

A. It occurred on the same day 100 miles to the south on the Grande Prairie, where Dr. Dawson observed 6 degrees of frost. Mr. McConnell reports 12 degrees on the Battle river, showing that it covered the whole region, but that it was more severe in the northern part in the Battle river region than on the plateau.

Mr. OLIVER.—I will not argue with the witness.

A. I want to explain this, because the explanation is satisfactory.

Q. It is no explanation. Will you kindly read this report of Mr. Selwyn's as to the thermometer at Fort St. John ?

A. This is from the Hudson's Bay records of course: 'No frost on the north side of the river after May 1. All the snow gone on the flats and on the hills by April 15. Average depth of snow 2½ to 3 feet. Horses and cattle winter out.'

That is all right, that is at Fort St. John in the Rocky mountains.

Q. In the Rocky mountains ?

A. Just outside 35 miles from the pass, outside our business altogether.

Q. That is the point I wish to come to, whether it is outside our business or not. I have not the opportunity to go into this matter of altitude and latitude thoroughly, to show the extent the witness had authority for the assertion that he had examined the whole of the Peace river country. I think that is your assertion ?

A. Oh, no, not that.

Q. Will you tell the Committee what proportion of the country you examined, and what portion of the country you never saw ?

A. I tried to get at that when Mr. Wade was examining me. I saw practically

the whole region, but did not examine all.

Q. You saw practically the whole region ?

A. I examined the country west to the British Columbia boundary, and the Pouce Coupé prairie.

Q. How far did you go west of Dunvegan ?

A. About 70 miles.

Q. About 70 miles. How far is it to Fort St. John from Dunvegan ?

A. 100 and some miles, I do not know exactly. I went to the British Columbia boundary, the map shows that, the green line running up and down.

Q. That is not the point.

The CHAIRMAN.—West or north ?

A. West from Dunvegan.

By Mr. Oliver:

Q. The point is as to the Peace river country east of the Rocky mountains, the witness has said he has examined the whole of the Peace river-

A. Terminating at the British Columbia boundary. I explained that to the Committee very fully before. I went to the Pouce Coupé because that was a prairie that the people wanted to know all about.

Q. I wish to have it established that this witness did not examine anything west

of the British Columbia boundary? A. I have stated that here before.

Mr. Wilson.—The witness stated that before; I heard him.

By Mr. Oliver:

Q. How far is it from Dunvegan to Fort St. John ?

A. I do not know.

Q. You were not there ?

A. No.

Q. How far were you west of Dunvegan on the north side of the river ?

A. About 40 miles, I should say, to the Clear Hills.

Q. Would you say it is 120 miles from Dunvegan to Fort St. John ?

A. I have no idea, I have only heard people speak of it.

Q. You say Fort St. John is immediately outside the mountains? A. 35 miles from Hudson's Hope.

Q. It is 150 miles from Dunvegan to Fort St. John to Hudson's Hope ?

A. I do not know.

Q. Then you presume to tell this Committee that you know all about this coun-

try, and yet you have not seen it and do not know the distance ?

A. I told the Committee it was my instructions to deal with that part of it that the Dominion government had control over. I went to British Columbia only to examine the Pouce Coupé prairie, so that people would know about it. My work was confined to lands that the Dominion government had control of.

4 EDWARD VII., A. 1904

- Q. That is the point I wish to bring out to the Committee, that the witness had not examined 120 miles of the country.
 - Mr. Cochrane.—Now you are arguing again, that is not asking a question.

Mr. OLIVER.—Excuse me.

Mr. Cochrane.—That is not asking a question, that is lecturing.

By Mr. Oliver :

Q. Do you know how far it is from Dunvegan to the Rocky mountains, to Hudson's Hope?

A. No, I do not of my own knowledge.

- Q. How far did you examine the country west of Dunvegan ?
- A. 70 miles west and 45 north. My work was chiefly east and south.
- Q. And the upland country to the Rocky mountains you never saw?

A. No, sir, certainly not.

Q. And you do not know anything about it ?

A. Certainly not.

Q. You were not more than half way to the Rocky mountains from the mouth of the Smoky river?

A. From the Smoky, I was within 70 miles.

- Q. Will you please go to the map and point out exactly where these points are, that the Committee may see for themselves ?
- A. I point out Fort St. John (indicating on map), this is Hudson's Hope here, my work is in this direction from this pink, in this direction (indicating on map).

Q. Now, talking about the upper Peace river country, of 23,000,000 acres?

A. There is where it begins there, the Peace river landing. I explained this part of it in this direction, and this part of it, and north in that direction, and up to the British Columbia boundary (indicating on map).

Q. Point out the Smoky river ?

- A. There is the mouth of the Smoky.
- Q. Will you point of Hudson's Hope ?

A. Yes, there it is.

Q. Now, point out the British Columbia boundary ?

A. Certainly, here it is.

- Q. And that is the limit of your observations?
- A. On the north side of the river, certainly.
- Q. Then the Committee can see for themselves that there was a large part of the Peace river country you never saw?

A. Yes, but nobody ever thought that that part was any good.

Q. The witness has made the assertion that nobody ever thought that this upper Peace country was any good?

A. No, I did not say that.

Mr. Lennox.—It is now 11 o'clock, I move that we consider the examination of Mr Macoun closed.

Mr. Davis.—I move an amendment to that motion—

Mr. RICHARDSON.—I wish to offer a word in seconding the motion submitted by Mr. Lennox. This examination has already occupied an unreasonable amount of the time of this Committee. It has degenerated into an unseemly wrangle, bringing the Committee into contempt in the country—

Mr. OLIVER.—I call the speaker to order, Mr. Chairman. Now, for my part, I have taken an active part in the proceedings of the Committee, and I deny the allega-

tion of the gentleman who has just sat down.

Mr. Davis.—I want to move an amendment to that motion much along the same lines. I move, seconded by Mr. Lang, that a sub-committee comprising Mr. Wilson, Mr. Ralph Smith and Mr. Wade be appointed to go over the evidence of Mr. Macoun and make a report to this Committee.

Mr. Wilson.—Give us an easier job, will you ?

Mr. Davis.—Somebody has to do that, and get it out of the hands of this Committee, and the sense of this Committee is that we should do this.

Mr. Rosamond.—I ask for your ruling, Mr. Chairman, that is not an amendment?

Mr. Davis.—It is certainly an amendment, what is the motion if it is not an amendment?

Mr. Lennox.—The motion is that the evidence be considered Gosed. This has nothing to do with it, it is a substantive matter.

Mr. Davis.—Certainly not, I submit that we are in order in sending this to the sub-committee.

Mr. Blain.—I ask the ruling of the Chair on this matter whether it is an amendment?

The CHAIRMAN.—I do think this is properly an amendment; first you close it, and then what are you going to do with it afterwards, that is the proposition ?

Mr. Davis.—We agree that it is closed, there is no necessity for the motion to say it is closed. Refer the matter to a sub-committee.

The Chairman.—Let the first motion go, Mr. Davis, and then let your motion go afterwards.

Mr. Ross (Victoria).—I think you had better leave that to the next meeting, the motion about the sub-committee.

The CHAIRMAN.—You can settle that now, but it will be a new motion.

Mr. OLIVER.—In regard to the closing of this evidence of Mr. Macoun, as far as I am concerned I am willing to quit, but there is a very large number of witnesses yet, Mr. Macoun himself has asked for the calling of other witnesses, and there is a lot of other information available.

The CHAIRMAN.—They can be called.

Mr. OLIVER.—Not if this motion is carried. They cannot be called, because the examination is closed up.

The CHAIRMAN.—I think this motion has reference to the examination of Mr. Macoun.

Mr. OLIVER.—I understand the motion to stop the examination of Mr. Macoun and discharge the whole business.

The CHAIRMAN.—That is my view. The motion is by Mr. Lennox, seconded by Mr. Richardson, that the examination of Mr. Macoun be considered closed. Are you ready for the question?

Some Hon. Members.—Question.

The CHAIRMAN.—Is it your pleasure that the motion carries? I declare the motion carried. The motion is carried.

Mr. Davis.—I move, seconded by Mr. Lang, that a sub-committee consisting of Messrs. Wade, Wilson, R. Smith, Ross (Ontario) and Wilmot be appointed to go through the evidence of Mr. Macoun and report.

The CHAIRMAN.—Shall the motion carry ?

Mr. Ingram.—Mr. Smith has not been here during the whole of the discussion. Perhaps he will suggest some other gentleman?

Mr. Davis.—My object in putting him on the Committee is because he has not been here wrangling, and Mr. Wilson has not taken any very active part.

An Hon. MEMBER.—What about Wade ?

Mr. Davis.—Well, I suggested Mr. Wade because he is a lawyer. We want a lawyer there.

Mr. Taylor.—This work is generally reserved till the closing of the Committee, at the end of the session. As Mr. Oliver has already stated, we may have other witnesses on this matter, then the special committee and the Chairman, or a Committee under his supervision will revise the evidence given during the entire session, and then weed out such parts of it as they deem fit for publication and have it published. It is premature to dispose of this question now. It should be left to the close of the 2—49

session and then the report brought in and the Committee reports to the House as much as they see fit.

Mr. INGRAM.—I move that we adjourn.

Mr. Davis.—There is a motion before the meeting. I submit that if we carried out Mr. Taylor's suggestion we would never have a report at all; put the motion.

The CHAIRMAN.—I would like to facilitate the business.

Mr. Wilson.—I do not think I could undertake to act on that Committee. It means a lot of work, more than I have time for.

Mr. OLIVER.—Any other gentleman on the Opposition side would be acceptable.

Mr. Davis.—I would suggest Robinson, of Elgin.

Mr. Ross (Victoria).—I don't think this is the proper time to appoint this subcommittee. We should go on with our work and finish before we proceed with this.

Mr. Davis.—The work is finished, as far as we can finish it now.

The CHAIRMAN.—If you have any more witnesses on this Peace river country this

practically excludes them. This should come in later.

Mr. Davis.—I don't know what other witnesses there are. Hon. gentlemen here are complaining that this has been before the country too long. When we proposed to bring out the facts and find out what the facts are, they don't want it; I would like to know what they do want.

The CHAIRMAN.—Shall I put the motion ?

Mr. CLANCY.—Some of the members of this Committee who may be somewhat new may take it for granted that this is the usual thing to appoint a Committee to revise evidence. So far as I know, this has never been done. The evidence is taken down, it may not be printed, it may not be thought wise to publish any part of it, it may not be thought necessary to publish a part of it.

Mr. OLIVER.—We were just thinking of that.

Mr. CLANCY.—But no committee has ever been appointed to revise and to decide what should be published or not. The good taste and experience of those who have been on the Committee many years have always suggested that we publish nothing that would be detrimental to the country. I don't see why we should make a departure on this occasion.

Mr. Davis.—I want to draw the attention of the Committee to the fact that the report of this sub-committee has to come to this Committee before it is published. This Committee has to be consulted before anything can be done. We know the amount of evidence there is there. This Committee could never undertake to go over it. I don't know what the object of these gentlemen is. If a Committee of this kind is not appointed, we will never hear anything more about it. We want to have it gone over and know what we want to publish.

The CHARMAN.—If Mr. Davis insists that the motion should be put I will put it.

I would like to be free to finish this up. This motion to adjourn will follow. Mr.

Davis' motion was really in before the motion to adjourn.

Mr. Wilson.—Does the gentlemen mean to say that the motion to adjourn comes before this?

Mr. Wright.—A motion to adjourn is always in order and takes precedence over everything.

Mr. TAYLOR.—A motion to adjourn should always come first.

The Chairman.—I would like to be as courteous to every member of the Committee

as possible. We can very soon take the sense of the Committee.

Mr. TAYLOR.—A motion to adjourn is always in order. This Committee is bound by the rules of the House. When the Speaker gets a motion to adjourn he must put it at once, no matter what is before the House.

The CHAIRMAN.—Better bring this up and discuss it at the next meeting.

Mr. Sproule.—I will refer to this fact, that the motion which I made at the commencement of this examination of Mr. Macoun, that we should instruct the stenographer what he should take down without that motion being dealt with, a motion was

made to adjourn, and my motion was left over because the motion to adjourn was carried.

Mr. Davis.—I think it should be dealt with to-day. I can't understand—

Mr. TAYLOR.—If it is decided not to adjourn we have to take this up.

Mr. Davis.—I want to explain that when I moved this motion the other motion was allowed to go through on the understanding that this motion was to come after.

The CHAIRMAN.—Let me say that this will be under the head of unfinished business at the next meeting. Shall the motion to adjourn carry?

Several Hon. MEMBERS.—Carried.

The Committee then adjourned.

Having read over the above transcript of my evidence, I find the same correct.

JAMES M. MACOUN.

THE EVIDENCE

PART II

IMMIGRATION AND COLONIZATION

THE IMMIGRATION OF 1903-'04

House of Commons,

COMMITTEE ROOM 34,

TUESDAY, June 14, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'colck a.m., Mr. Douglas, Chairman, presiding.

The CHAIRMAN.—We have with us to-day Mr. W. D. Scott, Superintendent of Immigration.

By MA. Clancy:

Q. I would like to ask Mr. Scott a few questions. I suppose, Mr. Scott, you are very familiar with all the workings of immigration matters ?

A. Yes.

Q. How long have you been connected with them ?

A. With this branch of the department?

A. Since January last year, January, 1903.

IMMIGRATION AGENTS IN THE UNITED STATES.

Q. Will you tell the Committee how many agents you have in the United States ?

A. That is paid agents ?

Q. Paid agents?

- A. I see they have not totalled them up, I have a list of them here.
- Q. Would they appear in your last report at page VI, Roman numerals ?

A. What page is that Mr. . Clancy ?

Q. Page VI of the report of the Department of the Interior.

A. Yes, these are all the agents of the department.

Q. Can you say how many there are ?

A. Twenty-two.

By Mr. Wilson:

Q. Twenty-two?

A. Twenty-two persons.

By Mr. Clancy:

Q. Can you say, in round numbers, what their salaries amount to ?

A. The salaries, total salaries in the United States ?

Q. The total salaries of the 22 agents in the United States ? A. The total amount is \$32,450 ?

Q. \$32,450 ?

A. That was for last year ?

Q. \$32,450 is the total salaries of the agents in the United States ?

A. The United States, yes.

Q. How many agents have you there on commission ? A. Well, I have a list of them here, I have not totalled them up. I can file a copy of it giving the names of each one.

4 EDWARD VII., A. 1904

Q. Have you the total of what is paid ?

A. The total amount paid through commissions?

Q. Yes.

A. The total amount paid for commissions last year is \$14,898.

Q. That is the total amount paid to these parties ?

Q. You will put in the names so as to form part of the report? It will save Mr. Chairman, Mr. Scott reading it.

A. Yes, I will take note. You want a list of the sub-agents ?

Q. Yes, and what is paid to each ? A. I have all those details here.

Q. Have you, in your report the number of settlers, each of those gentlemen who were on salary, have sent in here ?

A. Well, I have not that at the present time, but I could get it. Every agentreports at the end of every month, so it is only a matter of totalling them up.

The CHAIRMAN.—He could hand it in.

M. CLANCY.-No, he had better give it, because we want to see the statement and examine it before it forms part of the report.

Q. Could you say the total number that they have all sent in ?

A. The total number of-

Q. That the agents on salary have sent in?

Q. Of immigrants?

A. The total number of immigrants r ported last year from the United States was 49,473.

Q. What proportion of that number did those agents on salary send in ?

- A. Well, I have not got that at the present time. I could give you a list of each one. I could give you a list of the names of the 49,000, but it would require considerable work.
- Q. I do not want the names. I wanted to know, if possible, what proportion of the 49,000 immigrants the salaried agents sent in ?

A. I have not got that.

Q. You could not say at this moment?

A. Not off hand.

Q. Nor the proportion that came in under the direction of the commission agents, nor those that come in through the direction and assistance of the railway companies or land companies ?

A. No.

Q. Well, will you be able to show that at the next meeting?

A. Yes, I can give you the number reported by our agents.

Q. I want the proportion in each case? Do you see?

A. Yes, you want the number reported as sent in by each agent. That is, each agent on salary and on commission.

Mr. CLANCY.—Yes, and the total.

By the Chairman:

Q. Have you any means of knowing the number sent in by railway ?

A. By railway agents ?

A. All the certificates that are issued by the Caradian Pacific Railway Company in the United States to settlers for reduced rates are received in my office. The number is very small.

By Mr. Clancy:

Q. I suppose there are a great many coming in you have no track of ?

A. Oh, yes, there are a great many coming in.

Q. And you include all that cross the border as becoming settlers in Canada ?

A. Not all, unless they declare their intention. We have a man on every train who checks these trains and asks the passengers whether they all intend to become settlers or are simply tourists going through the country.

Q. Is he likely to be able to elicit the truth on all occasions ?

A. Oh, I think pretty accurately.

Q. It is not always to a man's interest to tell that he is not going to become a settler, is it? Is it on the ticket of each company that carried a settler in, that the man intends becoming a settler?

A. Yes.

Q. When was that system started, of giving tickets under such conditions?

A. Oh, many years ago.

Q. Have you changed the system in that or any other regard that you know of since you took hold?

A. In issuing certificates ?

Q. I am speaking generally ?

- A. Well, the certificate has been changed some. The certificate now reads that a certificate can only be issued to an actual settler.
- Q. But it is issued before you know whether he is going to become an actual settler, or not?
- A. Every one of our agents sends in a form in which this man says he is going to become an actual settler. It is impossible for our agents to see every man who communicates with them, because they receive hundreds of letters from points scattered all over the United States, but they send this form and the man gives his name and his age, and his wife's name, and the names of the members of the family, also saying that he intends to become a settler in the Canadian North-west. Then a certificate is issued entitling him to receive reduced rates.

Q. It is quite impossible for you to know whether this has been carried out or

not ?

A. The certificate comes to us.

- Q. Do all the certificates come in ? Do you have other certificates that they have become actual settlers?
- A. Well, we get a big number. We are advised whether a man goes in on a single ticket or on a return ticket.
- Q. Would it be possible for men to get those certificates to get reduced fares, and that there will be a number of them who will not become settlers in Canada? There is no means of tracing whether they do or not?

A. Well, you could not trace them after they get into the country, it is a very

large country.

- Q. You could not really tell whether they become settlers or not ?
- A. We could by the number of homestead entries that are taken up.

Q. You could not tell whether they were the same persons?

A. Not actually, no.

Q. You could not tell by the persons taking up homesteads who had any assistance, or had come in unaided?

A. Well, the bulk of them come in on certificates.

Q. Is it not possible for settlers entering the country to come without the assistance or encouragement of either the railway company, or of agents paid by salary or otherwise?

A. Well, they come in, yes. They would pay the regular rate, that is all.

Q. So that the homestead entries would not be a perfectly accurate test to show that all the persons who took up homesteads came in by the means we have been discussing?

A. Oh, it is pretty hard to tell, I imagine.

Q. If Mr. Scott will kindly get the information on the lines I have indicated, and if it is forthcoming at the next meeting, he may go on with his general statement. I do not desire to occupy the whole time of the Comimttee?

4 EDWARD VII., A. 1904

A. You asked for a list of the sub-agents, with the amounts paid and the number of people reported by each as settlers ?

Q. In a word, the detail as far as possible of the work of each of the agents who

has reported and the number of homestead entries we have here?

A. I have nothing to do with the homesteads, that is a separate branch.

Q. Who would know that ?

A. The Interior Department, the Lands Branch. I suppose the Deputy Minister.

Q. Mr. Smart would know that ?

A. Yes. I see now that I have the year and the number of people sent in by sub-agents. I see I have that here.

Mr. CLANCY.—Well, you have not the other statements to complete it and probably you had better go on and make your general statement.

By Mr. Ingram:

Q. You made a statement that all trains had government agents on them ?

A. That is in the west at points where settlers come in.

Q. Will you define what districts those are in ?

A. From Gretna and Emerson, Portland and Coutts-points west.

Q. In Manitoba only?

A. And the Territories. Portland and Coutts are the two great highways, of course, for immigrants going into the Territories.

Q. But not in Quebec and Ontario ?

A. Ne.

Bu Mr. Wilson:

Q. If permitted I would like to ask two questions. I would like to know who has been the salaried agent at Indianapolis for the last five or six years ?

A. At Indianapolis ?

Q. If you cannot tell me now, bring the information at the next meeting. You might tell me his salary too, and also how many persons he sent to this country, if you will ?

A. You wish the salary ?

Q. Yes, and the number he sent in.

A. The number sent in.

Q. And his name, and how long he has been there. I would like to know who has been there for the last five or six years. Then, I am not exactly satisfied with your report with reference to the nationalities of the people you refer to in your general report. I would like to have the nationalities for this year and last year?

A. In what way, sir ?

Q. On page 6, I think, of your report, you give a list of the nationalities ?

A. Galicians, Germans, Hungarians and Austrians.

Q. Yes?

A. Scandinavians, French and Belgians.

Q. But you have not a single Italian in it?

A. Under the miscellaneous, I suppose, they would come.

Q. Yes, but why would they come under the miscellaneous? Now, there is a very large number of Italians, come in, you know, and they should not be put under such a heading as miscellaneous. That is supposed to cover those whose nationality you would not reasonably know?

A. Well, we bulk them together under this, a great many nationalities.

Q. Well, you put the Italians under miscellaneous when they are the largest of any except Galicians ?

A. Of course there are a great many nationalities that come here.

Q. That is true but you pretend to give the principal nationalities, I see? A. Yes.

Q. And if I should judge from what I have seen in the newspapers the Italians entering Canada are quite a considerable number ? .

A. Yes.

DEPORTATION OF IMMIGRANTS.

Q. Well, would you kindly look that up ? There is just another thing. You do not state in your report and I think it ought to be done, how many you deport. You see the Americans get up a report very nicely. They have got a lot of tables, and they tell how many they deport ?

A. I can tell you the number deported.

Q. It is about 505, I think.

A. The Act went into force in December, 1902, and from December, 1902, until June 30, last year, there were 267 deported.

Q. There was an answer given in the House which stated, I think, that the number deported from June 30 last year, up to about March 1, was 405 ?

A. That was taken up to March 15.

Q. Yes.
A. That is from the time the Act went into force.

By Mr. Ingram:

Q. We have no means of knowing what people enter Ontario and Quebec ?

A. Not except west of the Great Lakes.

Q. You take the Italians, for instance, coming into Canada. They come in by

way of Ontario and Quebec ?

A. Well, there is such a large interchange of traffic, of passengers, between the two provinces, between Quebec and Ontario and United States, that we make no effort to keep track of them all, it would be impossible.

By Mr. Wilson:

Q. Well, you report many coming in from the United States ?

A. Not via the Suspension bridge, for instance.

Q. Well, you do not keep track of them when they come in from these points ?

A. Not any from the east at all, it would be a matter of impossibility to keep track of them.

By Mr. Ingram:

Q. Then how can we carry our alien laws ?

A. I suppose that does not come under the Immigration branch.

Q. But still these immigrants come in to work on the construction of railways. They come in to work in Canada, they are immigrants in a sense, they come in here and become citizens of Canada?

A. Not as a usual thing, they do not. Q. Well, I find them in my town ?

A. Well, you see of the total number of homestead entries last year, some 30,000 odd, I think, there were only six Italians.

By Mr. Wilson:

Q. I do not think you report as many as that ?

A. I think there were six Italians.

Q. You may be right. But I was looking at the report ? A. As a usual thing they are not settlers, the Italians.

Mr. INGRAM.—I am not speaking in that sense, where they come in to take up land and become farmers, but where they become citizens of Canada.

4 EDWARD VII., A. 1904

By Mr. Wilson:

Q. You did pretty well. There were five who came in, I see ?

A. Oh, five.

Mr. Stevens.—I do not think the Italians become citizens of Canada in that sense.

The CHAIRMAN.—Perhaps Mr. Scott had better go on with the statement.

Mr. Scott.—I thought, gentlemen, that in order not to repeat what has been said before the Committee from year to year regarding immigration that it would be better to take up some matters more in detail which might interest the Committee. The general work of immigration has been along the same lines as former years. This year we find it necessary to give perhaps more attention to the reception and location of immigration than formerly, particularly in finding situations for farmers, for large numbers of young men who come in to look for farm work and placing them with farmers, farm labourers and also mechanics.

. By Mr. Wilson:

Q. You might give a statement of the districts you placed them in if you have it?

A. Well, we have not any such statement. I am speaking now particularly of the west. The great bulk of the immigration goes west of the Great Lakes.

By Mr. Stephens :-

Q. I would like to ask Mr. Scott, would it be advisable, would it not be possible to bring some immigrants of the agricultural classes, male and female, and locate them in Ontario. The scarcity of farm labour in westertn Ontario is so great that the farmers are not properly tilling their farms?

A'. Well, our English officers have endeavoured to divert as far as possible—they have this year—the farm labourers and those who may have been mechanics, but wish to take up farming pursuits—they have been trying to divert them to Ontario, and we find it very difficult to get them to go where there are no free lands.

By Mr. Wilson:

Q. There is another trouble, it is very difficult to find them constant work the year around?

A. It is one of the great difficulties we find. I see it every day. Young men come out and some work for farmers. They work for seven months, and for the balance of five months they have to get into the cities and towns. They are employed on street cars as conductors and as drivers, and once in we never get them back to the farms.

By Mr. Stephens:

Q. I am satisfied that 200 or 300 farm labourers, even if they were not farm labourers, but strong able-bodied men, could be placed in the city of Chatham, or at least among the farmers around that city the year around in good salaries. If they came out in March, and some of them were left in the town, the farmers would take them and pay them a certain wage, say \$18 or \$20 a month and their board?

A. They only employ them for the seven months.

By Mr. Gilmour:

Q. I might say that the farmers from the neighbourhood of London went down to

Toronto and brought up men ?

A: I know that Mr. Southworth, of the Bureau of Lands, Torounto, has a list of all the farmers who wish help. They sent out circulars and distributed them free of charge from Toronto to any part of Ontario. They gave them free transportation. They are getting free transportation to any place in the province from Toronto.

By Mr. Maclaren:

Q. You have no reports to show what immigrants come from the cities, and what number from the rural parts?

A. Well, we keep track of the counties they come from in England and Scotland.

- Q. In my own county we have a good many of these people sometimes. Our farmers go into Montreal, we are within 50 miles of Montreal, and go down and try to employ farm hands. I have heard several of them say they did not like the appearance of the new arrivals for farm hands, that the greater part of them came from the poorer classes in the cities, and they did not seem to have that brawn and muscle our farmers would like to have at work on their land. That is the reason I asked the question?
- A. If you would like I can bring you down a report showing the number who declared at the port of entry that they were farmers?

By Mr. Wright:

Q. I might just say for your information that Mr. Maclean, of Carleton Place, undertook to try and see if he could get 300 farm hands to work in his locality and my locality in Renfrew. He succeeded in getting about 30 to come to work. Each of these 30 men after they remained for a week suddenly left and went to Manitoba.

A. It is very difficult to get them to remain in Ontario.

By Mr. Ingram:

Q. You say they declare at the port of entry that they are farmers?

A. They declare at the port of entry. I was going to give the Committee a description of how these immigrants are handled, and that is one of the quetions that is asked in the civil examination—their occupation. If a man says he is a carpenter, but states, 'I am going to follow agricultural pursuits,' that is noted also'.

By Mr. Ingram:

Q. Do you find mechanics say that they are farm labourers ?

A. Oh, we find many mechanics in the west. We find many in the west that have taken up agricultural pursuits that have been mechanics in the old country.

Q. Is there any special advantage they get by saying they are agriculturists ?

A. No, sir, the rates are the same.

By Mr. Stephens:

Q. Did I understand you, Mr. Scott, to state what they were or what they intended to be?

A. Both.

Q. Two separate questions ?

A. Yes.

By Mr. Ingram:

Q. But with a view of going to work on the farm, I suppose ?

A. The rate is the same for mechanic or farmer.

By Mr. Stephens:

Q. The mechanic in the old country comes out here with the intention of becom-

ing a farmer ?

A. To make the best of farming. That is the reason of asking the two questions. If a man comes out to work as a mechanic, the government would not pay the commission for any steamship company. But if he says he is a mechanic and is going to follow agricultural pursuits, that is another matter.

Q. It would be just a little weak, what he is going to do ?

A. You have got to take the man's word for it.

4 EDWARD VII., A. 1904

By the Chairman:

- Q. You find a good many carpenters who are good farmers?
- A. The very best.

MEDICAL INSPECTION OF IMMIGRANTS.

By Mr. Wilson :

Q. Let us have the rest of the statement ?

A. As I said before, we are paying a good deal of attention, more attention than we have in the past, in the locating of these people—that is, farmers, farm labourers and domestics, and mechanics who intend to go in for farming. I have just returned from the west, and I found while I was there that a great many mechanics had gone out to Manitoba and had gone on to the land themselves, declaring their intention of becoming farmers.

By Mr. Wilson:

Q. Before you leave that. That means a lot more officials to locate them ?

A. Well, land experts, yes. The emigrants leaving Great Britain are all medically inspected before they leave the port.

Q. How long has that been the case ?

A. Since last December, a year ago. Since our medical Act went into force. These are the regulations (producing books) that govern the admission of immigrants now into Canada. I have brought over a few so that the Committee may read them. These immigrants, I might say, coming from different parts, we will say, to Liverpool, go into boarding houses as a usual thing. There are a couple of boarding houses where the immigrants remain until the ship is ready to sail. The company's doctor and the port doctor they examine all these immigrants at the boarding house.

Q. At whose expense?

A. At the expense of the company.

Q. The steamship company?

A. The steamship company. Afterwards before the ship sails they are inspected by the Board of Trade doctor, in company with the ship's doctor, so that now it has lessened the percentage of undesirables from disease, being allowed to come into Canada.

Q. That is since when did you say ?

A. Since our act went into force in December.

Q. Last December?

A. Decèmber a year ago.

Q. I see there were quite a number rejected by the Americans just the same?

A. Well we find that too, possibly on account of trachoma. It is a thing that develops very fast, and I think that in the holds of some of these old ships the air is bad, and the smoke and other things causes inflammation of the eye. They hold them up.

By Mr. Ingram:

Q. At the port of landing? What then?

A. Well, then I was going on to say that when they cross over to this country they are medically inspected by our doctors at the ports of landing here. If found free from disease they go before civil examiners, that is the immigrant agent and officials, and answer certain questions. They give their names and their occupation, whether married or single, whether they can read or write, and such information as that. If found to be diseased, they are put to one side and re-examined. If the doctors have any doubt about them they are put to one side and re-examined. If they are found to be diseased, suffering from some manner of contagious disease such as favus or trachoma, we have at Quebec a new hospital where these people are put and treated. Of course

they have to decide by their own option. If they say they do not want to get treated they are put back on a ship and deported. If they have the money to pay for their treatment, or if the steamship company that brought them out is willing to pay for their treatment, then they are taken to the hospital and treated and cured before they are allowed to proceed. After the doctor who has charge of the hospital thinks they are cured he calls in the port doctor and inspector and he re-examines the immigrants and certifies that they are free from disease, and they are allowed to proceed.

By Mr. Blain:

Q. How many had to be deported last year ?

A. The total number deported? From the time the Act went into force in December, 1902, to June last year, there were 267 deported. From December to March 15 this year there were 405.

By Mr. Wilson:

Q. Well you see there were deported by the American officials in this country, according to Mr. Watchorn's report, 5,158.

A. That is going to the United States.

Q. Yes. Now out of the whole of that 5,158 you only deported 405 people for the fiscal year.

A. There were 267 up to the end of June.

Q. That leaves nearly 5,000.

A. What is the statement you are reading, Mr. Wilson?

Q. I am reading Mr. Watchorn's report. He says there were 5,000 deported. You can read it yourself.

A. Of course the steamship companies running into Canada do not carry altogether Canadian passengers. They carry a great many people who are booked from Halifax, St. John and Quebec to direct points in the United States. That has come before the United States inspectors themselves.

Q. But that does not affect the matter in the slightest. They are left on our

hands.

A. They are not left on our hands.

Q. What is done with them?

A. If a United States doctor says that a man has got trachoma he is deported just the same, even if going to an American point.

Q. Would it not appear in your report?

A. Not at all, not when ticketed to the United States.

Q. Not when they come to Canada?

A. No Sir, if ticketed to the United States.

Q. Then they don't remain in Canada ?

A. Do not remain in Canada. Of course before the Medical Inspection Act came into force there was no doubt the Canadian steamship lines running to Canadian ports did bring people that were diseased into Canada, there is no doubt about that. If they only stay in Canada a short time, a year or so, the American officials insist upon inspecting them.

Q. These were the only parties that were not allowed to enter the United States.

It does not say they were deported.

A. They were originally ticketed to the United States.

Q. No matter where they were ticketed for they were left on our hands. If they are not fit to become citizens of the United States we ought not to retain them either?

A. That report is to the 30th June. Our Act was only in force six months out of that year.

By Mr. Stephens:

Q. That is a very important point. If all these people rejected by the Americans come before our own examiner?

A. We had no inspection before December, 1902.

- Q. But since then if the American officials rejected them they do not come before the Candian officers for examination at all but are deported directly back to their own country?
- A. Directly back unless they want to remain for treatment the same as immigrants coming to Canada.

By Mr. Sproule:

Q. Is it not optional with them to remain in Canada if they wish?

A. If they are diseased we do not allow them to remain in Canada.

Q. But your officer does not inspect them because the are ticketed for American ports?

A. There are two manifests issued, one of which is handed to the United States officer and the other to the Canadian officer. All those who are going ticketed to the United States, are on the American manifest, and the American doctor and inspectors inspect those thmeselves.

By Mr. Maclaren:

Q. Where ?

A. At the ports of landing.

By Mr. Sproule:

Q. What becomes of the rejected ones then ?

A. If they do not wish to remain for treatmet, they are put back on the ship.

By Mr. Wilson:

Q. Here are the two reports for 1902 and 1903. Here is a statement of persons with no certificates rejected, 1,052.

A. Because they have no certificates.

Q. Well, they may be bad or may not be, I do not know?

A. Certainly.

- Q. But then there is 'contract labour 431,' 'paupers or persons likely to become paupers, 1,575. Now that is a class that would not be deported. They would simply leave them on our hands?
- A. We would not take them. If they were ticketed into the United States we would not get them.

Q. Can you tell us whether they were or not?

A. I could not tell you that.

- Q. Well, that is information we ought to have, because we are under the impression that they are left on our hands?
 - A. Under our Immigration Act we cannot deport a man because he has no money.
- Q. Here are others deported. 'Arrested and deported to Europe for having effected unlawful entry to the United States: via Canada, 19; via New York, 166;' making 185 deported?
- A. That is where men came to the United States, Mr. Wilson, and they could not pass the inspection.

Q. And they stole over?

A. And they stole over and they nailed them on the other side, and they shipped

them out by American ports.

Q. 'Rejected at Port Huron, 1,247, for all points west of Port Huron; number of smugglers arrested and convicted, 25; total border rejections for all causes, 5,542; refused and given passage to European ports via Canada, 150; deported to European or Canadian ports by United States immigration authorities, 336; deported to Europe by Canadian immigration authorities, 130.' So you see that according to this report, they were very few of these but were deported.

- A. There is a lot of them who might not necessarily be deported. For instance, if they did not go before the medical examiners and get a certificate from that officer, they would not allow them to cross. But that is no reason why they should be deported.
- Q. I quite agree with you, but there is a list of 1,575 paupers, and out of that number only 400 or 500 were deported?
- A. There is nothing in our Act, nor any other place to say that we shall deport anybody who has not got money, so long as they are able to work.
- Q. We have had some experience in Montreal with this class of people, we read that hundreds of them have no money and are almost starving.

By Mr Black:

- Q Are we to understand that an immigrant purchasing his ticket for the United States, but coming through a Canadian port is not inspected by a Canadian officer at all?
 - A. No.
 - Q. Is there not some danger about that?
- A. He is inspected by the American officers, and if he passes he is allowed to proceed to his destination in the United States.
 - Q. To go through Canada?
- A. To go through Canada. If he does not pass the examination he is held and deported just the same.

By Mr. Blain:

- Q. Supposing he should change his mind and remain in Canada?
- A. If he has passed American inspection—their inspection is equal to ours.
- Q. Is it equal to ours ?
- A. I think they are both about the same.
- Q. It is no better ?
- A. I do not think so.
- The CHAIRMAN.—It is pretty severe.

By Mr. Sproule:

- Q. If he is not fit to remain in the country he is deported ?
- A. He is not deported by the American officers. It being a Canadian port they have no authority here. Our Canadian inspector sees whether he is diseased or not. Americans have no authority in our port—
 - Q. To deport anybody?
 - A. No.
- Q. This is a very large number who came in and were rejected by the United States, and yet were not deported by us.
 - A. A great many of these came to Canada before we had an Inspection Act.
- Q. Making all allowances for that, there was a very small percentage of them deported?

(No answer.)

By Mr. Maclaren (Huntingdon):

- Q. Supposing an American officer rejected an immigrant going through Canada, what would happen?
- A. He comes before our officer and if he wishes to remain in Canada until an examination is made we allow him to do so. We have had only two or three cases of that kind where our doctors differed from the American inspection.

By Mr. Blain:

- Q. Have you the nationality of those deported last year ?
- A. I can get that.
- 2-50

Q. You might get it for the period since this Act came into force. It might be of value showing the countries from which the best immigrants come.

By Mr. Ingram:

- Q. Were not the Montreal papers complaining of diseased immigrants coming into Montreal last summer?
 - A. Well, I did not see anything about that.

By Mr. Wilson:

Q. I could give you the clippings. A steamship agent in Quebec said that ten per cent of those who had landed there in Quebec were diseased?

A. I do not believe everything I see in the newspapers.

By Mr. Stephens :

Q. Who should know the best, the editor of the newspaper or the doctor who made the examination?

(No answer.)

By Mr. Wilson:

Q. I can give you the statement of another gentleman who was allowed to go all over the city before being examined?

A. The gates are all locked; they cannot possibly get out.

Q. It is the statement of a gentleman in Winnipeg, reliable man. There was another case at Vancouver?

A. That is the case of those who came off one of the China boats.

Q. Yes. Where that man died and was buried in Japan. The boat came to Vancouver and the man was taken to the hospital and died, and still they allowed the

passengers to come on. How do you account for that ?

- A. I do not know why the authorities allowed them to proceed. We had the same experience this year in the case of a boat which came from Glasgow. One of the passengers, a man by the name of Smart, stopped in Glasgow at a boarding house over night. A disease developed on the road out. The number of days that small-pox takes to develop was about the time that the ship takes to come out. He passed the doctors at Halifax as one who was not diseased, got to Sherbrooke twenty-four hours afterwards. Here a rash had begun to come out. He went and saw a doctor in Sherbrooke who said there was nothing seriously wrong; his stomach was probably out of order. He continued on the train until he got to Schreiber, on the north shore of Lake Superior, and was examined there by the company's doctor, the Canadian Pacific Railway doctor. This doctor said it was small-pox. Well, they carried that passenger through. They detached the car he was in from the body of the train and put it ahead of the baggage car and carried him to Bird's Hill, near Winnipeg.
 - Q. Have you no power to do anything with that sort of thing?

A. I should imagine it comes under the quarantine officers.

- Q. You talk to the Minister of Agriculture, and he says 'no, they have nothing to do with it'?
- A. It was a difficult matter. Small-pox requires a certain amount of time to develop.
- Q. This divided authority is what I complain of, instead of working together, as they should.
- A. There was a case of small-pox recently brought from Scotland. I have seen the man since he had it.

By Mr. Stephens:

Q. Did he spread the disease?

A. There was a man released after being in quarantine. He went to Edmonton and small-pox broke out there, a very bad form indeed. His name was Colbert. In

Edmonton he was shaved by a barber. He gave both barbers the small-pox. landlady in the boarding house got the disease. The doctor said she had very bad pains about the back, he examined her and said it was inflammation. He said she had better get a professional nurse. She got one, a young girl of twenty-four. She had never been vaccinated and she developed small-pox, as well as the woman, and the nurse died. It was a very bad form of the disease.

By Mr. Ingram:

Q. I think a good many doctors are deceived about small-pox?

A. In the early stages of it I imagine it is very hard to distinguish what it is.

By Mr. Roche (Marquette):

Q. These Scotch immigrants, were these the immigrants with whom the Ontario immigrants were mixed?

A. Yes, they got into the same cars at North Bay.

Q. There was great feeling in the west about their being detained four or five days and allowed to go and then spread the small-pox.

A. I did not hear of any cases. They were released on the direction of the Chairman of the Board of Health at Winnipeg.

Q. The Secretary of the Board writes me that there was a small-pox case at Brandon originating from the Ontario case?

A. I have heard of that at Brandon. There were a few cases at Regina, but they were amongst commercial travellers.

DISTRIBUTION OF LITERATURE.

By Mr. Wilson:

Q. Have you a regular statement to make to the Committee?

A. I was going to describe the work from the sea-board west.

The CHAIRMAN.—I think you had better go on and give all the facts you can to-day.

By Mr. Wilson:

Q. In your report you speak of the literature that you distribute ?

Q. 500 cases containing 6,000 packages of literature, 1,313,909 pieces? A. 1,344,725 pieces, I have it here.

Q. I may have made that mistake. Would you give us an idea of what kind of literature it is ?

A. Copies were laid before you last year.

Q. Have you no new ones since ?

A. Yes. Here is a new geography (geography produced).

Q. What does this cost ?

A. 7 cents a piece, I think.

Q. You circulate a lot of newspapers?

A. These are other samples (producing samples of other immigration literature pamphlets). That one, 'Prosperity follows settlement,' costs four cents, and the cartoons cost four cents each.

By the Chairman:

Q. The cartoons are very good.

We think it is in most cases. This little pamphlet, 'Where, and how and all about it,' costs a little over one cent each.

By Mr. Wilson:

Q. Never mind that. What newspapers were they that you circulated so many of ?

A. The names of the newspapers ?

2-501

Q. Yes, and what did they contain that is important ?

A. They were general write-ups of special locations. The names of the newspapers?

Q. Yes, and what they contain that is important, if we are to circulate the news-

papers ?

A. They are generally write-ups, of special locations, the different papers through the west write up their own particular district, and we very often purchase a number.

Q. Yes, well you know, I view that as money thrown away. And you have apparently 379,000 of them here.

A. Yes.

Q. And you have the whole of the newspaper at a large price for just a little bit they publish, for the little advertising matter you put into it?

A. It is generally a write-up of the whole district.

Q. Here is an English newspaper somebody sent me, I do not know, but I suppose you paid for that ad., did you not? Take it and look at it?

A. I do not see any of our agents' names mentioned here. I cannot tell whether

it is a Canadian advertisement or not.

Q. It is an English paper, you look at the front page and you will find it is a

London paper ?

- A. Yes, the *Daily Express*. I cannot say whether that is one of our advertisements or not. I can look up the records and see whether we are carrying on in the *Daily Express*. If we are, we will have a copy of it on file.
 - Q. What would that probably cost if it was paid for?

 A. I have not any idea, it would cost considerable.

Q. It would cost considerable, would it not?

A. I should say so.

By Mr. Roche (Marquette):

Q. You paid for a large number of the Harvest Number of the Winnipeg Free Press?

A. Yes.

Q. Have you a copy of it?

A. I have at the office, if you have not seen a copy, I have one there.

Q. Yes, I have. Were there not a large number of these withdrawn from general circulation?

A. There were a few, at first there were a few errors, and they were withdrawn,

but that issue was only a very small one.

Q. I understand that the issue contained many things rather damaging to our country, particularly to that frost we had last September. I have seen a sample copy of it and I understand that some intending immigrants from the United States have been deterred from coming to our country after reading that, so that a good many copies that had been issued had to be withdrawn on that account.

A. It was not that. It was that some figures with reference to statistics of crops in previous years were wrong. I will bring you a copy, if you would like to see it.

By Mr. Wilson:

Q. Will you find out whether you paid for this advertisement or not?

A. What is the date of that paper?

Q. I think it was sent me from England, by my friend Preston probably, and was dated April 14, 1904.

A. The Daily Express?

Q. I guess so, yes Daily, and it is on the seventh page.

By Mr. Stephens:

Q. When you advertise in the newspaper some one writes up the district as I understand?

A. That is very often the case, we usually put a small add, as a usual thing. You will find in last year's report a list of advertisements we are carrying in the United States papers.

By Mr. . Wilson:

Q. Well, I think in the United States you have not much need to advertise, for the land companies are so active that they do a very large part of the advertising. I am under the impression that the land agents do a lot of the 'working up,' and divide up with our agents on the commission. I will make a statement to the House in reference to that later I expect, and from an agent of your own too.

A. Well, they might.

Q. Well, then you have the press reporters, what arrangement had you with them?

A. Which press reporters?

Q. The English press reporters.

- A. They came out from the old country to write up Canada.
- Q. Who paid their expenses?

 A. We paid their expenses out.

Q. Whatever they were ?

- A. We had a special rate on the steamers and we got them free transportation over the Canadian roads.
 - Q. And entertained them on the way?

A. Paid their expenses.

- Q. What had you to do with the Scotch curlers, that is a new kind of immigration
- A. I think the only action we took in reference to that was we had one of our men accompany them.

Q. Should you find out what that cost?

A. Yes. Mr. Thompson of Virden accompanied them.

By Mr. Roche (Marquette):

- Q. Did you have reports from those farm delegates who were sent across to the old country?
- A. Yes, we asked for reports from all of them, and some of them we got reports from; but you know what farmers are, and some others we cannot get reports from.

By Mr. Wilson :

Q. What about the payment of the usual commission to steamship agents now, have you made any change?

A. Some of the agents get seven shillings and the others twelve shillings, there

are a few of the agents who get twelve shillings.

- Q. I must have misunderstood Mr. Smart, the Deputy Minister, when talking to him the other day then. I understood him to say they had changed all that lately Will you kindly get that information for us, if you havn't it with you?
 - A. I think I have it here, but I have not a copy for filing with the Committee.

Q. You can get that easily enough?

A. I will bring it down. What is it you are wanting ?

Q. I want to know whether you are still paying the extra five shillings to some agents?

Q. Yes, we are to a certain number of them.

Q. Just get me the particulars about that, what commissions you are paying to steamship agents that are also your own agents. There is a difference whether they are just steamship agents, or whether they are steamship agents and also immigration agents as well?

A. Where they distribute our advertising matter and advertise Canada particu-

larly we pay them an extra commission.

Q. How much ?

A. Five shillings more, they get twelve shillings instead of seven.

Q. Just bring down a statement, please, and how many of them you have? Do you pay anything to the steamship companies themselves as a bonus ?

A. No.

Q. That is ended?

EUROPEAN AGENCIES AND ALLOWANCES.

Q. Perhaps you will tell us how many agents you have in Ireland on salary, and how many on commission ?

A. In Ireland?

Q. Yes. A. We have two paid agents, one at Belfast, Mr. Kelly, and at Dublin, Mr. John Webster.

Q. Last year you had only one ?

A. There have been some changes made last year, I think there was only one last year after Mr. Devlin's resignation.

Q. How many have you on commission?

- A. We have one on commission, that is every steamship agent who is an immigration agent of the Canadian government, provided he sends out farm labourers, farmers and servants.
- Q. Mr. Smart made a definite statement last year about the number you had. I could give you a statement from his evidence, he said there was a hundred in Ireland alone, and in England you have them also. How many salaried agents have you in England do you know ?

A. We have one in Preston's office in London, Mr. Murray, whose office is at Cardiff in Wales. Mr. Jury, who has an office at Liverpool and a gentleman in

Birmingham.

Q. How many is that ?

A. That would be four, would it not ?

Q. Is that all you have in England, four salaried agents ?

A. That is all.

Q. How many on commission ?

A. Every steamship agent who sends the class of immigrant we require, that is, every steamship agent of the C.P.R., the Allan or the Dominion line who sends out farmers, farm labourers or domestic servants receive a government commission.

Q. You must have a record of them ?

A. We can tell you the number last year and the amount of commission paid.

Q. You can tell us the number, you have quite a number of agents ? A. It is a matter of adding the number of agents together, yes, sir.

- Q. Well, you had better give us that, because Mr. Smart said last year there were 500 on commission?
- A. I suppose there are a great many more than that—all these steamship companies' agents.
- Q. Mr. Smart favoured last year bringing not only farmers, but anybody who is an active strong person willing to go on the farm ?

Q. Do you pay a commission to agents on that class of men still?

A. If the man declares at the port of entry that he is intending to become a farmer.

By Mr. Wilson:

Q. What about the lectures in England-these people that are lecturing for you ?

A. Yes.

Q. What kind of a success are they making of that ?

A. I think, very well. The farm delegates that were over last year, some of them were very fair speakers.

Q. Do you know anything about Mr. Smart's evidence on that point last year, or the year before, in 1902, or Mr. Preston when he was here?

A. No.

Q. I remember Mr. Preston said there would be only a few children and perhaps ten or twelve grown persons at the lectures, and he did not think much of it. Mr. Smart said he did not think much of it. Mr. Preston has apparently changed his opinion this year?

A. They probably have better lecturers.

- Q. It shows how unreliable the reports are.

 A. In immigration work you have to change your mode of getting immigrants.
- Q. It is not a change if you have some line of business which one year you report as no good, and another year that it is all right?

A. Perhaps they have better lecturers.

- Q. In England, do salaried agents keep a diary of what they do, as they do in the United States?
 - A. I have not been in England.

Q. You get the reports ?

- A. Only Mr. Preston's annual report.
- Q. Is that all you want ?

A. Yes.

Q. There are only four of them; they could give the information. ?

A. There are two in Ireland and one in Scotland.

- Q. You should get a diary from the agents in Europe as well as in the United States?
- A. We handle the United States agents from this office, and the English office looks after the agents in Great Britain.

Q. I know. All you need to say is that you want a weekly report ?

A. They all report to Mr. Preston.

Q. Why not get his report forwarded here ?

A. I imagine I probably have some of them.

Q. Will you see if you have, before the next meeting? I want to see if they have diaries to note what they are doing from week to week?

A. You want to get weekly reports by the agents in Great Britain.

The CHAIRMAN.—It seems to me that their pay has to do with the diaries.

By Mr. Wilson:

Q. Not the salaried agents ?

A. Not the salaried agents.

Q. The trouble is that we sometimes think the salaried agent does his share of the work as well as the commission agents, and the commission agents get all the pay. We pay the salary, and again besides that we pay the commission on the same immigrant. That is what is said—of course I do not know. What commission do you pay on the people who come from the continent?

A. We pay £1 per head for those that come from the continent.

Q. For men, women and children alike ?

A. Yes.

Q. Irrespective of ages ?

A. Yes.

Q. And for those who come from Great Britain and Ireland ?

A. We pay according to the age.

Q. Over 12 ?

A. Over 14, I think it is.

Q. Over 12, I think Mr. Smart said ?

A. Over 12 or 14, the full amount; under half that amount.

By Mr. Roche:

Q. That £1 a head is paid to the booking agent on the continent ?

A. No, we have a contract with the North Atlantic Trading Company, big shipping people. A good many countries do not allow us to do any advertising. We have an arrangement for them to do our immigration work.

Q. Do you pay a larger sum by reason of keener competition or a superior quality

of immigrant?

A. The difficulty of getting them. For instance, in the United States, we only pay \$3 per man, \$2 per woman and \$1 per child.

By Mr. Wilson:

- Q. These commission agents in the United States, are the salaries about the same as before?
 - A. We have reduced the commission in some cases.

Q. For what reason?

A. We thought they were making more than they should.

Q. That is, working harder than the others.

A. No, probably in a better territory.

Q. I see that Mr. Ritchie in 1901 made nearly \$4,500 as commissions on immigrants?

A. Yes.

Q. How do you account for that ?

A. I suppose he was in a good territory.

Q. Do you think he could do that much work alone ?

A. Yes.

By Mr. Stephens:

Q. Could he not have some one under him that he paid, helping him ?

A. He did, I know, he had his brothers working for him.

By Mr. Wilson:

Q. Do you allow them to do that?

A. We don't care as long as we get the people.

Q. I thought you had something to do with the appointment ?

- A. We pay them. If they get others to rustle round the country for them we have no objection.
- Q. I see that Mr. Smith reports arrivals at Winnipeg, 115,000. Do you count them all immigrants?

A. No.

Q. How do you divide them up ?

A. A great many go through there from Ontario and the eastern provinces.

- Q. Well, how does he arrive at what are immigrants? What does he claim for Winnipeg?
 - A. In the way of immigrants?

A. Yes

A. Those coming by Atlantic ports and the United States.

Q. How many does he claim ?

- A. I cannot say that. The report would show it.
- Q. There are 17,000 harvesters came up there?

A. Yes, they would not be included at all.

Q. I see he adds in addition to these that he has figures of another 25 per cent?

A. Those are people who drive across the line and get into Canada.

Q. How does he arrive at that ?

A. I do not know, I have no idea.

Q. We have not either. We want to arrive at that. Will you get that information?

A. Yes.

Q. I think he says in that report also that 20 per cent of these were Canadians that arrived?

A. Yes, a great many Canadians,

Q. A few of them from the United States?

A. A great many Canadians returning from the United States. They are what we call returned Canadians. For instance, when I was up there the other day, one of our agents had a party from Minnesota. They were French Canadians, originally from Assomption, Quebec and all returning to Canada, representing 1000 families.

Q. You deported a few from Winnipeg ?

A. Yes.

Q. Do you know how many ?

A. No, not from memory.

Q. Do you know what it was for?

A. No. not from memory, no.

Q. Perhaps you will get that for us?,

A. They were not desirable, or they would not have been deported.

Q. There must have been some reason, and I do think it is given in the report. I think we should know whether it is because they are paupers or were diseased?

A. They must have been diseased; we cannot deport men because they are

Q. Perhaps you will tell us what the diseases were. The American delegates that came to visit our country, who paid their expenses?

A. Which ones, sir.

Q. Well, I do not know, they are reported to be 1,072. You will find it on page 102 of the report?

A. They pay their own expenses—you mean the farm delegates coming from the different states?

Q. I presume so.

A. We furnish them with free transportation.

Q. I suppose the railways gave the transportation free and you just gave it to them?

A. These delegates represented a certain number of farmers in the district in which they lived.

Q. Were these editors that visited the west, the same as came out from England ?

A. They were the ones.

Q. You paid their expenses and furnished them with free transportation ?

A. Free transportation, I may say that this year we are bringing out 200 editors and their wives and friends from Indiana.

Q. You are liberal people, we know; money is no object ?

A. It is the best kind of advertisement.

Q. You had better adopt it in the other country ?

A. We cannot always adopt it.

By Mr. Ingram:

Q. These delegates from the old country, was their expense account limited ?

A. Of course, every expense account is limited.

Q. Is that the understanding?

A. Yes, always, everybody that works for the government as far as my department is concerned, their expenses are limited. They are paid \$150 for three months and their actual travelling expenses. I suppose it would average about \$500.

By Mr. Stephens:

Q. Including the salary ?

A. Yes, that would be the total cost of each one,

By Mr. Wilson:

Q. You are remarkably liberal; I see you allowed as much as \$10 for tips?

A. That would be on the steamer, I suppose.

Q. Have you any knowledge of the Barr colony, whether there are many of them left there ?

A. There are about 300 in the colony.

- Q. That is about all that are left out of the large number that came out. Where are the others ?
 - A. The balance of them are scattered around in the west.

Q. Some of them went back to the old country ?

A. Very few of them.

- Q. I see Mr. Preston's postage account was \$10,041; what check have you on that ?
 - A. He had his vouchers.

Q. What do the vouchers consist of ?

A. The receipts from the Post Office Department. They are in the department.

Q. That is the evidence that he bought those stamps?

Q. That is all I suppose you could get ?

A. Yes.

Q. And you pay the income tax, I see ?

A. Yes.

Q. Why should you do that ?

- A. I do not know I am sure, it has been going on, I suppose, and we allowed it in
 - Q. And I see you pay some of their insurance when they travel?

A. That has been done away with.

Q. When ?

A. This year.

Q. I think the Deputy Minister was paid according to the last report ?

A. I am speaking now of this year.

Q. Have you done away with the allowance to buy satchels and coats and such things for these officials ?

A. I do not think there has been any coats?

Q. I think I can show you where there have been coats bought ?

A. Not since I have been in the department.

Q. Perhaps not. And you say you have got rid of allowing them to pay anything in the way of accident insurance ?

A. We do not allow that.

Q. I think if you will go a step further and tell anybody that is getting a good income that they will have to pay their own income tax it will be better. Of course, I understand you do not have full power to do that, but you can recommend it ?

A. Very well.

By Mr. Stephens:

- Q. I suppose that is taken into consideration as a portion of their salary?
- A. Certainly.
- Q. A good many of them understood that they would receive these allowances in addition to their salaries?
 - A. And some of them may be receiving low salaries.

- Q. That is not the case with those we are talking about. Some of them who are subordinates are receiving a higher salary altogether than the man occupying your position, for instance?
 - A. They have yet.
 - Q. Have they ?
 - A. Yes.
 - Q. That is very unfortunate, I think ?
 - A. That is the point, I say some of the salaries are too low.

By Mr. Ingram :

- Q. What is the reason of that ?
- A. I do not know, I imagine living is pretty expensive in a place like London.
- Q. Are you supposed to pay living expenses, too ?
- A. Oh, no.
- Q. You do pay some of it all the same ?
- A. I would not say that was the explanation, but that was the way I would look at it. I know that living in Winnipeg, for instance, is very expensive just now.

By Mr. Henderson:

- Q. Not more so than here, what makes it expensive?
- A. It is so full of people.
- Q. What do you pay more for ?
- A. For everything, all things are high. Winnipeg is a very expensive place to live just now.

By Mr. Wilson:

- Q. Are you pretty well acquainted with what a man's duties would be, a man like Mr. Jury?
 - Q. Would you tell us what his duties are ?
 - A. He would take charge of the office in Liverpool.
 - Q. Would he be there the most of the time ?
- A. A portion of it. During certain seasons of the year he holds meetings throughout the country. Mr. Preston does the advertising, but there a certain number of letters for that district would be referred to him, and he would have those letters to answer.
 - Q. How large is his district, do you know ?
 - A. I do not know personally. Since I have been in the department—
 - Q. The distance would not be very extensive ?
 - A. Oh, quite a distance, you know it is 212 miles from London to Liverpool.
 - Q. But he does not take in London, does he ?
 - A. No, but supposing he took in half the distance.
- Q. Can you give us any idea of what proportion of time he spent in the office, or anything about it?
 - A. No.
- Q. You can see now the importance of having his diary, because if you had it you could answer the question right off hand almost. The reason I ask is I see an item, 'Board and lodging, \$176; railway and street car fare, \$360,' which seems to be quite considerable for a man whose attention you would think would be principally confined to Liverpool?
 - A. At certain seasons of the year, of course, he goes out and lectures.
 - Q. Well, that would be only a small portion of the year ?
- A. During the winter season; I should think they would start in November, and continue for November, December, January, February and March. I suppose for four or five months.
 - Q. Well, is he allowed anything for living expenses when he is at home?
 - A. I could not say that off hand, but I can get the information.

- Q. Are the agents of the United States allowed anything ?
- A. Some of them are and some of them are not.
- Q. When they are at home ?
- A. Yes.
- Q. Would you give us a list of them, please, that is a new departure if I remember right. Give us a list of the whole or in part. That is a new departure if that is allowed, or else I am mistaken?

A. We allowed living expenses at headquarters.

- Q. I think the Minister has said in the House more than once that is not the case. I see that the fitting of the office in London, while we pay a big rent, we have to do all the fitting?
 - A. All the office fittings.
- Q. And there is a sum here for fittings and heating apparatus, \$188.65. Now, why should we have to pay that?

A. I cannot say, I am sure.

- Q. You would think if you rented an office wherever it is, that they would certainly make that fit to occupy. You will find the statement of expenses I referred to at L 18 Auditor General's report. There are the items, 'Office Specialty Manufacturing Company fixtures, \$458; heating apparatus, \$188.65.' I can easily understand that they might want brass fittings. Then there is another matter that is still more extraordinary and that is an item of \$197 for preparing the lease. It does seem to me that in this country, if a man wants to lease a property he has to pay for the lease. Isn't that the case?
 - A. I cannot say.

Mr. INGRAM.—What is the rent per year ?

Mr. Wilson.—I have forgotten, it is a large amount.

Q. Do you know the rent of the London office ?

A. I think we pay about \$5,000 a year.

Q. Is it not more ?

A. It is something like that.

Q. I think it is about \$6,000, if I remember rightly?

A. It is something around that.

By Mr. Ingram:

Q. Can you give us any idea what it is ?

A. I have not seen it myself.

By Mr. Rosamond:

- Q. What part of London is it in ?
- A. Charing Cross.
- Q. Near the C.P.R. offices ?
- A. About two minutes' walk from them.

By Mr. Ingram:

- Q. Will you take a note as to the rent, the time the lease is drawn up for, and the amount of the lease?
 - A. What is that you want ?
 - Q. The amount of rent according to the lease, and the length of the term ?
 - A. That is for London ?
 - Q. Yes—the space—
 - A. And the term of the lease ?
- Q. Yes. Then, there are, as I understand it, a large number of products exhibited there?
 - A. Yes.
 - Q. Will you give us some idea what products are ?
 - A. They are just the general products of Canada.

Q. There will be no harm to give us somewhat in detail what they are, because we have another institution in England that we pay for, the same kind of products?

A. What is that ?

Q. The Imperial Institute ?

A. That is away up out of the city.

Q. I know, but they have moved down. What I want to find out is-

A. What they have in the Imperial Institute is principally manufactures, min erals and things of that kind.

Q. We have another office that we are paying \$500 for ?

A. That is a sub-office; that is away down in the city. I suppose that is six niles from the other.

Q. I would like to get that.

A: That is what they consist of, agricultural products.

Mr. Wilson.—Get us reasons why we had to pay for drawing that lease.

Mr. Rosamond.—I think, Mr. Wilson, it is usually the case that a person who buys a property, pays for it.

WITNESS .- I do not know what the law is.

By Mr. Wilson:

Q. Mr. Preston is very economical about newspapers—I don't know whether he s to be commended on that. For Canadian newspapers I see \$1.50 was paid, and for British newspapers, \$3.65 ?

A. The Canadian newspapers are paid for here. He does not pay for them there.

Q. Then that does not give us any idea of what he spends in that way at all ?

A. They do not get very many papers there.

Q. The Liverpool office are very desirous of reading newspapers. I see it costs them for British newspapers, \$40,86, for Canadian newspapers, \$42,74. Is it different in the one office from the other ?

A. I do not know, I suppose, they do not send their account out here. Some of them, to save the exchange, send their accounts here to be paid. That is the differ-

ence.

Q. You don't have any system. Everybody does as he likes ?

A. If an agent asks for a certain newspaper he gets it.

Q. You should send for it, and it should be the same with all, is not that right?

A There is no reason why they should

Q. There should be some regular system of keeping government offices. It is not as if you were paying it yourself and putting the amount down in your memorandum book. There should be some system for a government so that we could trace it. In the Liverpool office we paid for the installing of electric lights, \$61.38. It seems that we take things just as they are, no matter what it costs, we accept it ?

A. Some agents have the accounts come through to us to save the bank charge on a draft; they send the account here and we pay it, the others pay them direct.

Q. How often do you allow your agents to come here at the expense of the government, to travel in Canada?

A. Which one ?

Q. Your immigration agents ?

A. Where from ?

Q. From Europe, Great Britain and Ireland ?

A. Occasionally, when we feel that a man has been there long enough and should come out to see Canada and makes a request which we think is a reasonable one, we allow him to come out.

Q. How long would you consider reasonable ?

A. Here is a case in point, a man who has been there a year, he is coming out this year.

Q. Only one year ? A. About 18 months.

Q. I suppose he was not very well informed when he went?

A. He was a very well informed man.

Q. Who is he?

A. Mr. Walker, of Glasgow.

Q. How long has he been there?

A. About 18 months now, I suppose.

Q. You pay all the expenses. I see Mr. Jury has been here? A. He has not been out since I have been in the department.

Q. Of course, you have not been here very long. While in Canada, his board and lodging cost \$60, fares, \$112.70; livery and cab hire, \$16.50; small items, \$24.45. He was not very expensive, only a total of \$264.91. But Jury's Liverpool office cost us \$234.40. Then Mr. Griffith, he is your agent in Wales?

A. He was.

- Q. Is he not now ?
- A. He is secretary to the High Commissioner now.

Q. I see he got an advance?

A. That was in connection, I think, with the colonists from Patagonia.

Q. He got an advance of \$219, and again another of \$150, making \$369. I do not find any account of what had become of them, and why he should get two advances without the first being settled. Can you tell?

A. No.

Q. Do you know anything about it ?

A. Yes, the advance to Mr. Griffith.

Q. Yes. You will find it on page L 19 of the Auditor General's report. Here is a Mr. Adamson. I do not know anything about him. Is he one of your regular agents?

A. Robert Adamson, yes.

Q. He is one of your regular agents at \$1,200 a year?

Q. I see you have allowed him for board and lodging, \$689.96 ?

A. While in England?

Q. How long was he in England?

A. I do not know, I am sure.

Q. I think that is something we should know ?

A. His account will show the dates.

Q. You can get that in your office ?

A. From the accountant's branch.

Q. I think we should know whether we have to pay for it ?

- A. Mr. Adamson is a very good man; he brings out some of the finest immigrants we get.
 - Q. It may be reasonable when we get the explanations, but it does not look so ?

A. His account will show the dates.

Q. If you took all the accounts and took the details and looked over every voucher, you would have quite a job on your hands ?

A. I would not like to tackle it.

By the Chairman:

Q. This man's son was asphyxiated with gas ?

A. Yes, died while he was on the water. What page is his account on?

Mr. Wilson.—Page L 19.

- Q I see you have another man in London; I do not know how long he has been there, but there is an item \$256 for board and lodging ?
 - A. Who was that?
 - Q. Thomas Duncan ?
 - A. London is his headquarters.

Q. Here is Mr. Bengough, what was he doing there travelling ?

A. I could not say, that was before my time.

- Q. I notice reported in the last Auditor General's report, J. W. Bengough, Liverpool to Montreal, \$30, at L 20 you will find that. That is just the fare from Liverpool to Montreal. I do not know why we should pay that. What was he doing, can you tell us?
 - A. I could not say.

Q. Can you find out ?

A. What is the question ?

Q. I want to know what Mr. Bengough was doing for us that we paid his fare from Montreal to Liverpool. You will kindly find out what he was doing for us?

A. He is not doing anything for us now, but I will find out. It may have been

some old standing account.

Q. I see we are still giving our usual grant to the Lake St. John railway. Can you tell us how many immigrants the Lake St. John Repatriation Society brought into the country?

A. I can tell you what they reported.

Q. They got \$3,000 from you. And I want to know how many immigrants they brought in for the \$3,000 ?

A. That is the Quebec Repatriation Society.

Q. 'J. A. Smart, accident insurance, \$25.' And living allowance, \$10 per day. Was he allowed that while on steamship also?

A. I could not tell you.

- Q. I will not bother about enquiring into the details of that, you have abolished the payment of insurance?
- A. You were speaking about the rent was paid in London a few minutes ago. I see that the amount we paid was \$5,860.44, or £1,200 4s.

Q. You paid the Militia Department on account of tents \$40,000 ?

A. Yes.

Q. Do you own those tents now ?

A. What we have left of them.

Q. That was a large amount to pay ?

A. Yes. We have some hundreds of them yet.

Q. Where are they used ?

A. We keep them stored at different points along the line in the west, in charge of the agents there, and if the town or village gets congested with people coming in, who cannot get accommodation, they get a tent.

Q. Were these damaged tents you got from the Militia Department ?

A. I do not know that, they were purchased from the Militia Department.

Q. Well, I guess if you get us the information I have asked for by the next meeting, you will keep us going for a couple of hours?

SETTLEMENT OF IMMIGRANTS UPON HOMESTEADS.

By Mr. Roche (Marquette):

Q. Were there many of the Barr colonists who went in there who were not satisfied and left?

A. They got dissatisfied with Mr. Barr, their leader, and a great many of them did not go into the colony, but settled east of it, around Battleford, in among the Canadians, Americans and other nationalities, and they are doing exceedingly well.

Q. They have taken up land?

A. Yes, and are doing very well. I cannot say as much for the colonists who are settled in the colony, because the report I received when I was in Winnipeg leads me to believe that they have not more than three acres apiece under cultivation.

By the Chairman:

- Q. Is it a fact that a number of them were in the immigration offices at Battle-ford last winter?
- A. I think we sheltered at Battleford six or eight families, they had been improvident in not getting up suitable houses, and we did not want to see them suffer.

By Mr. Wilson:

Q. You might tell us whether the Doukhobors have repaid the government the loan which was made to them ?

A. Very well.

By Mr. Douglas :

- Q. There are many reports, I understand, that some of these men who were at Battleford would not work? They would not stay in any situation more than a few days?
 - A. The Barr colonists ?

Q. Yes.

(No answer).

By Mr. Wilson:

Q. You can go to any town in Canada and find people who will not work.

By Mr. Roche (Marquette):

- Q. How do you account for their not succeeding as well in the colony as those who have settled elsewhere?
 - A. Because they are not mixed up with other nationalities,

Q. You are opposed then to colonies ?

- A. I think they are better off when mixed with other nationalities.

 Q. When they are mixed up with other nationalities they do all right?
- A. It is quite natural that they should want to be together. When a foreigner comes into this country he naturally wants to go where the people can speak his own tongue. I imagine if one of us went over to Germany and could not speak the German language we would like to get somewhere where we could meet people who spoke
 - Q. Who are your officers ? You have a great many ?

A. Would you like a list of them ?

Q. You have a man named Harvey, have you ?

A. Yes, he is an interpreter.

Q. Of what nationality?

A. I imagine he is a German by birth. He speaks a good many languages.

By Mr. Ingram:

Q. What steps do you take to prevent them locating together? People of one nationality?

A. We do not take any.

Q. So that they can go and locate side by side if they want to ?

A. Yes.

our language.

Q. Without any interference at all ?

A. There is no reserve at all, although we have done so, by getting the foreigners to take the poorer class of land. We can put a Galician upon a class of land that the English people would not go on. If a Galician gets a homestead, with anywhere from 40 to 50 acres of arable land, he is perfectly satisfied. Take east of Winnipeg, that country which we look upon as useless, they are turning it into a garden.

Q. Are Mr. Harvey's duties confined to the province of Manitoba ?

A. No, all our officers in the west have their work, the greater portion of it probably in the Territories, because there are no homesteads left in Manitoba now.

By Mr. Ross:

- Q. How is the Mormon settlement proceeding ?
- A. Very well, indeed, they are a very prosperous community.
- Q. Do they follow their religion there ?
- A. Polygamy?
- Q. Yes.
- A. Not to our knowledge, we have never been able to find any. They are a very prosperous community, the Mormons are born colonizers.
 - Q. Are they hived?
 - A. They are scattered over a great big territory.

By Mr. Wilson:

- Q. What particular ideas have they with regard to religion, any particular form ?
- A. Latter Day Saints.

By Mr. Roche:

- Q. What use do you make of interpreters—to accompany immigrants when going in to settle ?
- A. They do all that and do all the translations from the large foreign correspondence. They also look after procuring work for the foreigners, etc.
 - Q. They are not expected to accompany the Liberal candidates and interpret for hem?
 - A. No, I do not know, I am sure.
- Q. I think Mr. Harvey spends a great deal of his time in the constituency of Marquette with the Liberal candidate and—

By Mr. Henderson:

- Q. Is he paid the same rate while doing that kind of work?
- A. He gets a certain salary per year.

By Mr. Ingram:

- Q. Do you approve of that kind of thing ?
- A. I do not know that he does it.
- Q. Dr. Roche has said that he does that-
- Mr. ROCHE.—I know that he does it.

By Mr. Ingram :

- Q. Do we understand that you approve of that kind of thing ?
- A. He receives a salary of \$1,000.
- Q. I want to know, do you approve of Mr. Harvey going around with the Liberal candidate in Marquette?
 - A. Certainly not.
- Q. You disapprove of that conduct. Wouldn't it be well to notify Mr. Harvey that he has been reported as taking part in politics?
 - A. And do what ?
 - Q. And tell him to cease?
- A. Yes, if I get a letter making any complaint I will always investigate it. Every time I get a complaint against an official it is investigated.

By Mr. Roche:

- Q. It is notorious that he has been passing a good portion of this winter in that kind of work. The Galicians say that he canvassed all of them for their support openly, and in their quaint manner they say that he talks to them like a man spreading butter on bread very thickly.
 - A. When we get complaints we always investigate them.

2-51

Q. He has spent a great deal of his time not only with the candidate, but with the organizer. The Galicians are settled in the Riding Mountains there and he openly canvassed them for the support of the government, in fact, I am afraid, uses rather more than legitimate means too—

The CHAIRMAN.—Get a case, doctor.

Mr. Gilmour.—I think Dr. Roche has made a definite complaint, and it should be considered as that.

The WITNESS.—Any complaint that is made to me will be investigated ..

By Mr. Roche:

Q. Mr. Harvey has accompanied the Liberal candidate, the Liberal organizer and another agent in the past month in the colony north of Shoal lake, canvassing on behalf of the Liberal candidate and distributing literature on his behalf. I make the charge openly.

A. I will write to him and ask for his explanation.

By Mr. Henderson:

Q. If you find that he is doing that will you continue him in your employment? A. I have nothing to do wth his dismissal.

By Mr. Wilson:

- Q. Will you report him to the Minister as being unfit for the position ?
- A. I will report him to the Minister.
- Q. As being unfit for the postion?
- A. He is a pretty good man, he is a good interpreter. I don't think it is right for officials of that kind to interfere. If they attend to their immigration work thoroughly they will have enough to keep them going.

By Mr. Henderson:

- Q. What steps do you take to ascertain the number of people that go from the older provinces over the Canadian Pacific Railway to Manitoba? Have you any means of keeping track of the number of people that pass into the country from the older provinces?
 - A. None.
 - Q. None whatever ?
 - A. None.

By Mr. Maclaren (Huntingdon):

- Q. Are they not included in the total immigration?
- A. The Commissioner collects figures at Winnipeg. A great many go in other ways. The railway company could tell the number of second class tickets issued; they would be able to find it out.

By Mr. Henderson:

- Q. The number that travel back and forth, they keep track, probably?
- A. On the main line of the C.P.R., yes.
- Q. That is the only means that you have ?
- A. Yes. If we wanted any definite information as to the number of second class tickets issued we could find it out from the railway. I know personally that a very large number of these harvest hands that go out in the fall stay there. They get out at a very cheap rate, \$10. I could get a statement from the C.P.R. giving the number of tickets issued and the number taken up in return.

By Mr. Ingram:

- Q. Are they counted as immigrants going to the country ?
- A. Yes, but not in our return. They are not immigrants, they go from one part of the country to another.

Q. They would not be looked upon as immigrants coming into Canada ? A. No.

By Mr. Wilson:

Q. When you hear people speaking of homestead entries, they say there are 31,000, as a proof of the great immigration to that country?

A. That shows you the number of Canadians that are going in, which are included

in that.

By Mr. Henderson:

Q. I suppose 10,000 of those are made up of people going from the older provinces—

By Mr. Wilson:

Q. There are between 5,000 and 6,000 from the older provinces in those that were entered last year, so that the report would be very misleading.

By Mr. Rosamond:

Q. Have you any record of the homestead entries from the United States ?

A. Yes, and the states they came from.

Q. As to whether they were originally Canadians ?

A. Yes, the returned Canadians.

By Mr. Wilson:

Q. There are 899 returned here as Canadians returned from the United States. I see in the regular table for homestead entries there are 1,942 Americans. If you come to make up the states from which they came they amount to 11,481. How is that?

A. It dos not tally ?

Q. No, it does not tally, it is nearly 900 out. This gives the states, you see.

A. I suppose these are reported from agents. They don't call returned Canadians Americans.

Q. No, I should think not.

A. Does that put in the returned Canadians. (Referring to Immigration report.)

Mr. Wilson.—Yes, that just makes the number.

The Committee then adjourned.

House of Commons, Committee Room 34, June 17th, 1904.

signation mot this day of

The Select Standing Committee on Agriculture and Colonization met this day at 10 o'clock a.m., the Chairman, Mr. Douglas, presiding.

The CHAIRMAN.—I suppose, Mr. Scott had better continue his evidence. There were a number of points, Mr. Wilson, upon which you questioned him at the last meeting.

Mr. Scott.—There were a number of questions asked at the last meeting. For instance, the list of sub-agents in the United States.

By Mr. Wilson:

Q. And the commission paid to them?

A. That is a different question.

2-511

Q. But it is there, is it not ?

A. I have got it. I now produce a list of sub-agents in the United States.

By Mr. Ross (Ontario):

Q. How many sub-agents are there ?

A. They are constantly changing them. At present I think there are—

By Mr. Clancy:

Q. About 100 ?

A. No, 72 at the present time. Another question asked was as to the commissions paid to sub-agents and the number of settlers sent in.

By Mr. Wilson:

Q. Have you got them there in detail ?

A. Yes, sir, and the number of men, women and children.

Q. Well, I would like to look at it?

A. It gives their names and all. I also produce a statement showing the amounts paid to commission agents in the United States and the date of each payment, and the total number of immigrants represented for the fiscal year 1902-03. Mr. Wilson asked to have the names read and the names of the people. There is A. E. Alexander, state of Pennsylvania, two males, two females—

By Mr. Clancy:

Q. If you will pardon me, Mr. Scott, I think all the Committee would want is just the substance of these statements. They may form part of the report afterwards.

By Mr. Ross (Victoria):

Q. What is the total of the immigrants you have there?

A. Six thousand and some odd.

By Mr. Wilson:

Q. Can you tell me whether Mr. J. H. M. Parker is still in the service or was he dismissed, or when did he retire?

A. He was dismissed in December last year.

Q. For what reason ?

A. For the reason, in the first place, that he was claiming commissions on people who were not actual settlers, and his correspondence with the department was of such a, you may say, saucy nature, that I decided to let him off.

By Mr. Wright:

Q. Where was he located ?

A. At Duluth.

By Mr. Wilson:

Q. Have you got the name of that agent I asked for in Indianapolis?

A. Indianapolis, yes, sir.

Q. Just tell us who has been the agent for the last five years ?

Q. You just asked the name ?

Q. I asked the name of the man who had been there for the last five years?

A. You asked the name of the agent at Indianapolis.

Q. Also his salary, the number he sent in, and how long he had been there ?

A. Well, then I missed it.

Q. How long has he been there, this man?

A. Since 1902, I think.

Q. John C. Duncan. Is that the man, do you know whether he has been there any longer?

A. I could not say, that is the memorandum I received from the record room.

Q. Well, I would like to have the information. I would like to have the name of the man who has been there for the past five or six years? I would like to have the first man?

A. You would like a full statement of that particular office ?

Q. Yes. 'John C. Duncan, salary, \$1,200.' The record here is very different from the one I saw, if this is the man.

The CHAIRMAN.—There is another Duncan, you know, in Manitoba.

By Mr. Wilson:

Q. I don't know the man's name. This is the man at Indianapolis, is it ?

A. At Indianapolis, yes, sir.

Q. This is Indiana ?

A. Indianapolis is in Indiana. He is a state agent for Indiana with headquarters at Indianapolis.

Q. Well, I don't think that is the man. I would like you to look up and see

whether you can get the information I asked for ?

A. Another question asked was the number of farmers from England, the total number.

By Mr. Ross:

Q. During the year ?

A. This is during the fiscal year 1902-03. There were 5,253 English, 94 Welsh, 962 Scotch and 382 Irish. These I might say are details only to first July of last year. Men, women and children of different occupations were not then classified, but since the first of the present fiscal year we classify the women and children belonging to farmers in the agricultural classes. I think that is the truer way of putting the information.

By Mr. Wilson:

Q. I see that the question I asked was the name of the agent at Indianapolis for the last five years, also his salary, and how many he has sent in ?

A. I did not so understand it, but I will bring you that information.

By Mr. Clancy:

Q. Before you leave that question, Mr. Scott, what is the object of the change in classification to which you referred?

A. Well, I think it will give a truer index of the class of people coming in. For instance, I think if a farmer is a married man his wife and his children should naturally be classed as agriculturists.

Q. We will suppose a case now, that a man came out here with ten children, and that five of those were boys and five girls?

A. Yes.

Q. Would you class those girls as the agricultural classes ?

A. Yes, if they were accompanied by their father.

Q. Now, you have no evidence that they are to become agriculturists here?

A. No, sir.

Q. Well, is it a likely thing—

A. We will simply—

Q. That a girl would become an agriculturist ?

A. Well, a good many of them do. It is a very difficult question to answer.

Q. Well, I am only asking the question that we may have accurate statistics, because these figures form part of the statistics of the country. Now, the women whe come out here may never go to work on the farm as well as many of the young men.

A. I am simply giving you the statement that when a man comes to the port of landing, and he is a married man with a wife and children, and he states that he is going on a farm, we class him as an agriculturist, and we class his wife and children as agriculturists belonging to the same class.

Q. On what authority do you state that males are drawn from the agricultural

classes in England, for instance?

A. A man's statement at the port of entry.

Q. Made by whom?

A. By the man himself.

Q. Have you any means of verifying that?
A. None whatever, except the man's word.

Q. Well, do you assist any other but the agricultural classes to this country ?

A. We do not assist any.

Q. Well, you assist the steamship companies or their agents ?

A. We pay the steamship agents, not the steamship companies. There are subagents through Great Britain.

Q. Do you pay for all classes ?

A. Only for agriculturists, agricultural laborers and domestic servants.

Q. Well, there would be some object in the steamship agents having those classified as belonging to the agricultural classes?

A. He does not classify them all. The man answers the question at the port of landing and states whether he is an agriculturist or not.

Q. He is told what to say, I suppose ?

A. I do not think so, I should not think he would be.

Q. Well, let us get to the bottom of this. We are only assisting a certain class of immigrants to come to this country?

A. We do not assist any.

Q. But we assist in an indirect sense ?

A. Yes. In the way of paying the agents commission to induce men-

Q. To come ?

A. Yes.

Q. The agent would have no object whatever in having any other class come, would he, because you would give him no assistance?

A. Well, I do not know. If he is a mechanic and when he comes to the port of landing says he is going to follow agricultural pursuits, we pay a commission.

Q. Only on his own word, that is what I am getting at ?

A. Yes, we have only to take a man's word for it.

Q. Now, I suppose in the first place the policy of the government is to assist only in an indirect way, and that is done by giving commissions to steamship agents for certain classes?

A. The policy of the government, I do not know what that is. I know the policy of the department of which I am the head, is to encourage agriculturists, agricultural labourers and domestic servants.

Q. Well, that I suppose would be the policy of the government. You have not got one policy for yourself and the other for the government?

A. Well, that is my instructions.

Q. Well, the steamship agents would take care, would they not, that every man in regard to whom they were trying to get a commission, would report himself as an agriculturist?

. Oh, I do not think the steamship companies or the steamship agents would ask a man to lie for five shillings or six shillings. I do not think a man would lie for record is so complete they have no possibility of doing it.

Q. Is that all the security you have ?

A. We have the man's word, that is all.

By Mr. Wright:

Q. Is the commission paid five shillings or seven shillings ?

A. Seven shillings for some, and twelve shillings for others.

By Mr. Clancy:

Q. Have you not found any case in your department where a man lied ?

A. Well, I have mentioned our sub-agents in the Uniated States. We found them trying to collect commissions on those who were not settlers, but our system of record is so complete they have no possibility of doing it.

Q. They did not state the truth to your department ?

A. No.

Q. Is it not possible the steamship agents would be equally open to the same thing?

A. Oh, I have no doubt they would be. They file claims, but we do not allow

them.

Q. Because you don't believe them ?

A. Because we find men whose names are on there that are not agriculturists.

Q. They are not agriculturists, and therefore only as far as you are able to detect it, have you been able to remedy the evil?

A. We detect them all right. We take a man's word at the port of landing. If

he says he is a farmer we allow it.

Q. You do not know whether he has served out on a farm?

A. It is not necessary for the agent to get his commission. If he says he is a farmer, or is going to be a farmer, the commission is allowed.

Q. You do not know whether he is going to be or not ?

A. Well, we cannot follow every man.

Q. Have you any means of telling how many of those who have reported themselves as farmers have gone into agricultural pursuits since they came here?

A. No.

Q. Then you could not tell as a matter of knowledge just how many of the agricultural classes in fact were brought here?

A. Yes, the question was asked.

Q. I mean other than what they say themselves ?

A. Other than what they say themselves, no.

Q. No knowledge other than what they say themselves. Is it not possible under the system that some might not have belonged to the agricultural classes, and might not follow agricultural pursuits after they came here?

A. Oh, anything is possible.

Q. So far as you have any means of detecting or following, that could happen?

A. A man might be a farmer to-day and go into the hardware business, or he might leave the farm and go into the grocery business. There is no means of stopping it.

Q. He may never have been on the farm in his life ?

A. He may have been a grocer or a mechanic in the old country, and come here to farm. We take a man's word for it.

Q. You have no means of testing whether that is true or not ?

A. Not after he leaves the port of landing.

Q. I suppose it would be unnecessary to comment on what that means ?

A. It would take a very large staff to keep track of every man who comes to this country.

By Mr. Ross (Ontario):

Q. Have there been large payments on account of this commission ?

A. No, sir. We only pay commissions on a very small proportion of the people who come to the country.

By Mr. Robinson:

- Q. Is it not a fact that a great many that do not intend to farm come here to take up farming ?
 - A. They have got to do it, because they cannot get anything else to do.

By Mr. Wilson:

Q. The farmers say they cannot get men in Ontario?

A. I am speaking only of the west. This year we placed lots of carpenters, stone masons and bricklayers. We placed them with farmers and placed them on railroad work. That is where they cannot follow the pursuits they came to pursue. They adapt themselves to the situation. A man is not going to loaf around and do no work if he can get something to do.

By Mr. Stephens:

Q. How soon are the agents in the old country paid commission on the people that leave there?

A. It takes probably a year to check them up, to check up the statements.

Having read over the foregoing transcript of my evidence I find the same correct.

W. D. SCOTT, Superintendent of Immigration.

MR. JAMES SMART, DEPUTY MINISTER OF THE INTERIOR WAS PRESENT BY REQUEST AND HEARD AS FOLLOWS.

Mr. SMART.—The agents are paid through the steamship companies. Steamship companies send in accounts showing the number of agriculturists, undersigned by the various booking agents, to the Commissioner of Immigration in London. He pays the account. Then after the people come to this country we take at the seaport a statement of their occupation, and if it is found that we have paid on more than the number who have arrived, the overcharge is charged back directly to the steamship company, not the agents. Then they can adjust it themselves with their own agents. They send in the statements of the agents to the Commissoner in London, and he makes the cheques out to the steamship company to distribute. We look to the steamship ocmpany, not to the local agents for repayment. We simply charge it back to the steamship company and deduct from the next account if there is a discrepancy.

By Mr. Stephens:

Q. Then if you find any number of cases where persons came out as farmers and declared themselves to be agriculturists in this country and the account was wrong, you charge that back?

A. We always do that ?

By Mr. Ingram:

Q. Are these steamship agents on salary ?

A. No, I think they are appointed by the steasmhip companies.

By Mr. Clancy:

Q. You said in answer to a question by Mr. Stephens, if you found afterwards that those persons who had reported themselves as agriculturists were not of this class,

and the agents had wrongly received the commission, you charge that back?

A. Yes.

Q. In view of what Mr. Scott has said, what means have you of tracing whether they were agriculturists or follow that occupation afterwards?

A. The Commissioner of Immigration in London after he pays the commission sends us a list, showing the names of every person upon whom he has paid a bonus,

and those are checked over in the office here.

Q. Well, that does not account for it. That does not account for what becomes of these people after they come here. Your answer would lead us to believe that if a man reported himself as being an agriculturist and you discovered after he came here that he was a carpenter, and followed that occupation, that you would take the account to the steamship agent or the steamship company, and say, 'We will deduct that?'

A. Yes.

Q. Notwithstanding, as Mr. Scott has said, that we took the word of a man when he came here, and never looked after him afterwards.

A. When it is always on the word of a man himself.

Q. It is only on the word of man when he leaves the old country?

A. No, on the word of a man arriving at our seaports. This is checked by the payments on the other side.

Q. Now, do you keep track of these men to find out whether they go into agri-

cultural pursuits or not ?

A. We cannot keep track of them in that respect.

Q. Then how do you check the account of the steamship company ?

A. In the first place, we take the word of the steamship company that this account is correct, and in order to expedite business we advance the money, and then we come to the other side, and if we find from the immigrants' own statements that they are not agriculturists, the commission is charged back to the steamship company.

Q. You mean the man's statement on his landing?

A. Yes, at the seaport. Every immigrant appears before our officer at the seaports for a detailed statement as to his occupation and the various other matters that we question him upon.

Q. Then what you refer to is this: that a man must state before leaving the country of embarkation, what his calling is to be, and also his occupation when he lands

in Canada ?

A. We do not question what he states over there, we do not know.

Q. You take what he says here ?

A. What he says here.

Q. But you have no means of verifying whether that is true or not ?

A. We accept his statement.

By Mr. Ingram:

- Q. I suppose, Mr. Smart, the immigrant has no direct benefit in the seven or twelve shillings that is paid ?
 - A. None.
 - Q. None whatever ?

A. No interest whatever.

Q. He has no interest in making a false statement ?

Mr. Scott.-No.

Q. The only person who can benefit is the agent of the steamship company ?

A. If he makes a false statement.

Mr. Ross.—The statements are contained in a schedule, are they not ?

Mr. SMART.—As a matter of fact, the statement is made by the purser on board the ship. As soon as a ship leaves Liverpool, the purser has a little card prepared by Mr. Scott that he sends to every passenger, filling in all the particulars that we want.

These are then compiled in a statement, and after they land the immigrants come before our officers, and a further record is got in that way. We accept that record.

By Mr. Robinson:

Q. Mr. Chairman, I happened to be in Montreal last Sunday, I went down to meet a young man who was coming to work for me, and I asked him whether he was approached or not, and he said there was nobody asked questions.

A. They ask them at Quebec. All second cabin and steerage passengers are examined at Quebec. The steerage are landed at Quebec, and the second cabin are

brought on to Montreal, and they are all questioned.

Q. I had the opportunity of getting acquainted with a good many who come over on the boat, and many of them knew nothing about farming, but stated they were going to farm in the North-west, and they had their tickets to Winnipeg?

A. Yes.

- Q. I do not know whether these were classed as farmers at all?
- A. If they made a statement to our agents at Quebec, when they were being examined, that they were going into farming.

By Mr. Wilson:

- Mr. Wilson.—I think it is better that one of the witnesses should go on and make a statement.
 - Mr. SMART.—I have forgotten really what I was going to say.

To Mr. Smart:

Q. I do not wish to be abrupt or disagreeable, but these constant interruptions make it so in the evidence. I had a little conversation with you on the street you will remember when I understood you to say that you had changed the mode of paying agents in the old country, that you had ceased to give the extra five shillings?

. A. Well, in nearly all cases we have. There may be a few yet of the larger agents who are looking after lectures and that sort of thing that get it, but I am not

positive about that.

Q. Is it your intention to drop that part of your immigration policy?

A. We have not decided yet, but we are inclined to drop all that because it arouses a little jealousy among the agents, and perhaps it is just as well to drop it.

Mr. Scott.—I produce a list of the sub-agents who are getting twelve shillings in England.

Mr. CLANCY.—I wanted to ask you a question or two, Mr. Smart.

Mr. SMART.—I was going to say that I remember now the statement I was about to make in connection with the examination of the immigrants. They make a statement on a card that is sent to them by the purser of a ship. Then the purser prepares a manifest which is simply a schedule. This is handed to our agent, and as each immigrant comes up for what we call the civil examination, after the medical examination, the agent finds his name on the manifest, checks it off, and asks him what occupation he intends to follow in Canada. So that some of those people who may be classed as carpenters, or some other trade may say, 'we intend to follow farming.'

By Mr. Ingram:

- Q. It would be a different answer if he were asked the question on the other sid?
 - A. Yes, all he is asked there is what his occupation has been.
- Q. When he comes to this side he gives his name and says, 'I am going to go in for farming?'

A. Yes.

- Q. You would make payment to the same to the steamship company recognizing him as an agriculturist?
- A. No, we probably in the first place did not, but if we found out afterwards that he was going on a farm we would pay for him.

Q. Although the steamship company may not have put in an account for it ?

A. May or may not, it depends upon what he told them.

Q. Told them he was a carpenter.

A. They would not then.

- Q. Then you would rectify it?

 A. If we found that this was what he really was coming here for we would pay for him.
 - Q. They may get less or more ?

A. Yes, they may.

By Mr. McEwen:

Q. How does it work out ?

A. The balance has always been in our favour and we get a refund. It has always been that way.

By Mr. Maclaren:

Q. Explain the payments as between five shillings and seven shillings, we do not understand that?

A. All of our agents, all of the booking agents who sell tickets to Canada throughout the United Kingdom, get seven shillings for every full ticket, and a half of that or 3s. 6d. for the half ticket.

By Mr. McEwen:

Q. There are children's rates, are there?

A. Under twelve.

By Mr. Richardson: .

Q. What about children over twelve?

A. All children over twelve would have full tickets.

Q. And there would be a commission on each individual?

A. A commission on each individual, each ticket. We paid by ticket. Then the 12 shillings. Two years ago, we thought it advisable in the interest of the work, we were pushing it very hard at that time, we thought it advisable to pay special agents in some of the larger places, that we would call local agents. We selected a good many steamship people for such agents, in nearly every case they were steamship agents, and they were paid 12 shillings. Now the work it is understood they should do was more than the ordinary agent would do. In many cases they gave lectures; some of them paying for all the expenses themselves; the rent of the hall and all that sort of thing.

By Mr. Ross (Ontario):

Q. Illustrated lectures I suppose?

A. Yes. They agreed to put Canada first in all suggestions as a place for persons who would wish to follow the pursuit of agriculture to move to.

By Mr. Wilson:

Q. Do you mean to say that the agents would get an extra five shillings.

A. I do not say all; I say some of them.

Q. Why not all ?

A. I do not know.

Q. Why not if they were required ?

A. There was no requiring. If they wish to have a lecture we do not object.

Q. Some of them are very generous?

A. I know they are, at least it appeared so to me.

By Mr. Ross:

Q. A man would spend three shillings in order to get five ?

A. We paid part of the expense; it depended on how much the expenses were, and then they put forward our literature to the front. If some of these people took an office, it became practically a Canadian office, and the windows were full of notices regarding Canada and suggestions as to the people coming to this country, and where they did this we paid them extra; we gave them the 12s.

By Mr. Maclaren:

Q. Instead of seven ?

A. There were, I think, 8 or 10 altogether ?

Q. It did not work well ?

A. It created jealousy between the agents.

By Mr. Wilson:

Q. 14 is the list?

A. Very well. We dropped a number of them and we got it down to that number. In fact the end of this year I don't suppose we will do any more.

By Mr. Clancy:

Q. Have you concluded on that point, Mr. Smart ?

A. Yes.

Q. You think your agents at the port of landing are checks, I suppose, upon immigrants who arrive in the steamships?

A. Yes, every person.

Q. They are all asked what their occupation is to be as soon as they have landed in Canada?

A. Yes.

Q. That question is asked every one of them I suppose ?

A. Yes.

Q. You have no evidence though.

A. Well, we always ask everyone of them-

Q. Well, we will come to that later. You have no evidence, though, that they follow that occupation other than the mere statement made by them upon landing.

A. As to individuals ?

Q. Yes.

A. That we could follow individuals ? We could follow a great many of them.

Q. I have not asked what you could do, but I have asked if you have any evidence as to what becomes of them afterwards.

A. No, we do not follow them in that sense.

Q. And you have no knowledge on that subject?

A. No.

Q. You have made a new departure by including all that come here as belonging to the agricultural classes, that is all who state that they do. For instance, a man comes and says he belongs to the agricultural classes or he intends to farm. How do you make the distinction between a man who may farm for himself or a man who may be employed by another? Do you simply state that he is an agriculturist?

A. Yes; wo do not distinguish between them at all, or to whether they are actual

farmers or farm labourers.

Q. You say he belongs to the agriculturist classes?

A. Yes.

Q. Do you include the wives?

A. Oh yes.

Q. And all the family?

A. All the family.

- Q. As belonging to the agricultural classes?
- A. Yes.
- Q. You naturally ask the husband, I suppose, when he lands?
- A. Yes.
- Q. You do not ask the old lady what she belongs to; whether she belongs to the agricultural class or not?
 - A. I do not suppose the agent inquires from them.
 - Q. Is it asked of each of the male members of the family?
- A. Yes. Of course a woman may be a widow, or may be a domestic, coming separate.
- Q. Say there is a family of twelve, including the parents, is each one asked, not omitting the little girls and the little boys?
 - A. I must confess I cannot answer that. I do not think they are.
 - Q. You do not think they are?
- A. I think the only ones possibly would be the father and the son who would likely be asked.
- Q. Then I suppose this classing them when they land as belonging to the agricultural classes is not of much value is it?
- A. Yes, it is; I certainly think it is. We assume that the family of a farmer coming out to this country are agriculturists; that they are all agriculturists.
 - Q. It is a bare assumption, I suppose?
 - A. I think it is a fair one.
- Q. I have not asked you how fair it is. Could we not get a direct answer, Mr. Smart? I do not want to be offensive. I asked you if it was a bare assumption. You said it was a fair assumption. I have not asked what kind of assumption it was.
 - A. Certainly it is an assumption.
 - Mr. W. D. Scott re-called.
 - By Mr. Clancy:
- Q. And the homestead entries, how many of these have you traced coming, for instance, from Europe?
 - A. That is not my branch.
 - Mr. SMART.—Perhaps I can answer that.
 - Mr. CLANCY.—Do you know what proportion ?
 - Mr. SMART.—I have some knowledge.
- Q. How many of these that you call agriculturists coming from Europe, have been placed on homesteads?
 - A. I cannot answer that.
 - Q. Have you no record of it ?
 - A. I think the report will show that.
 - By the Chairman:
 - Q. The land office would show it, I think ?
- A. It will not show the number of agriculturists and their families as well, it will show you the number of entries.
 - Q. You have it in your report ?
 - A. It is in the introduction to the report.
 - Q. How many immigrants came in last year from Europe?
 - A. I think there were 37,000, if I remember correctly—or a little over that.
 - Q. How many came in through the work of your agents in Eunrope ?
 - A. Well, I cannot say that.
 - Q. Have you any record?
 - A. You mean came directly through them ?
 - Q. I mean directly through the agents?
- A. Practically all of them—a good many came outside the work of the agent and our own work, but practically all of them came through the direct advertising by our agents. In some countries it is very difficult to do practical immigration work.

Nearly all the countries have restrictive immigration laws, which prevents an agent going there and soliciting immigrants, or as they call it, inciting immigration. The work is done indirectly. Pamphlets sent in by the hundreds of thousands from some outside country where there is no objection to the work, to the countries from which we want to direct people, such as Germany, Austria, Sweden and Norway.

Q. I suppose you are not able to say how many came in directly?

A. No, I cannot say that.

Q. You have a different system in the United States? A. Yes, because we have certificates there.

Entries from the United States in 1903.

Q. How many came from the United States last year ?

But that record is taken at Winnipeg, at Portal, at Emerson and A. 49,473. Coutts, and one or two other places along the boundary line that we have selected where immigrants come across by waggon. There is no way of telling directly that every one of these came through the efforts of our agents. The agents issue the certificates to actual settlers. This enables them to obtain a low rate of transportation after they reached the boundary on this side.

Q. With regard to the certificates, have you been able to trace all those persons to whom certificates have been granted, and upon which you recoup to some extent

the railway companies?

A. No, it is not the railway companies. Where they belonged to sub-agents the commission is paid to the sub-agents on these certificates. If the certificate is issued by our own regular agents it is simply returned to us.

Q. I am including all the agents when I say that ?

A. The sub-agents are paid according to the certificates returned.

- Q. What is the arrangement with the railway companies under which they get reduced fares?
 - A. The only arrangement is that they return the certificates to the department.
 - Q. The companies get nothing ?

A. No.

Q. If a man comes to Canada by reduced rate it is a question for the railway company making the loss and not the country?

A. As to expenses?

Q. As to railway fares?

A. Oh yes.

Q. There is no loss to the country by reason of the reduced transportation?

A. No. none.

The CHAIRMAN.—That is satisfactory.

By Mr. Clancy:

Q. That is satisfactory. Are you able to say how many of the whole number that came from the United States came through your agents?

A. According to the reports of our agents, that is the salaried agents, 28,332 came through their efforts; that is, they have a record of these people having come from their districts.

Q. And how many through the commission agents?

A. (Mr. Scott.)—6,509.

Q. That would leave how many that came by other routes?

A. (Mr. SMART.)—14,000. In that same statement we have included all that came to the Lake St. John district, which last year amounted to about 1,200, and also the district north of Montreal through the agency of the Montreal Colonization Society, and also those that we know that have gone into New Ontario.

Q. From-

- A. From the United States. That is included in the 49,000. There would be probably a balance of 8,000 or 10,000 that we have no direct record of.
- Q. Now, then your agents, the sub-agents or commission agents reported a certain number?

A. Yes.

Q. Are you able to verify that?

A. Yes.

Q. By what means?

A. By the certificates returned to the office here.

Q. Does that mean that they have become residents of Canada? Have you any record that any portion of these gentlemen returned?

A. (Mr. Scott.)—The certificate shows—there are two classes of tickets issued, one, a return ticket, and the other a single ticket. We don't allow them anything on the return ticket.

Q. Take a case: Suppose a man wishes to visit his friends in the Northwest Territories, and he lives in Dakota——

A. Yes.

- Q. He takes his wife and two or three of his family with him; or take a single person who got a certificate?
 - A. He would not get a certificate unless he made a statement in the first place.

Q. Is that statement made under oath?

A. No; that would not help it very much, if they intended to deceive.

Q. You have become very skeptical withtin a short time.

A. He makes a statement that he wishes to become an actual settler, and the certicate is issued on that.

Q. The man may never become a settler as far as you know?

- A. You cannot find out every one, no. If he buys a return ticket he would not be classed as a settler.
 - Q. Supposing he gets a reduced fare one way, and then pays his fare back.

A. Of course there is no means of telling that.

Q. Are there any large numbers of persons who come in prospecting and do not become settlers?

A. They are not classified as settlers.

- Q. I suppose there are many of them as a matter of fact?
- A. Certainly; a great many come in looking for locations.

Q. And later on locate in the country.

A. They are coming in and going out all the time.

Q. They come in on these certificates?

- A. We do not classify them until a certificate shows that the man is a settler by purchasing a single ticket.
- Q. Would there be any object in purchasing a single ticket, and then paying the fare back?
 - A. I should not think so.

By Mr. Wilson:

Q. I should think there would be ?

A. Paying the full rates back?

- Q. What could you get a return ticket for ?
 A. A cent a mile each way on our certificate.
- Q. Supposing he wanted to come in on a trip, what would it be?
- A. return ticket—a cent a mile each way.
- Q. On your certificate ?
- A. Yes.
- Q. If he had not your certificate what would he pay?
- A. $3\frac{1}{2}$ or 4 cents a mile.

By Mr. Clancy:

- Q. A return ticket ordinarily is about one-sixth less than the regular rates?
- A. I do not know, I am sure.
- Q. You will say it is 3 cents a mile here, in that case he would make some money by paying a cent a mile one way and paying the full rate the other way, would be not?

A. No, two cents a mile—a cent a mile each way.

- Q. He would not get a cent a mile each way unless you were satisfied he would become a settler?
 - A. Yes.
 - Q. He buys a ticket coming in at one cent a mile and pays full rate going out ?
 - A. Yes.
 - Q. Then he has made something over the man who pays ordinary rate in and out? A. Yes.

 - Q. There will be some object in that?
- A. If he was a land seeker, he would get a return ticket, at a cent a mile each way.
 - Q. He would get that from the railway company, would he not ?
 - A. Yes.
 - Q. Outside of your certificate ?
 - A. He might.

Q. Do not the railway companies and the land companies—there are several here

—give the same fares as you give ?

- A. The land companies do not, the railway companies do, to everyone they think is a bona fide settler. The railway companies say it would be a hardship on the actual settler, and they keep a man there at the boundary line to question those who desirs to come across.
 - Q. You don't include these in your report ?

A. In whose report ?

- Q. For instance, the railway companies, some four or five of them have large quantities of land for sale ?
 - A. Where ?

Q. In the Northwest Territories ?

A. There are only two of them, the only company that has any agents in the United States is the Canadian Pacific Railway.

By Mr. Wilson:

- Q. There are land companies ?
- A. Any quantity of them.

By Mr. Clancy:

- Q. What about the North-west Colonization Company ?
- A. That is the Canadian Pacific Railway.
- Q. Then the Qu'Appelle and Saskatchewan ? A. The Qu'Appelle and Long Lake.

Q. Yes, I suppose ?

A. Then the Saskatchewan Land Company.

- Q. It is the railway company I am speaking of. Then there is the Long Lake and Saskatchewan and the Calgary and Edmonton companies. I suppose they give the same fares to persons coming to Canada as intending settlers as they give on your certificates?
 - A. Who?

Q. These companies?

- A. The Canadian Pacific Railway and the Canadian Northern are the only two that give reduced rates. They are the only two railways in the country.
 - Q. Do you count any of these persons who come in other than on your certificates?
 - A. As settlers?

Q. Yes?

A. Yes; of the 49,000 settlers from the United States last year our state agents sent in 28,332, our sub-agents 6,509, which would be a difference of 14,632. I suppose that a good many of these came in through the land companies.

Q. Do you have any report of how many come in on your certificate at reduced

fares?

A. Yes.

Q. You don't know?

A. Of course we use these land companies to a great extent. We keep them supplied with all our best literature, and with exhibits of agricultural products.

Q. Do the railway companies report to you?

- A. No; we only get the certificates from them. The agent at the international boundary line issues a ticket on the certificate at a reduced fare, and that certificate is sent to us.
- Q. On what authority? You say you have reports from your agents; is it from the salaried agents?

A. No; the man on the train.

Q. What report have you from the salaried or commission agents that they sent from each locality?

A. The state agents sent in 28,332, and the sub-agents 6,509.

Q. That is the report from the different persons?

A. You have a list there giving the names by sub-agents.

Q. How did that correspond with those at the boundary who gave the certificates?

A. That is one under each certificate, and these certificates were received by us.

By the Chairman:

Q. They are paid on those?

A. Yes.

By Mr. Clancy:

Q. If a man comes to the boundary without any certificate from your agent, either

salaried or commissioned agent, he goes to your agent at the boundary?

A. No, he goes to the Canadian Pacific Railway ticket agent at the boundary and says, 'I want a reduced rate.' It is not the ordinary station agent, it is a special man; the Canadian Pacific Railway agent has a man at the boundary who can judge from conversation with him if he is likely to become an actual settler, and if so he gives him an order on the ticket agent and he gets a reduced rate. It has the same effect as our certificate. We have no record of these. But these land companies have all the exhibits they want. We utilize them as far as possible.

Q. Your statement includes men, women and children?

A. Oh yes. You have got a statement (referring to document) that is a fair sample of the statements that are made out.

By Mr. Wilson:

- Q. Now, here are one or two questions that I want to straighten out. Here is the list of your agents (list produced) that get the extra five shillings in the Old Country.
 - A. Yes.
 - Q. Is that for the distribution of literature? What do they do extra for that?
- A. For the distribution of literature. They arrange for public meetings, very often pay for the hall themselves, and put Canada forward stronger than the ordinary ticket agent.
- Q. Now I want to go back to the question I asked you about Indianapolis. I find it here in the notes as follows: 'Q. If permitted, I would like to ask a couple of questions. I would like to know who has been the salaried agent at Indianapolis for the last five or six years? A. At Indianapolis? Q. If you cannot tell me now,

2-52

bring the information at the next meeting. You might tell me his salary too, and also how many persons he sent to this country, if you will?'

A. I misunderstood your question, Mr. Wilson, but I have taken a note of it.

Q. 'The number he sent in,' and so on ?

Mr. SMART.—There have been two or three agents at Indianapolis.

Q. In the last five or six years, that is what I want to know?

A. Yes. Well, I will bring down a full statement.

Q. These farmer delegates that you sent to the old country, as well as those that you paid. I suppose you paid the fare for some into the North-west from the United States, did you not?

Mr. Scott.-No.

Q. You gave them free transportation, didn't you ?

A. That is a matter for the railway companies.

Q. What is the result of these farm delegates that you sent to the old country, what is the report you have? They are not included in your report?

A. I have not a copy of the report. I can bring down copies of the report.

Mr. SMART.—As to whether they are a success?

Mr. WILSON.—Yes.

- A. Every person that I have discussed it with, especially on the other side, seems to be of the opinion that we have never made a better move in one particular special work than when we sent over those delegates, because they were able to give the people by personal evidence, information that an ordinary agent could not give, and they also delivered a number of lectures.
- Q. Well now, when you bring down the report at the next meeting, which I suppose you will, will you give us the list of the agents?

A. I think I have that here, I can give that to you.

Q. I want more than that, I want what you paid them and the expenses you allowed each?

A. I think I have it here.

Q. Very well, that is all the better, and if you can give us anything of the results that followed. You might just as well read it if you have it here. Read it, and it will go right into the evidence. I want the name of each one, the salary they get, and what they were allowed for expenses and the report of each one.

Mr. Scott.—Yes, we will have to bring the reports separately.

Mr. SMART.—These reports will have to be brought down separately.

Q. They ought to be brought down in typewritten form.

Mr. Scott.—You want copies of the reports of the farm delegates ?

Q. Yes. You had better get the shorthand reporters to give you a list of these questions in full, so that you will not make any mistake. That is what Mr. Pedley did, and I think you had better do it?

A. I have a list of the names here.

Q. You might just as well leave that until you bring all together a list of the names, their salaries and expenses, and what they reported?

A. Names, salaries, expenses and reports.

By Mr. Clancy:

- Q. How many of these farm delegates did you send out, Mr. Smart ?
- A. (Mr. Smart) 56, last year.

By Mr. Wilson:

- Q. Were they all from the North-west ?
- A. Yes, Manitoba and the North-west.

By Mr. Roche (Marquette):

Q. Were they all farmers ?

A. Yes, either farmers or gentlemen farmers. They were nearly all farmers. I don't suppose there were more than two or three that were not actual farmers on the land. I am certain of that, but if not all farmers on the land, were really farmers just the same, carrying on farming operations.

By Mr. Clancy:

Q. You gave them a sort of holiday trip, I suppose ?

A. Perhaps some people might think that, but they worked pretty well while over there.

Q. Did each take a field for himself ?

A. Yes, they were under the direction of our various agents. We sent a certain number to each agent to locate at different places.

By Mr. Wilson:

- Q. You have not many agents in England, only four, I think ?
- A. Yes; four agencies in England and Wales.

By Mr. Clancy:

Q. How were they distributed ?

A. At the various booking offices.

Q. Between England, Ireland, Scotland and Wales?

A. The bulk of them were left in England, the great number of them, perhaps thirty of them.

Q. Did each of them give a lecture there?

A. I do not know that every one of them lectured, many of them did, though.

Q. Did each make a report separately ?

A. I think so.

Q. Was a general form of report prepared for them ?

A. No, they were just told to report when they returned, as to their work, and I think in every case they did it.

By Mr. Wilson:

- Q. We will have reading for the rest of the session, will we not, if we get all those reports?
- A. Yes; they are interesting, a great many of them. Some of them were very short.

By Mr. Clancy:

Q. Was there any necessity for that ?

A. For which ?

Q. For sending them over ?

A. Yes, I certainly think that there was.

Q. Do the people over there disbelieve your agents ?

A. No, but it created an interest that I think would not have been created in any other way. They were sent not as agents of the government, but as men prepared to give their own testimony of the country independent of the government. So that any persons who might be sceptical as to the statement of agents would be able to talk to the men who were really farmers on the land.

Q. Were they allowed any salary?

A. They were allowed \$150 each over and above their expenses.

Q. I suppose you did not tell that over there; it was not disclosed that they were your agents?

A. The chances are in every case the money was all spent by the delegates. A man cannot put every dollar in his expense account.

Q. I suppose it was well known there; the people there knew the conditions under which they were sent ?

 $2-52\frac{1}{2}$

- A. No, they knew they were invited, that is the way we put it, that they were simply invited to go over to give their testimony to every enquirer.
 - Q. Invited by whom?

A. By the government.

Q. They were really government agents ?

A. Well, they were in a sense, but we tried to let it be understood at all events that they were not going under the government at all events, so far as their statements were concerned.

By Mr. Wilson:

Q. Our people would understand it as a sort of love feast?

A. No.

By Mr. Clancy:

- Q. I suppose it was a means of giving those friendly to the Liberal party a chance to get over there, was it not?
 - A. I am not prepared to answer that question; I am not a politician.
 - Q. Were they selected independently of their political leanings?

A. I cannot tell you what their politics were.

Q. Who made the selection?

A. I cannot say as to that, but I think Mr. Sifton did.

Q. I will venture to say he did his duty to the party?

- A. I think he approved of the selection. I do not know that he selected them all. But he approved of all that were sent.
 - Q. Is it not a fact that the greater portion of them were Liberals?

A. Well, I think they were.

Q. Yes. Then in sending men over there I suppose they were not going over to convince Liberals?

The CHAIRMAN.—Mr. Clancy, you must keep politics out of this. Politics has nothing to do here. You must find it out in some other way.

Mr. CLANCY.—I am asking Mr. Smart—

The CHAIRMAN.—He has no right to answer that.

Mr. CLANCY.—I deny your right to say what a witness is to answer.

The CHAIRMAN.—That is my ruling, and I appeal to the Committee. These political questions are out of order.

Mr. CLANCY.—You may rule them out of order and the public will not know; so that you must take the responsibility.

The CHAIRMAN.—I assume the responsibility.

Mr. CLANCY.—What I want to ask is simply this. There was an unusual depar-

ture of sending persons over to England as farm delegates.

The Charman.—I object to that question. It is not an unusual order. The practice was followed by the late government, the Conservative government. I know personally that that was done years before this government came into power, and I know parties they sent over from my own district.

Mr. CLANCY.—I never knew of that departure before. The CHAIRMAN.—They sent good Conservatives, too.

Mr. CLANCY.—I congratulate you, Mr. Smart, on the chairman coming to your

relief. I bow to your will, no matter how much the country suffers.

Mr. Scott.—The question was asked the other day by Mr. Wilson of the number of settlers coming in by state agents in 1902 and 1903. This is the answer here. (Document produced.)

By Mr. Wilson:

Q. Were you not to give the salaries with them?

A. The salaries are in the report, I think.

Q. I know, but you ought to have that right with it; I think that would make it complete. Would it not be better to take it back and just add the salaries to it and make it complete? There was a question up here the other day about agents being allowed their living expenses while at headquarters.

A. I have that here, sir, yes.

Q. I would like to ask, Mr. Chairman, if I may be allowed to have this statement taken back and filled in with the salaries and the other expenses.

A. I can give you that here now.

Q. It would go right in a regular table, and it would be so much handier in the report. We have to go to work and make these tables ourselves if you don't do it, and we prefer you to do it. Besides, if you do it, they are official, and if we make them, they are political. Isn't there something in that?

A. 'State agents.' I have a statement here of the contingencies and general

expenses of the state agencies.

Q. Yes. But if you would put that in your report in the form of a table, how much handier it would be and how much better it would look?

A. I was not asked to do that the other day.

Q. If we can improve upon what you are doing I suppose you are anxious to do that?

A. Yes.

Mr. SMART.—The Auditor General's report gives that.

By Mr. Watson:

Q. But not that form at all ?

Mr. SMART.—As far as the United States agencies are concerned it is all on one page.

Q. It is possible there might be different things scattered through it. Perhaps you would find expenses that you did not expect to find there. If you will just kindly put that into a table?

Mr. Scott.—Quite so.

Q. Salary and expenses, put it in the form of a table in the report, and I think everybody will appreciate it.

By Mr. Clancy:

Q. When you are through I want to ask one question. With regard to the farm delegates, did they get living allowance, or did they get actual expenses?

A. Actual expenses.

Q. Have they reported in detail, each one of them ?

A. Each one of them.

Q. In detail—not in lump sum ?

A. No, no, in detail. There may be one or two exceptions where they lumped their expenses, but I think probably 99 per cent of them are in detail.

By Mr. Wilson:

Q. Will you bring down details of their expenses ?

A. Of each ?

Q. Of their expenses ?

A. I can bring copies of their expense accounts.

The CHAIRMAN.—You would not want that to go into the report.

Mr. WILSON.—No.

Mr. SMART.-What you want is just the allowance made to them ?

Mr. WILSON.—Yes.

Mr. SMART.—Each one got \$150 over and above his actual expenses.

By Mr. Wilson:

Q. We will just get the account, and if there is anything that looks a little fishy we will go to the Public Accounts Committee.

A. (Mr. Scott).—You just want the bulk—you don't want the details? What you want is the name, the salary, and the lump amount of their expenses, and copies of the reports?

Q. Yes. I will tell you how you might divide it, what it gives for fares and living allowances separately.

A. You want a synopsis made of each account.

The Chairman.—You want to see that there is no champagne in it. By Mr. Wilson:

Q. I don't care anything about that. Mr. Sifton is a member of our church, and I know he wouldn't have it.

A. (Mr. Scott).—You asked for a copy of the Winnipeg Free Press harvest number; I produce it (Copy of newspaper produced). You asked for a list of the people deported from Winnipeg, giving the number and the nature of the disease.

Q. And the nationalities, too; did I not ask for that, too?

A. Not in that particular question. It gives the nationality there, though.

Q. That is all right. Is this only from Winnipeg?

A. Yes.

Q. Did I not ask for it for all the country?

No, sir, not that I recollect.

The list referred to is as follows:-

PEOPLE DEPORTED FROM WINNIPEG, NUMBER, NATURE OF DISEASE, 1902-3.

Date.	Name.	Nationality.	Disease.
1902.			
July 8 July 18	John Stevenson.		Physically and metally unsound.
Aur 18	(Johan Stevenson Orheim)	Swede	Phthsis pulmonalis.
Aug. 10	Abraham Graus, 10 years		Epilepetic fits.
	Lea Graus, 2 years	Returned to sister-in-law in Montreal who offered to	
Aug. 28 Aug. 22	Stanley Carlyle Ernis Johnson (Johanson)	support them	Rheumatism and heart disease. Melancholia mentally deranged.
Sept. 12	Martin Morson	Icelandic (sent in care of Mr.	Epilepsy. Mentally unsound.
	Jon Jonsson	Icelandic.	Physically, unable to sustain him self.
Oct. 25	William Millan	British.	Phthsis pulmonalis. Heart disease.
Oct. 30 Nov. 17	William Lee	British English	Chronic dysentary. Mentally unsound.
Nov. 22	Samuel Hayward	English.	Neurasthenia.
1903.			
Jan. 19	Arthur Varley (wife and 2 children)	Englishman	Physically and mentally incapable.
Jan. 29	Mekola Bibui	Galician	Incurable.
Jan. 22	Joseph Donnison		Epilepsy. Physically unfit.
Jan. 20	Edward Alfred Foreman.	British	Epilepsy. Old age and physically unable t
April 18	George Arthur Morgan		Deafness, needing an ear trumper impediment in speech.
April 22 April 23	Archibald Smiley F. C. Cox.		Pulmonary affection
April 22	Arthur Dixon		Rheumatism.

PEOPLE DEPORTED FROM WINNIPEG, NUMBER, &c.-Concluded.

April 28. Frank Hanley Pleurisy. April 29. C. H. White. Chronic rheumatism. April 29. A thur Dunn (Vaughan). May 7. C. A. Lamner May 4. Edward Davis (wife & child) May 6. A. Nuttall. May 12. Francis M. Coley May 12. Stanley Westgate May 21. 'John May 22. Christopher Rigby. May 21. Jonas Ostland. Swede. May 21. Jonas Ostland. Secotland. Pulmonary tuberculosis. May 18. David McKinley. Scotland. Piles requiring operation. May 28. R. C. White. May 29. David Robertson. Scotchman. Consumption. May 28. Frances Pireoco May 21. David Robertson. Scotchman. Sciatica. May 30. Herbert Newton June 6. Adolf Hanson (wife and four children). Norwegian June 16. A. F. Marvell. June 16. John William Kisby June 25. Jankel Seechter and wife. June 29. Thomas R. Rowland June 3. Fred. Bosson. Fileurisy. Chronic rheumatism. Pleurisy. Chronic rheumatism. Epilepsy. Harmless idiocy. Pulmonary tuberculosis. Pulmonary tuberculosis. Pulmonary tuberculosis. Piles requiring operation. Physical disabilities. Consumption. Sciatica. Epilepsy. Norwegian Dislocation of right shoulder. Old, decrepit, ill, deaf, asthmatory. Old and undesirable. Rheumatism and nervous trout. Rheumatism.	Date.	Name.	Nationality.	Disease.
April 28. Frank Hanley. April 29. C. H. White. April 29. C. A. Lanner. May 7. C. A. Lanner. May 4. Edward Davis (wife & child) May 6. A. Nuttall. May 12. Francis M. Coley May 12. Stanley Westgate May 12. Christopher Rigby. May 21. Jonas Ostland. May 21. Jonas Ostland. May 23. Jonas Ostland. May 18. David McKinley. May 21. David Robertson. May 28. R. C. White. May 29. David Robertson. May 29. Frances Pireoco May 20. David Robertson. May 21. David Robertson. May 28. Frances Pireoco May 29. Frances Pireoco May 30. Herbert Newton June 6. Adolf Hanson (wife and four children). Norwegian Morwegian Morwegian Mold decrepit, ill, deaf, asthmate June 16. A. F. Marvell. June 25. Jankel Scechter and wife. June 29. Thomas R. Rowland June 3. Fred. Bosson Epileman Italian. Consumption. Brileshman Cold and undesirable. Rheumatism and nervous troub Rheumatism. Old and undesirable. Rheumatism.	1902.			
April 28. Frank Hanley. April 29. C. H. White. April 29. Athur Dunn (Vaughan). May 7. C. A. Lanner. May 4. Edward Davis (wife & child) May 6. A. Nuttall. May 12. Francis M. Coley May 12. Stanley Westgate May 22. Christopher Rigby. May 21. Jonas Ostland. May 21. Jonas Ostland. May 18. David McKinley. May 21. David Robertson. May 21. David Robertson. May 22. Christopher Sigby. May 23. David Robertson. May 8. R. C. White. May 9. David Robertson. May 9. David Robertson. May 9. David Robertson. May 9. Frances Pireoco May 30. Herbert Newton June 6. Adolf Hanson (wife and four children). June 16. A. F. Marvell. June 16. John William Kisby June 25. Jankel Scechter and wife. June 29. Thomas R. Rowland June 3. Fred. Bosson Pleurisy. Chronic rheumatism. Pleurisy. Chronic rheumatism. Purity Repilepsy. Harmless idiocy. Pulmonary tuberculosis. Pulmonary tuberculosis. Pulmonary tuberculosis. Pulmonary tuberculosis. Consumption. Sciatica. Epilepsy. Norwegian Dislocation of right shoulder, Old, decrepit, ill, deaf, asthmatory old and undesirable. Rheumatism and nervous trouk Rheumatism.	April 22	G. A. Larson	Swede	Varicose ulceration of the legs, following inflammatory rheum-
April 29 Athur Dunn (Vaughan). May 7. C. A. Lanner May 4 Edward Davis (wife & child) May 6 A. Nuttall. May 12. Francis M. Coley May 12. Stanley Westgate May 21. John May 22. Christopher Rigby. May 21. John May 21. John May 23. R. C. White May 28. R. C. White May 29. David Robertson. May 28. Frances Pireoco May 29. David Robertson. May 28. Frances Pireoco May 30. Herbert Newton June 6. Adolf Hanson (wife and four children) June 16. Albert Morgan June 16. A. F. Marvell June 25. Jankel Seechter and wife. June 29. Thomas R. Rowland June 3. Fred. Bosson Begilepsy. Epilepsy. Harmless idiocy. Pulmonary tuberculosis. Pulmonary tuberculosis. Pulmonary tuberculosis. Pulmonary tuberculosis. Pulmonary tuberculosis. Pulmonary tuberculosis. Piles requiring operation. Physical disabilities. Consumption. Sciatica. Epilepsy. Norwegian Dislocation of right shoulder, Old, decrepit, ill, deaf, asthmatory and the consumption. Power and the consumption. Sciatica. Physical disabilities. Only decreption of right shoulder, Power and the consumption. Physical disabilities. Old, decrepit, ill, deaf, asthmatory and the consumption. Physical disabilities. Old and undesirable. Rheumatism and nervous troutents and the consumption. Rheumatism.	April 28	Frank Hanley		Pleurisy.
May 6 A Nuttall May 12 Francis M. Coley May 12 Stanley Westgate May 22 Christopher Rigby May 21 John May 13 Jona Ostland. Swede. May 14 David McKinley. Scotland. Piles requiring operation. May 28 R. C. White May 29 David Robertson. Scotchman. Consumption. May 28 Frances Pireoco May 20 Herbert Newton June 6. Adolf Hanson (wife and four children). June 16. A. F. Marvell. Englishman. Dislocation of right shoulder. June 16. John William Kisby June 25. Jankel Scechter and wife. June 29. Thomas R. Rowland June 3. Fred. Bosson Harmless idiocy. Pulmonary tuberculosis. Piles requiring operation. Physical disabilities. Consumption. Sciatica. Epilepsy. Dislocation of right shoulder. Old, decrepit, ill, deaf, asthmatous description. Reheumatism and nervous trout Reheumatism. Remainder. Old and undesirable. Remainder. Remai	April 29 .	Arthur Dunn (Vaughan)		
May 22 Christopher Rigby Harmless idiocy. May 21 Jona Sotland. Swede. Pulmonary tuberculosis. May 18 David McKinley. Scotland. Piles requiring operation. May 28 R. C. White Physical disabilities. May 21 David Robertson. Scotchman Consumption. May 28 Frances Pireoco Italian. Sciatica. May 30 Herbert Newton. Englishman Epilepsy. June 6. Adolf Hanson (wife and four children). Norwegian June 16. Albert Morgan. Englishman. Old, decrepit, ill, deaf, asthmat June 16. John William Kisby June 25. Jankel Scechter and wife. June 29. Thomas R. Rowland. Rheumatism and nervous trout June 3. Fred. Bosson.	May 6	Francis M. Colev		Incurable. Consumption.
May 18 David McKinley Scotland Phies requiring operation. May 28 R. C. White Physical disabilities. May 21 David Robertson. Scotchman. Consumption. May 28 Frances Pireoco Italian. Sciatica. May 30 Herbert Newton. Englishman Epilepsy. June 6. Adolf Hanson (wife and four children). Norwegian Dislocation of right shoulder, June 16. A. F. Marvell. Englishman. Old, decrepit, ill, deaf, asthmat June 16. John William Kisby June 25. Jankel Scechter and wife. June 29. Thomas R. Rowland Rheumatism and nervous troul June 3. Fred. Bosson Requiring operation. Phies requiring operation. Physical disabilities. Consumption. Sciatica. Epilepsy. Dislocation of right shoulder, Old, decrepit, ill, deaf, asthmat Guident and undesirable. Rheumatism and nervous troul Rheumatism.	May 22	Christopher Rigby		Harmless idiocy.
May 21 David Robertson. Scotchman Consumption. May 28 Frances Pireoco Italian. Sciatica. May 30 Herbert Newton. Englishman. Epilepsy. June 6. Adolf Hanson (wife and four children). Norwegian Dislocation of right shoulder, June 16. A. F. Marvell. Englishman. Old, decrepit, ill, deaf, asthmat June 16. John William Kisby. Old and undesirable. June 25. Jankel Scechter and wife. Rheumatism and nervous trout June 29. Thomas R. Rowland Rheumatism. June 3. Fred. Bosson Rheumatism.	May 18	David McKinley	Scotland	Piles requiring operation. Physical disabilities.
June 6. Adolf Hanson (wife and four children). Norwegian Dislocation of right shoulder. June 16. Albert Morgan. Old, decrepit, ill, deaf, asthmat June 16. John William Kisby Old and undesirable. June 25. Jankel Scechter and wife. Old and undesirable. June 29. Thomas R. Rowland Rheumatism and nervous trout June 3. Fred. Bosson Rheumatism.	May 21	David Robertson	ScotchmanItalian	Sciatica.
June 16. John William Kisby June 25. Jankel Scechter and wife. Old and undesirable. June 29. Thomas R. Rowland Rheumatism and nervous troul June 3. Fred. Bosson Rheumatism.	June 6	Adolf Hanson (wife and four children)	Norwegian	
June 29. Thomas R. Rowland Rheumatism and nervous trout June 3. Fred. Bosson Rheumatism.	June 16.	John William Kisby		Old, decrepit, ill, deaf, asthmatic.
	June 29	Thomas R. Rowland		Rheumatism and nervous trouble. Rheumatism.
May 27 Chas. Alfred Chapman Epilepsy. July 6 Miss Isabel McAllister.	June 3 May 27	Albert Ed. Rowles		Haemoptysis. Epilepsy.
July 8 Gabriel Pimpel Tuberculosis. Total 70	July 8			Tuberculosis.

Mr. Scott.—There is an item of 8,152 persons shown on the report under miscellaneous. You asked for the sub-divisions of these.

By Mr. Wilson:

- Q. Yes, I asked for the nationalities of these.
- A. (Document produced.) You asked if we received weekly reports from the agents in Great Britain?
 - Q. Yes.
- A. When Mr. Smart was in Great Britain this year he arranged that agents keep weekly diaries, but copies are not sent to this office here.
 - Q. Does this report show all the Italians you got this past year?
 - A. That is for 1902-03?
- Q. Three thousand three hundred and seventy. Would you tell us why that was not put in your report that way?
 - A. I do not know, sir.
- Mr. SMART.—We have always had certain nationalities that we put in under the heading miscellaneous.
 - Q. This is not one of them?
 - A. (Mr. SMART.)—Yes.
 - Q. I think I can show you the number of Italians in one of your reports.
 - A. No.
 - Q. I would like that put in your report.
 - A. We might put them all in.

Q. No person would want you to make a special statement for nationalities represented by only 43, or 17, or 65. No reasonable man would like a special report for that number; but when it comes up to be a matter of 2,477, or 1,700, or 3,000, and so on, I do not see why they should not be specified just as much as any of the others.

A. No special reason.

Q. It gives an impression to those of us who are a little skeptical that while you are getting a large number of people from countries that are undesirable it is nice to hide it a little. That, wo do not like, and I am strongly of the opinion that where any nationality goes over 500 they should be entered up in your report.

A. I think that is a good suggestion.

Q. I don't care what they are; we don't ask what they are. You give a report of the people that come to the country, and pretend to give their nationality, and then give a large number of countries and bulk the rest under miscellaneous.

A. (Mr. Scott.)—I would like to bring you a book showing how the statistics and

the sub-divisions of nationalities are made.

Q. Well, if you like to. We want to get all the information we can. I would like a further statement of all the parties deported from this country, their nationalities, and where they were deported from, and I think it would be well—if you would permit me to make a suggestion. Now, the United States as you know, gets out a very nice report of their immigration business, and there are a great many tables in it, and they are a very great convenience.

A. (Mr. Scott.)—We will, in this year's report. The Act was not in force when

the last report was published.

Q. I mean, not only with reference to deportation, but a great many things?
A. (Mr. Smart.)—We have decided to do that. The Act was not in force when that report was made.

By Mr. Robinson:

Q. I would like to ask if this influx of Italians which caused some discussion in the House a few days ago, if the names of those came through the companies, and if they received any remuneration?

A. (Mr. Scott).—We do not pay any commission to steamship companies on

Italians.

By Mr. Wilson:

Q. Not even if they come from Cork ?

A. No.

By the Chairman:

Q. I suppose it is the railway building that brings them out ?

A. Yes. This is a free advertisement (producing clipping from London Daily Express, advertising the advantages of Canada.

By Mr. Wilson:

Q. How did that come ?

A. It was arranged in the London office. It is a nice advertisement.

By Mr. Clancy:

Q. Mr. Smart, has there been any effort made on the part of your department with regard to Italians of the class described coming in ?

A. Any effort ?

- Q. Yes.
- A. No.

Q. To exclude them ?

A. Yes, we have. As soon as we saw what was being done in the way of bringing a lot of people from Italy through Antwerp, we wrote to the steamship people and

advised them that they would have to be very careful in receiving destitute people for this country, and that if continued we would simply have to deport every one of them. The same thing applies to other nationalities which we have found out since are on the way now. Last week we deported a lot of Syrians.

By Mr. Wilson:

Q. On what ground ?

A. They were diseased. They were on the Steamer Halifax.

The CHAIRMAN.—We have a settlement close to my home of Syrians. They are good settlers and are doing well.

By Mn. Wilson:

Q. That is not their reputation with us. I think the time has come when we should take power—and I think you should recommend it to the Minister—to deport people that are likely to become paupers, as well as diseased persons. If you will notice, in the United States, at the last meeting of Congress there were six or eight bills introduced to exclude people by different means, especially illiteracy. They have found that they are getting so many people of the undesirable classes, in spite of all their restrictions, that they are bound to keep them out.

A. (Mr. Scott).—The Italians are the highest in that way, 67 per cent of them

are illiterate.

Q. The United States are most rigid in their inspection, and that has the effect of making the undesirable classes apply more particularly to our country, and we

certainly do not want them.

The CHAIRMAN.—I would like to give an opinion with reference to the Syrians. They cannot leave their country without a passport, and until they can show through the British consul that they have friends in this country who will take charge of them when they reach here. I have looked into their position more than once, and can bear testimony to the fact that they have relatives here who will receive them.

A. (Mr. Scott.)—They are not producers, they are peddlars. Another question asked me was, why does Commissioner Smith add 25 per cent to his figures in his

annual report.

By Mr. Wilson:

Q. I think that ought to be read.

A. (Mr. SMART.)—You will nderstand that we do not take Mr. Smith's figures in his report for our statements.

Q. We will have Mr. Scott read this to the Committee.

A. (Mr. Scott.)—Mr. Smith in his Annual Report for 1901-1902 says: 'To these 52,819 (recorded) must be added a percentage for unrecorded immigrants who came in at various points, largely by wagons, moving into Manitoba and the Northwest Territories as immigrants formerly did from the eastern to the western States. That is along the international boundary from Emerson to Gretna. That is a well settled country.

'This feature is particularly noticeable in connection with the movement from the state of Utah to Alberta; and in view of the very large movement that has taken place from the Dakotas into the southern part of Manitoba and Assiniboia by way of wagon roads, there is every justification for continuing to add as due to that source

25 per cent to the arrivals recorded at this office.'

In his report for 1902-1903 he says: 'Forty-two thousand and twenty-four souls (including 28,068 male adults) are reported as arriving from the United States, but they represent only those with whom our agents have come in contact on railway trains, and it is only reasonable to add a fair percentage to these American records for those who come in at various points where we have no agent and those who drive into the country by trail. The international boundary, stretching one thousand miles between

Lake Superior and the Rockies, affords ample opportunity for many thousands to cross and settle in western Canada without coming in contact with our agents at all, and in view of the very large movement that has undoubtedly taken place by way of the wagon roads and trails there is justification, I think, for continuing to add 25 per cent to those arrivals from the United States recorded in this office.'

Q. That is only a guess at best.

(No answer.)

By Mr. Clancy.

Q. Do you take any notice of that?

A. No.

By Mr. Wilson:

- Q. In his report he adds 26 per cent and calls that a part of the immigration.
- A. (Mr. SMART.)—He does that; there is no standard to go by.

Q. Will you add that to your report?

A. No, we take the actual figures, the actual returns.

Mr. Scott.—You asked for a list of agents in the United States and Great Britain who are allowed living expenses at headquarters. The list is as follows:—

J. S. Crawford, T. O. Currie and Charles Tilling.

Q. Do you give the amounts?

A. They are allowed actual expenses.

Q. You ought to have that here.

A. The Auditor General reports show it.

Q. That is true. You must remember that people think we have nothing to do down here, but any member of parliament who does his part has more than he can do. I think the living allowances should be shown in full. The more you get of these things in your report the less trouble you will have from year to year. If you get it right once you will continue along the right line.

A. The question was just for a list of the agents in the Uinted States and Great

Britain who are allowed living expenses at headquarters.

Q. That may be true. I have not looked up the evidence. You know another question you answered was not all the one that was asked?

A. You wish the amount paid at each place?
Mr. SMART.—Just the amount paid at home?

- Q. Yes, because I understand two or three years ago no man was allowed living expenses when at home?
- A. (Mr. SMART).—So it is now, when a man is living at his own home, where he has his family, the rule is that no allowance will be given for expenses at head-quarters.
- Q. Supposing I was an immigration agent and did not see fit to move my family where you appointed me to go. Would you pay my expenses?

A. No.

- Q. If I moved my family there I would have to live at home and pay all my own expenses?
 - A. Yes, if definitely settled at any particular place. That is the general rule.

By Mr. Clancy:

Q. Where is Mr. Currie settled ?

A. At Milwaukee.

Q. How many are there of these agents altogether ?

A. (Mr. Scott).—Three.

By Mr. Wilson:

- Q. Is that all?
- A. Yes.

Q. It is not worth while—it is not a part of the policy of the government ?

A. It is an exception to the rule.

Q. That is another thing. The answer the other day led me to believe it was pretty general?

A. No, only three. Another question asked was, 'What is the rent paid for our

London office? What is the space, and what is the term of lease??

Q. Mr. Ingram asked that ?

A. The rent is £1,204 and 4s. per annum (\$5,860.33). The offices consist of a commodious ground floor, having an imposing frontage to Charing Cross of about 24 feet and containing a superficial area of about 1,100 superficial feet, together with corresponding basement space, immediately below, and two rooms on the first floor.

Q. I asked something about the furnishings there, with regard to the brass fix-

A. You asked why the department paid for the drawing of the lease. Mr. Preston was requested to have a solicitor in London look over the lease and arrange the terms to suit the conditions-all the particulars regarding the conditions of the lease not being known in this country.

Mr. SMART .- I think the tenant in the old country has to pay for the drawing of

the lease.

By Mr. Wilson:

Q. That is not the statement he makes. He got a solicitor to look over it. Do you mean to tell me that the tenant has to pay for the lease in the old country ?

A. (Mr. SMART).—The lease there is a regular great big book, almost as big as that (indicating a book about foolscap size on the table). They had the largest number of conditions in it I ever saw.

Q. I thought you as a business man would introduce something new in a work of

that kind?

A. In the old country, it is a tremendous document.

Q. Am I to understand that the solicitor drew that lease ?

A. I presume so.

Q. It is not a fee for simply examining it ?

A. Both.

Q. If he drew it, he did not want anything for examining it ?

A. I do not know.

By Mr. Clancy:

Q. Who drew the lease ?

A. I do not know.

Q. Who examined it?

A. I do not know.

By Mr. Wilson:

Q. I know in this country if a man leases a property to another man he would pay for drawing the lease.

A. Not always.

Q. That is the rule in Ontario, and whenever I leased property either to another party or from another party to myself the owners always drew the lease.

A. I suppose it depends upon the arrangement. Q. It depends on how badly the man wants it.

A. I bought a house and had to pay for the expenses of title.

Q. You wanted the house more than the man wanted to sell it. In Ontario if I buy a property the man who sells it to me has to pay for the deed. If I am not able to pay for it and give a mortgage I have to pay for the mortgage—for the registration

of the mortgage. The man who sold the property has to give me a deed. I can register the deed or not as I like. I have to pay for drawing the mortgage.

A. I think you will find in the Old Country that the lessee or the purchaser pays

for everything.

By Mr. Clancy:

Q. Have you any report as to whom that \$197 was paid for drawing the lease? A. I have not.

Mr. Scott.—There must be an account for it.

By Mr. Wilson:

Q. I do not think the Auditor General's report gives the name of the party who drew the lease.

A. (Mr. Scott.)—Mr. Preston's account will show who drew it.

Q. 'Preparing the lease,' is what it says. You will find it in the Auditor General's report on page L 18.

A. (Mr. SMART.)—'Preparing the lease.'

Q. Does it give the name of the party?

A. No; the account will show that. We might see really what it is.

Mr. Scott.—I will get a copy of the account—do you want a copy of the account? Mr. Wilson.—I think it would be just as well.

- Q. Do you know about why the heating apparatus had to be put in by us, Mr. Smart?
- A. Well, the whole place had to be furnished by us; we were getting nothing but the bare office, just the bare walls finished, that is all, and we decided that we would furnish it altogether with Canadian woods, and also heat it by a Canadian boiler.

Q. And you had to finish it? What do you mean by finishing?

A. It was plastered, and we put on the wainscotting to correspond with the rest of the woodwork. We had a regular specification prepared for the work, and that was followed out.

Q. What would you have had to pay for rent if they had had to finish it?

- A. I do not know. That was the arrangement we made, and that is the way it was done.
 - Q. I see you also pay Mr. Preston's income tax ?

A. Yes.

Q. He gets \$3,000 a year and something for living expenses.

- A. Well, that is a special tax, and I do not see why it should not be paid. He is compelled to pay it.
 - Q. Yes, I suppose he is compelled to pay taxes on the house he lives in ?

A. I do not know about that, the income tax is a special tax.

Q. Somebody has to pay for it.

A. It is a special tax—we have nothing here corresponding with it.

Q. Why, certainly; we have the provincial tax.

A. Not on government officials.

Q. I do not see why they should not pay; it is true we passed government legislation to prevent them being taxed. I would say you had not more right to pay Mr. Preston's income tax-I do not speak of it because it is Mr. Preston-than you have to pay any man's tax.

By Mr. McEwen:

Q. What is done with the High Commissioner? Mr. CLANCY.—He is a rich man, he pays his own. (No answer.)

A. I think so; I think it is right to pay that tax.

By Mr. Wilson:

- Q. I am afraid this was done years ago as well as now. Mr. Preston gets a salary of \$3,000, and he has other expenses amounting to \$456.26, and it does seem to me that a man getting so much salary should pay his own taxes.
 - A. How much is the tax ?
 - Q. The income is \$286.91.
 - A. That is a pretty heavy tax.

Q. And then he has postage; he pays \$10,041.48 for postage.

- Mr. Scott.—There was another question you asked, Mr. Wilson, in regard to the total expenses of Mr. C. A. Thompson, who accompanied the Scotch curlers. The total cost was \$441.96.
 - Q. Does that include salary ?
 - A. Everything, I suppose.
 - Q. Is he not an official of the government?
 - Mr. SMART.—He is when called upon.
 - Q. He is just paid by the day and is not a regular officer?
 - A. No.
- Mr. Scott.—Another question asked by you, Mr. Wilson, was in reference to the advanaces which were made to Mr. W. L. Griffith, page L—10, Auditor General's Report: Have these amounts been accountd for? The answer to that is that the amount has not yet been accounted for to us, but Mr. Griffith writes that he sent account to Mr. Preston. Correspondence is at present with the Public Accounts Committee.
- Q. Yes, he has had two advances. Why should he get the second advance before the first is accounted for. I certainly do not approve of this kind of business by officials; we ought to have some explanation of it.

Mr. SMART.—It ought to have been settled; I thought it was.

Q. And it might have been done before the second advance was made.

- A. That might be an impossibility; we sometimes have to make second advances, but the rule is that the person receiving an advance should account for the money he has received at the same time that the second advance is made.
- Q. It seems to me that a man employed for important work such as that should be able to live within his means?
- A. I confess that I took exception to certain items in that account, and Mr. Griffith said if he had been obliged to buy certain clothing that would not be of any use to him anywhere except in Patagonia. But I do not know that the account was still unsettled.

By Mr. Clancy:

- Q. I suppose if he were a resident of that country he would have to wear clothes of some kind.
 - A. Yes, I suppose he would, but he was sent there on a special mission.

Q. How long was he there ?

- A. He went there on a special mission for about two or three months. He interviewed the Patagonians, and with very good results, two or three hundred of them here. His contention was that he had to use certain clothing that would be of no use to him at home, and I think if what he said was true there was some justice in his claim.
 - Q. Did you ever see him dressed up in these clothes ?

A. No, I did not.

By Mr. Wilson:

Q. Do you remember any of the clothing; what was it like?

A. No, I have not seen any of it; I remember at the time I took exception to the account.

I suppose it would have to be light clothing would it not.

A. I suppose so.

- Q. Well, they would have to be very light, if they were not fit to be worn here.
- A. He does not live here; he lived in Wales, then.
- Q. I think that account ought to be settled.
- A. I thought it had been settled.

By Mr. Clancy:

Q. I would like to ask the Deputy Minister in reference to the statement to Mr. Wilson that Mr. Griffith was there for two months. Did he require clothing to the value of \$300 for that short time?

A. That \$300 would not represent clothing, it would represent a number of other items that probably were not objected to at all, but the whole account was left open because of the question in reference to the items for clothing.

By Mr. Wilson:

Q. What I object to is the two advances. If one account had been settled at the same time that the second advance was made, I would not feel the same way about it. But here is a man with an overdrawn account of \$150 or \$200, and it is not settled, and he gets another advance. I say that in my judgment it is not right.

Mr. Scott.—It is not right; it should have been settled.

Mr. SMART —He might have been stuck at the time he made the second advance.

Q. It would not have been a bad idea to let him stay 'stuck.'

Mr. Scott.—The next question you asked Mr. Wilson was in reference to the number of immigrants reported to have been sent in by the St. John Repatriation Society, 1902-03. There were from United States, 1,378; from Canada, 1,050; from ocean ports, 573, making a total of 3,001.

Q. They got \$300, did they not?

A. No; this is the St. John Repatriation Society.

Q. Oh, this is the St. John Repatriation Society; how much did they get ?

Mr. SMART.—\$2,000.

Q. Are these from the United States?

A. No, the details are all shown in the statement. They were 1,378 from the United States; 1,050 from Canada, and 573 from the ocean ports.

Q. Well, if they honestly did that I think that is all right.

Mr. SMART.—I think they did it, they are doing good work.

By Mr. Clancy:

Q. With regard to the province of Ontario, have the province any agents in England, they used to have?

Mr. Scott.—They have one at Liverpool.

Q. Mr. Spence ?

A. Mr. Byrne.

Q. Is he there yet?

Mr. SMART.—Yes, they sent Mr. Kyle there this, and I think last year too, to see what he could do in the way of getting farm help to come out to Ontario specially. These are the only two agents they have as far as I know.

Mr. Scott.—With reference to the question asked by Mr. Wilson, what were Mr. Bengough's duties for which he was paid his transportation, page L 20, Auditor General's Report? He was employed delivering lectures, etc., in the interests of immigration to Canada.

By Mr. Wilson:

Q. Well, where does the rest of his account appear?

A. The question you asked was, what were his duties and why he was paid anything ?

- Q. Certainly, I asked why it was that the \$30 appeared in the Auditor General's account alone; that was all that appeared in the Auditor General's account that I could find?
 - A. You said, 'What did Bengough do for the money ?'

Q. That is what I want to know? A. He was delivering lectures.

Q. Will you tell us what those lectures cost ?

A. I will ask the accountant, he can tell.

- Q. We do not seem to get at the point, the trouble is this is his passage from Liverpool to Montreal?
 - A. \$30. Q. \$30 ?

A. I do not see how that was, this is cheap travelling.

Q. That stands alone in the Auditor's General's report and it excited my curiosity. I would like to have it brought down to this Committee and also the date when Mr. Bengough was there?

A. In 1902.

Q. When he lectured, and what other expenses were caused I think it is absurd to say that the \$30 account will stand alone for a man like Bengough. The only way I can account for it is that it was the winding up of an account.

Mr. SMART, The other items may have been in the year before.

Q. I think we ought to have before us what he did for us, how many lectures he delivered when they were delivered, how much they cost apiece, and whether we allowed him living expenses?

Mr. Scott.—Very well.

By Mr. Roche (Marquette):

Q. Did Mr. Bengough visit the old country especially on government business?

A. No.

Q. As far as my recollection goes, Mr. Bengough was over there to engage in the Chamberlain campaign?

A. This was the year before, it was last winter he was over there for that purpose, but this was for the previous winter.

By Mr. Clancy:

Q. Was he there at the instance of the government?

Mr. SMART.—He was not sent there by the government.

Mr. Scott.—He was employed whilst over there.

Q. Can you say off-hand what he was paid ?

A. Where lecturers are required, we pay \$15 a lecture.

Q. If he went over there and delivered a good lecture, I suppose you would pay

him for it ?

Mr. SMART.—Oftentimes we arrange a campaign for lecturers, and very often something turns up that the regular lecturer cannot appear on the scene, he has to go somewhere else, and in that event the London office hustles around and gets the best lecturer they can get for that purpose, who is a Canadian.

By. Mr. Wilson:

Q. I would like to ask if you have changed your opinions in reference to the value of lectures during the last two years?

A. I do not think an awful lot of them.

Q. I think I could tell you that four years ago; when Mr. Preston was here he told us that the lectures were not a success, that there would be a dozen or fourteen people at the lectures; he did not approve of them?

A. That was his opinion at that time, perhaps.

Q. I notice in his report this year he is very enthusiastic over the lectures, and says that now there are 3,000 or 4,000 people at the lectures, and they turn the people away. They must have some fellow like Gamey over there.

A. Well, we never got any results from them during all the years they were given up to two or three years ago. We had lectures all over the British Isles, and we did

not seem to improve our returns as a result.

Q. Was it the fault of the lecturers?

A. I could not say that, but perhaps the people did not take the same interest in it, and the advertising might not have been as effective. But the new interest that was created two or three years ago in the old country has entirely changed things, and we can draw big audiences now, although it is a fact that the year before last, and previous to that, the lectures were attended by comparatively small numbers.

By Mr. Clancy :

Q. Were these farm delegates you sent over persons accustomed to lecturing ?

A. Some of them were good speakers.

Mr. Scott.—Some of them were remarkably good speakers, and they were very strong with the farming class over there; they told a plain, unvarnished story of what they had done out here themselves, which impresed the people.

Mr. Douglas.—The Canadian Pacific Railway sent a brother of mine down to Ontario, where he was well known, and they paid his expenses, and he brought up some

600 people from there.

Mr. CLANCY.—You had better not tell that in this part of the country.

Mr. Douglas.—It was the Canadian Pacific Railway people did it, not the government.

LOAN TO THE DOUKHOBORS.

Mr. Scott.—In reply to Mr. Wilson's question: 'Has the loan made to the Doukhobors been repaid? the information I have to give to the committee in reference to that is that the loan amounts to \$200,000 and has been owing for four or five years and it is intended to hold the advance as a lien against their lands; patents will be withheld until the claim is satisfied.

By Mr. Wilson:

Q. That is hardly a true statement. We ought to have the interest added to that. I asked for the amount they were indebted to the government, and we ought certainly to add the interest to that amount. The report is that the Doukhobors are doing well, that they have a lot of money to their credit and besides that the government had in their hands a good sum of money received for cattle and things that they sold on the Doukhobor account. Why did they not keep that, and why are these people allowed to go on when they are reported to have money and no effort is made to collect what is owing by them?

Mr. SMART.—The government did not really take that money which was received for cattle, &c., but it was put into a trust account by the Commissioner at Winnipeg with the idea and the understanding that when they came to their senses and wanted to purchase horses and cattle he would supply them with the money. We charged all the expenses in connection with that movement to that account and the rest of the money had been returned to the Doukhobors. When we advanced the loan to which Mr. Wilson refers, we simply said that we would hold it as a lien against their land.

Q. But for many years after that they did not take out their patents, and what

good was the lien ?

A. They have nearly all made entries now.

By Mr. Clancy:

Q. Do you intend to collect it ?

A. Yes.

Q. When ?

A. We will not allow them to have their patents until they pay it.

By Mr. Douglas:

Q. It is on the same basis as the grain loan ?

A. The same.

By Mr. Wilson:

Q. I wish you would add interest to that.

A. We have not added interest at all.

Q. I understood you at one meeting to tell us that you would charge them five per cent.

A. Perhaps I did.

Mr. Scott.—I cannot add the interest.

Q. Mr. Smart can do so. I think we ought to have a statement of account, and what the government intends to do. My recollection is that you stated we were to get five per cent interest on the loan.

A. (Mr. Smart) If I stated that, it will be done.

By Mr. Clancy:

Q. Are they able to do that ?

A. They can pay, I think, perhaps, some of it. I think what they intend to do, is to pay by installments. Prof. Mavor went up there this year, not representing anybody particularly, and in a note he spoke about their paying it by instalments.

Q. Has there been any communication on the subject through the department?

A. No, because we have not anybody to deal with directly; we know that we have the homesteads all in shape, and we can press it, perhaps, on Mr. Verigen, who is their leader. He understands, of course, all about it.

Q. I am not asking with a view of having it pressed; there may be good reasons

why pressure should not be used.

Mr. Scott.—Just now they are raising thoroughbred stock and displaying some intelligence.

Q. The only question is that Mr. Wilson asked: what is the policy of the government on the question. There seems to be none.

A. (Mr. Smart) There is a policy of making them pay.

By Mr. Douglas:

Q. They cannot get their deed unless they settle ?

A. No.

By Mr. Roche:

Q. Were the Galicians advanced money ?

A. No, this advance was made to the Doukhobors the first winter; you remember, they came here in the winter, that is the Yorkton colony, and they were in need of help. We provided for them. Through a committee of Doukhobors they got \$35,000 paid to them instead of to the steamship companies, as bonuses. They spent that money, and \$20,000 more through Mr. McCreary, who was the Commissioner at Winnipeg at the time; that was for provisions, and supplies as they needed them. The amount over and above the \$35,000, the total was about \$55,000 or \$56,000; we hold that as a loan; it was the government money that was advanced, and we hold it against the land until they settle. Before they get their patents they must pay the money. We have given help to two classes of people in that way, and we have given help in the same way, but not exactly to the same extent, where we found that the Galicians needed it. Two years ago they were advanced a little flour or something of that kind.

Q. Just to temporarily relieve their distress ?

A. Yes.

Q. But they have not given them loans and taken liens on their land?

A. Yes, we hold it against the land.

Q. The complaint up there is that the Galicians have inferior lands; they were settled along the Riding mountains?

A. Well, they went out and picked their lands themselves.

Q. The great complaint is that they are located there, and they do not know whether or not they have settled on the proper lands?

A. If they go ahead of the surveys, we have nothing to do with that at all.

By Mr. Wilson:

Q. Now, Mr. Smart, will you bring us down a statement with reference to the Doukhobors, with the interest added, at the next meeting of the committee.

A. The amount that they owe ?

Q. Yes, and I understand you now say that you have made advances to other parties ?

A. That was a little while ago.

Q. No matter whether it was a little while or long ago. I would like still to have it stated ?

A. I do not know whether you can have the amount.

Q. Why not ?

- A. Because that may be in the lands office.
- Q. Do they not report to you every year.

A. They report payments.

Q. Why not ?

- A. It stands there against these people; there are not so many of them, I do not know how many there will be, there are some.
 - Q. Will you bring us down what you have, because this is a new revelation ?
- A. No, it is not; I think I made the same statement years ago to the committee. Mr. Scott .- You asked the particulars of Mr. Adamson's account; that was the gentleman.

By Mr. Roche (Marquette):

Q. How many copies of the harvest number of the Free Press were got by the government?

A. I think 200,000.

Q. Is this the original copy; I understood from you the other day that there were

some issues of this number that were suppressed?

A. They were not suppressed, no. There were some tables showing the crops from year to year by diagrams. On looking at them in the office they did not seem to be over-complimentary to the country, and we cut them out.

Q. Had many of them got into general circulation ?

A. Not many of them.

Q. How many did you say of these altogether ?

A. 200,000.

Q. Who compiled these tables ? A. The Free Press.

Q. Had not anybody on behalf of the government the compiling of them ?

A. We purchased them from the Free Press.

Q. It seems rather strange that they should get into general circulation bearing the stamp of the government if they were incorrect? A. The tables took in in some cases the fiscal year and other years the party who

compiled them had taken the returns for the calendar year.

Q. I understand that besides these inaccurate figures there were many uncomplimentary things with regard to the climate that summer ?

A. I never read it myself.

Q. I have seen correspondence to the effect that people were deterred from coming

into the country in consequence.

Mr. Scott.—The American Land Companies came up here and got samples of that grain and exhibited it as Canadian produce.

By Mr. Clancy:

- Q. Did the government pay for this advertisement compiled by the Free Press without having first had the stamp of sanction by the department placed upon it?
 - A. I never saw the manuscript at all. Q. Perhaps Mr. Smart could tell that?

Mr. SMART.—I do not remember.

Q. Is it usual for a newspaper to get up an article of that kind without supervision?

A. It was a special edition.

Q. To get up statistics of their own and ask you to pay for them ?

Mr. Scott.—They took them from the government reports.

Mr. Douglas.—They get out an edition, and ask the government to pay for a certain number of them?

A. Yes.

By Mr. Roche (Marquette):

Q. There are reports from correspondence in that edition in reference to the storm, are there not?

A. Are there references to the storm in there ?

Q. Yes, in many places there are reports of damage to the wheat.

By Mr. Maclaren:

Q. That is from the correspondents?

Mr. Roche.—Yes, I say it was an unfortunate time to issue those statements just then. I would like to read a letter, it is a personal matter, but I think it is something that ought to be taken up and inquired into by yourself, because it will deter immigrants from coming here for a certainty. It is from a gentleman in Montreal who writes me to this effect.

Mr. Scott.—Give that to me, I will have a report on it. I do not think it has occurred in the office. We advertised in the paper up there asking the farmers to

send in applications for farm help.

By Mr. Wilson:

Q. Where was this man Adams working ?

A. In Scotland.

Q. I see he has had to pay \$14 exchange?

A. Yes, that was on his money I suppose going backwards and forwards.

Q. He has steamship fares \$196, where was he?

A. He was in Scotland.

Q. Where would he have to pay these fares?

A. Montreal and Liverpool.

Q. \$196 ?

A. Yes.

Q. Why Bengough got over once for \$30 ? I presume he has his family and takes them with him?

A. Adamson never takes his family.

Mr. SMART.—He takes two trips each year.

Q. You pay for him no matter how often he goes ?

 $2 - 53\frac{1}{2}$

A. He brings over the very finest class of immigrants we have coming into this country. He gets orders from farmers before he starts, and in a great many cases they advance the money for transportation before he starts.

Q. That is the men who want the people ?

A. Yes, I think he brought over about 500 last year altogether.

Q. I did not understand what his business was before.

A. That is what he does.

By Mr. Roche (Marquette):

Q. You spoke a while ago about some Galicians being located in the timber reserve in the Riding Mountains. There are other settlers located there in anticipation of its being opened up?

A. I know.

Q. There are some of these places, in township 19 for instance, where it is almost devoid of timber, and is a good farming country. In these townships of course the railway companies own some land and they are selling them and settlers are going in,

but still the government keeps the rest of it tied up as a timber reserve.

A. The difficulty about those places you refer to is that there is timber all around them, and you have to pass through the timber to get there and it is necessary in order to preserve the timber reserves to rigidly enforce the regulations, and to observe the limits of the reservation of this timber reserve especially so as to give the young timber a chance to grow. But we have a very hard time to do it. We have difficulty in making exchanges with the Hudson's Bay Company for lands owned by the company in the Riding Mountains, and we have not been able to effect it so far.

Q. I understand that the government is going to introduce legislation dealing

with the matter?

A. There is an amendment proposed, I think, to the Dominion Lands Act.

Q. Do you not think it was a mistake to allow any of the land in there to go into

the hands of any of these companies ?

A. It should never have been done; it is too bad, and so far as the Moose Mountain reserve is concerned, we effected an arrangement there by which we got the Canadian Pacific to Withdraw from a large number of sections and we were able to exchange with the Hudson's Bay Company also. We have the Moose Mountain reserve in first-class order, but with this Riding Mountain reserve we have had trouble all through. Many have gone in there and in the township you refer to there have been a great many people going in; there is a beautiful lake there and many half-breeds have gone in and settled.

Q. So far as the government is concerned, is it the intention to reserve that still, or will it be thrown open?

A. We have not decided. It has been before the Minister and the Department for a good while; we do not know what to do with it; it is a very awkward thing to handle. The railway company had, I suppose, the right to sell their lands there to settlers, until we got them to take some other lands, but these were sold before the exchange was made.

Mr. Scott.—Is there any other information you would like ?

Mr. Wilson.-You have a lot to give us yet.

A. I have given all you asked for so far.

Q. Well, bring us at the next meeting the information we have asked for now.

Committee adjourned.

Having read over the above transcript of my evidence, I find the same to be correct.

JAS. A. SMART. W. D. SCOTT

The following is the statement of immigrant arrivals at ocean ports during the fiscal year 1902-3, submitted by Mr. Scott:—

A 1.	10
Arabian	46
Armenian	113
Australian	741
Austrian	781
Bermudian	6
Bulgarian	7
Belgian	303
Bohemian	16
Bukowinian	1,759
Croatian	1
Dutch.,	209
Egyptian	1
Finnish	1,734
Flemish	14
Freich	937
Galician	8,382
German	1,869
Greek	193
English.	32,087
Welsh	423
Scotch.	7.046
Irish.	2,236
	2,250
Hebrew	
Hungarian	2,074
Maltese	2
Mennonite	38
Newfoundland	335
New Zealand	2
Prussian	5
Polish	274
Persian	40
Roumanian	437
Moldavian	1
Russian	5,505
Servian	2
Saxon	13
Slovak	82
Sicilian	1
Spanish	7
Swiss	73
Syrian	847
Scandinavian	
Danish	308
Icelandic	917
Swedish	2,477
Norwegian.	1,746
Turkish	43
West Indian.	17
United States.	65
Italian.	3,370
Ivalian	5,510

The following are the nationalities and numbers included under the head of miscellaneous in the immigration report:—

H 사용 : X [2] 보고 있는데 20년 (12년 12년 12년 12년 12년 12년 12년 12년 12년 12년	
Arabian	46
Armenian	113
Australian	46
Bermudian	6
Bulgarian	7
Dutch	209
Egyptian	1
Flemish	14
Greek	193
Hebrew	2,066
Maltese'	2
Newfoundland	335
New Zealand	2
Polish	274
Persian	40
Roumanian	437
Moldavian	1
Servian	2
Sicilian	1
Spanish	7
Swiss	73
Syrian	847
Turkish	43
West Indian	17
Italian	3,370
	8,152
	0,104

The following is the list of sub-agents in Great Britain who receive the extra five shillings bonus, as submitted by Mr. Scott:—

Lindsay, T. & H., 18, South St. Andrew street, Edinburgh, steamship agents.

Fleming & Haxton, 76, High Street, Dundee, steamship agents.

Cook, John & Son, 62, Marischal street, Aberdeen, steamship agents.

Macpherson, D., 15, Union street, Inverness, steamship agents.

Peace, Wm. & Son, Kirkwall, Orkney, booksellers and steamship agents.

Wallace, W. G., Nile Court, Ayr., Ayrshire Post.

Millar, D. M., Dumfries, commission agent.

Telford, Fred., the Exchange, Carlisle, auctioneers and shipping agents.

De Rome & Sons, Stramongate, Kendal, auctioneers and shipping agents.

Potts, Jas. & Sons, 26 Sandhill, Newcastle-on-Tyne, shipping agents.

Johnson, W. J., 96, High street, Gatesnead-on-Tyne, shipping agent.

Burt, Jas. & Son, 184, High street, Kirkcaldy, booksellers and shipping agents.

Bardwell, H. E., St. Stephen's Square, Norwich, shipping agent.

Salvation Army, 101, Queen Victoria street, London, E. C.

The following is the list of local commission agents in the United States, 1902-03, as submitted by Mr. Scott:-

MICHIGAN.

D. Allard, Zilwaukee. G. H. Arnott, Levering. Wm. Akins, Vassar. Geo. H. Beach, North Branch. F. M. Beaman, Albion. Thos. Brennan, Chesaning. F. Bellinger, Bessemer. W. Bingnam, Gagetown. Wm. Bolton, Midland, Midland County. Ed. Boseley, Unionville. D. Brown, Sebewaing. E. W. Brown, Farewell. Jas. W. Bauer, Hastings, Barry Co. E. G. Brainard, Stanton, Montcalm Co. N. P. Chamberlain, Mancelona. C. H. Clark, Stamwood. W. H. Cline, Mount Pleasant. Geo. Cockburn, Ludington, Mason Co. Martin Conaton, Bad Axe. H. C. Cudney, Ewart, Osceola Co. E. A. Convis, Owosso. J. J. Dodge, Decatur, Van Buren Co. Jno. Doyle, Saginaw. W. H. Simmons, Doyle, St. Clair Co. T. E. McDonough, St. Clair, St. Clair Co. R. C. Sawdey, Coldwater. H. H. Davis, Caseville. J. K. Durst, Gaylord, Otsego Co. T. H. Ferris, Pinconning. G. Freeman, West Harrisville. A. Ford, Charlotte, Eaton Co. Dr. S. J. Gareau, Saginaw, Saginaw Co. Henry T. Gilbert, Sand Beach. Geo. Greenwood, Elmira, Otsego Co. Bruce Green, Manton. Erastus Harris, Lakeport. F. C. Harrington, Howard City. V. S. Hollinbeck, Alma. L. H. Howse, Brown City. A. F. Houston, Croswell, Sanilac Co. G. T. Field, M.D., Chase. H. D. Keller, Wyandotte. Walter S. Keyes, Coleman. R. A. Kilgour, Marlette. A. Lieberthal, Ironwood. Angus G. McKay, Port Huron. D. J. McGinnis, Cooks, Schoolcraft Co. James McLean, Reed City, Osceola Co. R. H. Martin, Standish.

W. A. McLean, Greenville.

Geo. E. Newell, Flint. Ernest Nicholson, Luther, Lake Co. N. J. Oliver, Black River. V. A. Poole, Cedar Springs. Frank A. Wickens, Pontiac, Box 134. H. C. Pierce, Elk Rapids. M. F. Quaintance, Petosky. J. A. Redmond, Sanilac Centre. Grant Reid, Vernon. Del! Roberts, Le Roy, Osceola Co. V. S. Rolfe, Tustin. Rev. Albert E. Seibert, Lake View. F. Schmack, Sebewaing. J. N. Simmons, Deckerville. H. A. Spencer, Cadillac, Wexford Co. B. S. Stratton, Owosso. Wm. C. Sutherland, Sault Ste. Marie Al. L. Thomas, Grand Haven. Jnc. J. Turner, Clifford. A. J. Urquhart, East Tawas. L. E. Vorce, Frankfort. John Warehock, Parisville. J. H. Westerman, Paris, Mecosta Co. O. W. Wiley, Big Rapids. John Wilson, Carsonville. W. Wallace, Ionia, Ionia Co. F. Thurtell, Traverse City. J. P. Galliver, Clare, Clare Co. W. A. Thomas, Bay City. W. S. Wilson, Barrytown, Mecosta Co. W. D. Springer, Whitehall. W. S. Tallant, Shelby. Rob. B. Merry, Joyfield. A. J. Gibson, Kalkaska, Kalkaska Co. James T. Mason, Clarkston. W. J. MacMaster, Hancock. N. E. McKinnon, Farington, Oakland Co. Geo. H. Trenaman, North Bc'h, Lapeer Geo. W. Petrie, Lapeer, Lapeer Co. Isaac Turner, Saginaw. Joseph Fisher, Leesville, Wayne Co. S. F. Munson, Mayville, Tuscola Co. W. C. Shell, Cass City. James Lyle, Fife Lake, Grand Traverse CoGustav Goerbig, Rothbury, Oceana Co. W. H. Hanna, M.D., Kingston, Tuscola Co. C. A. Berg, Escana. Andrew Lind, Ishpeming.

MINNESOTA.

N. Campbell, Crookston. F. W Goertz, Theilman. J. C. Koehn, Mountain Lake. S. F. Long, Worthington, Noble Co. H. E. McGonigle Waseca. J. H. M. Parker, Duluth. P. W. Simpson, Hutchinson. Peter Johnston, Preston. John Marth, Barnesville. J. A. McKay, Alexandria. Abel Armstrong, Hendrum.

A. M. Eklund, Hallock.

James Kelly, Wadena. F. G. Dennicliffe, Windom. Peter Johnston, Fosston. G. Mix, Minneapolis, South 13161 1st st. R. Price, Fairmount. E. J. Meilicke, Windsor. M. J. Jacobson, Wheaton. R. R. Stoner, Winthrop.F. J. Lange, Minneapolis, 1228 Washington Ave, N. Andrew Hoidale, Dawson.

Wencer Fox, Iron river.

C. M. Jelleff, New London.

H. E. McRae, Chippewa Falls.

WISCONSIN.

F. S. Baldwin, Waupaca. A. W. Ballantyne, South Milwaukee, Wm. Barr, Jefferson. J. F. Clark, Bent Block, Oskosh. W. D. Corrigan, Plainfield. A. L. Hellwig, Bayfield. P. Cress, Phillips. Frank Heidt, Portage. R. J. Dugdale, Plattsville, Grant Co. Robt. M. Lamp, Madison. W. W. Fisher, Ashland. S. D. Forbes, Westfield. D. McQuane, Hayward, Sawyer Co. Jno. A. Flanigan, Rudolph. Jno. H. McRae, Eau Claire, Suite 1, Inggram Block.

John R. Means, Stevens Point. A. B. Noble, Ashland. J. Ross Porter, Mt. Morris. Samuel Shaw, New Richmond. Stephen Plumley, El Pasco, Pierce Co. Frank H. Hurd, Wabasha. Thos. Fairbairn, Milwaukee, New Insurance Building. Hans O. Erickson, Tomahawk. Wm. Kissack, West Salem. Geo. D. Wood, Appleton, Outgamie Co. M. A. Grasse, Milwaukee, 400 East Water Street.

C. H. Hegge, La Crosse, 1531 George St. August Braatz, Wausau. Ferdinand Hemmings, Milwaukee, 134 Sec ond Street.

OHIO.

C. T. Amsden, Greenwich, Huron Co. F. B. Barber, Colebrook. J. C. Bigelow, Bostwick, Geauga Co., Box Albert Pickering, Columbus, 199 North G. W. Carter, Osborn. Wm. Gates, Toledo, 403 Madison Street. E. B. Gorsuch, Springfield. W. M. Morlan, E. Liverpool, Columbiana Co. Frank E. Moore, Alavada, Seneca Co. John H. Nigh, New Washington, Crawford Co., Box 12. W. S. Sears, Sidney. Gamble Shields, Marysville. A. J. Sims, Kent. Jas. M. Smith, Bloomville, Seneca Co. C. S. Wallace, Moark Centre.

C. J. Nelson, Kent. C. B. Johnson, Van Wert. High Street. G. W. Squiggins, Cleveland, 241 Superior Street. Chas. C. Smith, Columbus, Chittington Block. Chas. Tarrance, Defiance, Defiance Co. R. D. Woodwansee, Columbus, 52½ East State Street. Wm. A. Hanna, Napoleon. S. M. Newlun, Lattas, Ros Co. A. J. C. Smith, Tiffin.

Thomas M. Foran, Buffalo, 57 California Street, N. Y. L. Harper, Conneaut.

оню—Concluded.

E. G. Wickersham, Grover Hill. Willard S. Weaver, Germantown, Montgomery Co.

Jno. M. Willeman, Florida, Henry Co.,

Box A. Geo. A. Whitney, Toledo, 205 Spitzer Building.

John Bellings, Cowie, Webster Co. Elmer Bruce, Laporte City, Blackhawk Co. C. B. Byer, Hartley, O'Brien Co. Herman C. Mills, Okoboji. S. F. Boyd, Davenport.

G. W. Robertson, Marion, 105 Walnut St. R. H. Rynard, Burkettsville.

F. M. E. Sibert, Westen, Wood Co.

John Powell, Shawnee, Berry Co.

Robert C. Carter, 1340 Harvard Street. Cleveland.

S. G. Drushel, Mt. Hope.

IOWA.

J. T. McFee, Lennox, Taylor Co.

L. L. Klinefelter, Mason City.

SOUTH DAKOTA.

Jas. Brooks, Watertown.

C. S. Doolittle, Ipswich, Edmunds Co.

J. W. Keating, Clark.

J. Trenholm, Henry.

J. Heinz, Mission Hill (or Violin).

E. H. Darrow, Sioux Falls.

Ed. Black, Geddes.

J. W. Rogers, Aberdeen.

Geo. F. Ott, Watertown.

R. H. Arthur, Mitchell.

NORTH DAKOTA.

Henry Marcoe, Churches Ferry. J. W. Sauntee, York.

Rev. F. A. Muller, Cathay, Wells Co.

MISSOURI.

Fred. B. De Mott, Hopkins. M. D. Shamblin, Bethany. Ed. Glenn, Louisiana.

A. D. Barnett, Guilford. Jno. W. Brooks, Warrensburg.

TEXAS.

Louis Lund, Olivia, Calhoun Co.

NEW YORK.

A. P. Shutt, Perry, Wyoming Co.

Wm. E. Adams, 346 Dyke street, Wells Ville, Alleghany Co.

INDIANA.

J. K. Vance, Farmland. P. B. Bollinger, Shipshewana. Everett & Kautz, National Real Estate Co., Rooms 30, 31 & 32 Tri-State Building, Fort Wayne.

Wm. H. Keck, Hamlet. Frank Fisher, Mexico. Howard W. Smith, Indianapolis.

CALIFORNIA.

C. J. Nelson, Kingsbury, Fresno Co. Wm. H. Thornley, 382 Washington st., San Francisco.

Newton Hogan, 3441 Hough st, Los Angeles

KANSAS.

Jos. W. Sims, Howard, Elk Co. H. H. Fast, Hillsboro. C. W. Miller, Hays City.

M. F. Shupe, Lost Springs. J. G. Anderson, Midway.

NEBRASKA.

J. J. Barge, Beemer. D. R. Buck, Omaha. G. F. West, 1401 Franam st, Omaha.

PENNSYLVANIA.

A. W. Alexander, Burnham.
Sanl. Dunseaith, Room 74, 339 Fifth st,
Pittsburgh.

H. C. Allan, C. P. & T. A., New York, Chicago and St. Louis Ry. Co., Erie.E. E. Work, Beaver, Beaver Co.

C. W. Heydrick, Meadville.

ILLINOIS.

A. M. Guittard, Arthur.
W. R. Perty, Ashton.
Jas. Garney, Harvey.
Rev. Father Bourassa, Pullman.
L. B. Dickey, 619 65th Pl., Chicago.
J. B. Green, Ramsay.
W. A. Shonkwiler, Atwood.
John Haacke, Canton.

G. E. Stebbins, Marseilles.
J. H. Ray, Wilmington.
R. S. Elworthy, 2145 Wilcox Ave., Chicago.
T. J. Burns, Springfield.
Geo. J. Main, Quincy.

ONTARIO, CANADA.

Oliver B. Stockford. Rat Portage.

R. A. Burris, Port Arthur.

Henry Long, Norris.

NORTH-WEST TERRITORIES.

H. L. Briggs, Olds, Alberta, Eastloh's Ranch.

UTAH.

J. W. Taylor, Salt Lake City.

Alan Wakeling, Robinson, Juab Co.

MASSACHUSETTS.

H. E. Sweet, 410 Tremont st, Boston.

Alex. D. McLeod, 48 Green st, Haverhill.

J. B. Hurtubise, 292 Bridge st. Lowell.

MONTANA.

Walter Matheson, 111 6th ave., Helena. Messrs. Griffin & Stannard, Kalispell.

KENTUCKY.

M. V. Bates, Cedar Grove.

H. C. Snyder, 445 E. Market st., Louisville.

HUNGARIAN.

Zoltan Von Rajcs, Rosthern, N.W.T.

STATE OF WASHINGTON.

E. W. Davies, 512 Empire State Bldg., Henry Cook, Tacoma. Spokane.

OKLAHOMA.

N. B. Easton, Stillwater.

W. L. Thomas, Oklahoma City.

INDIAN TERRITORY.

W. H. Williscraft, Tahlequak.

House of Commons,

Committee Room 34,

OTTAWA, June 21, 1904.

The Select Standing Committee on Agriculture and Coloniation met here this day at 10 o'clock a.m., the Chairman, 'Mr. Douglas, presiding

The CHAIRMAN.—Mr. W. D. Scott, Superintendent of Immigration is here for further examination.

Mr. Scott.—I produce a copy of accounts in connection with the London office. Mr. Clancy.—I suppose those are in conformity with Mr. Wilson's request.

Mr. Scott.—I also produce a list of the names of agents who have been stationed at Indianapolis since the opening of the office there and the number of immigrants sent in; also a list of immigration agents employed on salary in United States during the fiscal year 1902-3, the total salary paid to each, and the amount expended by each for travelling and living expenses; also a list of the names of paid agents in United States, showing the number of people sent by each agent, the salary they receive, and the amount of expenses for the year 1902-3.

Mr. CLANCY.—Is it proposed to have these statements form part of the report.

The CHAIRMAN.—Well, it is for the committee to say; it will make a very lengthy report.

Mr. Scott.—We have 50 reports from the delegates who were in England, and it

would make a big pile of matter.

Mr. Clancy.—I would suggest that an opportunity be afforded of looking over those statements. I am speaking for myself, of course; I do not know what Mr. Wilson's views may be. There is no use making a bulky report unless the information itself is important.

Mr. Scott.—There is really nothing in these delegates' reports. It just shows

where they were and what they did.

SYSTEM BY WHICH SETTLERS ARE LOCATED UPON LANDS.

By Mr. Clancy:

Q. I would like to have some information; if convenient we might possibly have it at the next meeting, with regard to how settlers are placed upon the lands by the land agents, their directions, &c. I was speaking in an informal way, Mr. Smart, to Mr. Scott before we came in, as to who will be able to give that information. Mr. Scott intimated that he had nothing to do with the homesteads, although that part was under his control?

A. That is the location of the settlers; I have nothing to do with the homesteads.

Q. Under whose control, may I ask, Mr. Scott, are the agents ?

A. Under the deputy minister. That is, the homestead agents, the Dominion lands agent?

Q. Yes?

A. They are under the deputy minister.

Mr. SMART.—We have a Commissioner of Dominion Lands, but it is really under the department all the same.

By Mr. Clancy:

Q. What is your position, how is it described, Mr. Scott ?

A. Superintendent of Immigration.

Q. And you see that the immigrants are delivered at Winnipeg or other points,

and you have nothing more to do with them ?

Mr. SMART.—His branch has to do with the land guides service. The land guides take people out, strangers who come, and drive them out over the country to the district, and they can select what lands they want. Then they come back and he takes them to the land office.

Mr. Scott.—They get \$2 a day for the days they work.

By the Chairman:

Q. They are not employed all the time ?

A. We generally like to get a bunch of three or six people, sometimes more, so that one guide can take them out.

Q. Are any of those immigrants placed upon lands other than the government lands ?

A. Only on Dominion lands.

Q. Only on Dominion lands ?

A. Of course a great many settlers buy private land from railway companies, and so on, but those are a class of people we do not have very much to do with. They do not bother us much, they are people with money.

Mr. SMART.—You see the land companies will have their own officers if they sold

the land.

By Mr. Clancy:

Q. You have no connection with those at all ?

A. We would not object to our guides going out with them, any person who goes into the country, any strangers.

Q. If the C.P.R. had lands?

A. If they did not send anybody to take care of their people.

Q. Would your land guides go to their lands ?

A. Their lands are all mixed up with the homesteads, you know

Q. Quite so, they are all mixed up, but in case they located them on the lands of railway companies I suppose you would make no distinction as to who should pay for the services of the guide?

A. Oh, no, that is not done very often. In nearly every case, you might say in every case, the settler coming in gets an entry, gets a free entry for the homestead, and in addition to that he buys, many of them buy, the adjoining railway land so they are all homesteads, at least the great bulk of them. There are some, I think, in Southern Manitoba, there have been a great deal of railway lands, sold to settlers who have gone in and settled on them. In those districts we have no land guides.

Mr. Scott.-We have no land guides.

By Mr. Clancy:

Q. What is Mr. Speers' position ?

Mr. SMART.—He is a colonization agent. He inspects all the colonies and reports on their condition. We have always been very careful as to locating any number of people in one locality. He has had to do with the location of the Galicians, for instance, in small colonies through the west, and he also visits all the colonies to see what condition the people are in, and the progress they are making and advises with them.

Q. Does he advise them as to the location they should make ?

A. Not necessarily, no.

Q. I mean where the colonies go in ?

A. He advises with the people.

Q. And he has nothing to do outside of inspecting those colonies and so on ?

A. No, really nothing unless he is asked to do special work. For instance, last year he had a great deal to do with the Barr colony. Practically, he took charge of

their location, but he did not advise them as to the location, because they had already selected it, but he went with them to see that the party was properly conveyed and that they were looked after and not imposed upon. Last autumn Mr. Lloyd, who is now apparently the head of the colony, came here with the idea of getting us to give a grant of land for a town site, for the Lloydminster town site. We declined to do that. He stated that the Canadian Northern Railway would locate their station at a certain point if the townsite were located there. We simply told him we would take the land ourselves jointly with the Canadian Northern Railway if they would locate their station there and survey a portion of it so that the people who were living in the town—at that time there were a great many living in tents and they did not know where to locate—would be able to get land and we told him any person who built in that town site up to the first of January would get a free lot. A part of the duty of Mr. Speers has been looking after that matter, quite an important thing too, deciding who were entitled to lands and to adjust any differences in regard to that matter.

Q. Well, the inspection of colonies now is pretty well at an end, is it not ?

A. Yes, very largely. In the earlier days of his appointment part of his duty was, especially in the autumn, to see that people would not likely be in want of anything, to provide them for the winter, and in many cases he distributed flour and feed and provisions of different kinds to the people in order to prevent anything like destitution. Mr. Wilson asked me for a statement in connection with that very thing. I have the original statement showing the names of persons indebted to the government for supplies of seed grain or provisions; I have not got copies made that I can leave with the Committee, but if the Committee want it, I can give it to them. But that was part of his duty to look after all these colonies to see that they were not in a state of destitution during the winter.

Q. At present he has, it seems, very little to do?

A. Well, he is kept pretty busy. He has just been away for two months.

Mr. Scott.—He has just got back from the Barr colony after arranging for seed grain for them and so on.

By Mr. Clancy:

Q. What is Mr. Speers' salary? He is rather an important officer?

Mr. SMART.—\$2,000.

The CHAIRMAN.—He is a man of very decided ability.

By Mr. Clancy:

Q. For a man with very decided ability his scope of work should be enlarged. Now, the seed grain business does not take an intellectual giant, does it?

The Chairman.—Not necessarily.

Mr. Smart.—And arranging these land matters. It is a pretty amportant thing.

Q. It is of some importance, but my information is that Mr. Speers is not engaged all the time with work, that there is not the work there to do. The conditions have changed. I am not arguing this, but asking if it is the case?

A. Not that I know of. I do not think there is any change in the conditions, in fact there are more people going in now and more colonies are being organized all the time.

Q. What colonies are being organized at this moment ?

A. Well, these Galicians colonies have been established all through the country.

Q. They were established some time ago, were they not ?

A. Yes, but new ones are being established all the time. Ten thousand came in last year and they all went into colonies. Many went into already established colonies, but others had no connection with the people who had been there and simply had to locate for themselves.

Q. Has Mr. Speers anything to do with locating these colonies :

A. Yes, he goes out with them and often decides as to where they should locate.

Q. Well, has he located them all in Dominion lands?

A. Yes, I think so.

Q. Well, will you be able to say at the next meeting whether that is true or not ?

A. Oh, yes, he has, he cannot locate them on any other lands. Numbers of Galicians have located themselves, for instance, on swamp lands, a few years ago that belonged to the provincial government, and Mr. Scott says within timber reserves. But outside of that Mr. Speers looks for land, where there is a good large tract of Deminion lands upon which he can locate settlers.

Q. I understand their location established in the timber district nave not been

recognized, is that so ?

A. In the Riding mountains, I suppose you refer to ?

Q. Yes.

A. There are a few on the outskirts of that timber reserve. We have not recognized the right of any person to that.

Q. Well, what is the policy of the government in regard to that ?

A. Well, the policy has been to maintain these timber reserves. In a number of cases we have been able to do that. In the Riding mountains there has been a great deal of difficulty, because we have not been able to exchange with the Hudson Bay Company for their lands nor the railway company owning the odd numbered sections. In a few instances the railway companies have sold their lands within these reserves, and now the question will be as to whether we will rearrange the reserves or divide it up.

Q. Is not the difficulty becoming more aggravated as time goes on ?

A. Well, I do not know that it is very much more. A man cannot locate a homestead in these timber reserves and under the law he cannot enter for a homestead if there is more than 25 acres of wood on a quarter section.

Q. But supposing he does ?

A. We will not recognize his right at all.

Q. Is he permitted to remain there undisturbed?

A. It is pretty had to drive him off.

Q. The difficulty it seems to me would be this, that if he goes there and makes

some improvements, tacitly he does it with your consent ?

A. No, he has not our consent. I do not think a man ever went into a timber reservation that did not know, that the government would refuse to allow him to hold the land.

Q. Has he been so notified ?

A. I think they have been notified ?

Q. Is there any record in the department that this has been done?

A. No, not particularly.

Q. What means have you of knowing that they have really been notified? You know, of course, there is often an opinion prevailing along certain lines, and it may be thought that they will not be interfered with?

A. There are so very few cases that it is hardly worth while considering at the

present time.

Q. How many cases are there ?

A. I do not suppose there are 25. At any rate not 50 cases.

Q. Fifty cases would be a serious matter, would it not ?

A. No, I think not, because most of them will be upon the outskirts of the reserve where the land is not covered with timber, and I think we can arrange that satisfactorily. There is only one township which was referred to by Dr. Roche the other day before the Committee in which there is likely to be any difficulty as far as Riding mountain is concerned. On the other hand the timber reserves at Turtle mountain and Moose mountain if it is impossible for settlers to go on because we own the whole of the lands, we have made exchanges so that the timber all belongs to the government, and every person knows that these are timber reserves, and no person will be allowed to receive a homestead in them or to locate there.

By Mr. Ingram :

Q. In regard to those 50 cases you spoke of, are they still holding that land?

A. I do not believe there are one half that number; I said 50 because I desired to be on the safe side. However, they are still holding it.

Q. And making improvements ?

A. Yes, a little, but it is impossible to drive them off once they get on.

By Mr. Robinson (Elgin):

Q. You will be able to sell that land ultimately, will you not?

A. We prefer to give the land to those people who have settled on it, if we can do so, without injuring the timber reserves.

By Mr. Ingram:

Q. These are what you call 'squatters.'

A. Yes, that is what we call them.

By Mr. Sproule:

Q. I suppose their object in settling there is to get the timber ?

A. There is not very much timber.

Q. Then what is their object in going there ?

A. I suppose it was because most of the land around the reserves was located before they came in. I do not know whether they have been advised by any person or not to go in and squat there.

By the Chairman:

Q. They are allowed to get the dead timber ?

A. All that they want, but they are not allowed to take it out for selling.

By Mr. Robinson (Elgin):

Q. Are there any people going into the Barr colony now? And how are they

getting along ?

A. Those left in the colony are not getting along as well as we would like to see. Those that are not in the colony proper are doing remarkably well. Perhaps one half the total number that went in there in that party, located outside, that is, they did not locate where they originally intended to, and on the land set apart for them in the first place. These people are doing remarkably well, but those who settled in the colony seem to be not doing so well-I do not know what to think about some of them.

Q. They are not accustomed to the work of settlement ?

A. They are not, and then again they are cut off from other settlements, they are 200 miles from a railway now, and that has its influence.

Q. I understood there was a railway going in there ? A. There will be one through their colony, perhaps this year.

By Mr. Blain:

Q. About how much money has the government expended on the Barr colony, Mr. Smart ?

A. In looking after them ?

Q. For everything, taking it altogether. A. Perhaps we have spent \$7,000 or \$8,000.

Q. How many people are there ?

A. About 2,000-I am taking into account the whole party. There were about 2,000 came in in the first place. The difficulty was that they located so far from a railway to begin with, but they were determined to go there.

Q. Who was responsible for that ?

A. Mr. Barr, who selected the site himself; nothing would do but that they would go there; you could not advise them otherwise; they would not take advice, so what

the department did was simply to make the best arrangement for them and to see that they did not really suffer in consequence.

Q. Has there been some expenditure during the last winter ?

A. Yes. Last year there was a question as to whether they would have, at that distance from the railway sufficient supplies, and in order to protect ourselves, without advising them, I arranged with the Northwest Mounted Police Force to take in an extra supply of about \$5,000 worth of provisions, so that in case they were needed during the winter they would be prepared for emergency.

By Mr. Robinson (Elgin):

Q. Is a a railway projected into that district now ?

A. Yes, the Canadian Northern, it is expected that their line will be built through there this year.

By Mr. Blain:

Q. You say that that portion of them who are not settled in the colony proper are doing pretty well. What proportion of them have not settled in the colony?

A. Perhaps one-half or more than one-half. There are now about 300 homesteads represented in the main colony; there were 400 to begin with.

Q. What is the difficulty with the colony as it is ?

A. The main colony?

Q. Yes.

A. I think there is too much machinery to manage a colony. I am afraid they are going into too many things. A great many of them seem determined to live in the town—Lloydminster. I do not know whether Mr. Lloyd is responsible for it or not, but they have all sorts of organizations. They have their council and hold their regular meetings and so forth.

By Mr. Robinson (Elgin):

Q. They do not live in a community, do they ?

A. No.

By Mr. Blain :

Q. I understood some of them have means ?

A. Some of them have. It is only a few of them we have to help.

By the Chairman:

- Q. They are too highly civilized for their surroundings, that is about the size of it?
- A. A good many of them were farmers, and a good many of them of course were not.
 - Q. How many of them were farmers ?

A. Perhaps one-half of them.

- Q. What lines of employment did those who were farmers follow before coming out there?
- A. All sorts of employment. They are really a good class of people as far as the people themselves are concerned, and I have no doubt at all, if they had located where there were other settlers going in they would have been far better off.

By Mr. Blain:

Q. I thought that the policy of this government was to locate people of different nationalities not in settlements, but to scatter them around among other settlers?

A. It is impossible to locate them in that way always. You can well imagine that if we ourselves were moving to a new country, a number of us going together, we would like to locate together. The result is that we have to locate them in small colonies, but we are doing it in very, very small colonies.

Q. How many ?

At Perhaps in some cases not a hundred, in other cases there may possibly be 200. It is however, impossible, to expect foreigners to come in and scatter all over when they can get together in small groups, especially when they speak a different language. It is quite natural for them to want to be amongst their own people, but I quite agree that it is rather a disadvantage to have a very large number settled in one locality.

By Mr. Blain:

Q. It will take that much longer to assimilate with our people ?

A. Yes.

Q. Are there not other colonies being promoted like the Barr colony at the present time?

A. No, we have discouraged it, and anything in the shape of reserving land for any body of people has been discontinued. In fact, it is almost impossible to keep any land now, there are so many going into the country. We had a case last year, the Society of Friends; representatives came from the old country and wanted to secure a township or two, and they were to come this year. Some of their representatives came ahead this year, but found that a good many of the lands they wanted had been located on when they got there.

By Mr. Robinson (Elgin):

Q. You could not put them off?

A. No, you could not put them off. We never interfere with the squatters.

Q. You give them a deed eventually ?

A. Yes, unless it occurs on land that we cannot control at all. Very often when men have gone on before the survey and even when it was railway land, we gave it to them. The railway company would have to take some other quarter-section. I have a statement here in reply to a question asked by Mr. Wilson. I'do not know whether I had better leave it for him.

The CHAIRMAN.—You had better leave it with the clerk.

WITNESS.—It is with reference to the loan to the Doukhobors, the advances made the first winter they were here.

By Mr. Ingram:

Q. How much is it ?

A. \$21,048.08.

Q. Was it given by way of loan?

A. We advanced it with the understanding that we would take liens on their land. We should not issue patents until this amount is repaid.

By Mr. Blain:

Q. What was that money used for ?

A. Simply for providing for them during the winter months. It may be remembered that they arrived in January, most of them, and we housed them in Winnipeg and other places. Besides this we had \$35,000 commissions to their credit. This went to their credit to provide for them during the winter months until they could go on the land.

Q. The money you are giving to the Barr colony, you are not taking any security for it ?

A. We are, for provisions and seed grain.

By Mr. Richardson:

Q. From what source did the money come that you held for the Doukhobors ?

A. Instead of paying anything to the steamship company we paid the commissions 2—54

to a committee representing the Doukhobors to be spent in their interest. That is where the \$35,000 was spent, and in addition to this \$21,000 to provide provisions for themselves.

Q. What is the total number that came out ?

A. 75,000.

Q. At one time ?

A. Within a few months.

By Mr. Clancy:

Q. You said a moment ago that you discouraged this colony business ?

A. Reserving land ?

Q. Yes, reserving land for them ?

A. Yes.

Q. How long has that been the policy of the department?

A. To discourage it?

Q. Yes.

A. We never adopted a policy of reserving any large tracts, excepting in a number of cases. Now we have determined not to do it at all.

Q. Now, for instance, a number of Germans would go in there. Would you get

a place for them all to settle together?

Q. If they went in together and made their entries they could get it, but unless they did that we would not reserve it or keep it from settlement. We could not do it in that case because there were so many people coming in. It is a most unsatisfactory thing.

Q. The reason for doing it is not to discourage general settlement?

A. Yes.

Q. Does the department aim at putting people in colonies in that country?

- A. No, no, we prevent that by having them spread over the whole country rather than having them locate together.
- Q. Is it not generally encouraged by the department even yet? I mean putting them in colonies?

A. No.

Q. I want to read a passage from Mr. Speers' report here: 'I have spent some considerable time during the last fiscal year in selecting suitable districts well adapted to the colonization of the different nationalities.'

A. That is exactly what I have explained to you as being a part of Mr. Speers'

duty.

Q. How does he find a location for each nationality? I understood you to say you discouraged that.

A. Yes, we do.

Q. He seems to have

A. I explained it before; you were not probably listening. It is impossible to locate foreigners except in little colonies, that is a small number in each—we keep them down as small as possible, so that they will be surrounded by other people. To locate, for instance, 100 or 100 Galicians who are all friends so that they could have no communication with one another would not be satisfactory to the people. They will go long distances to get a tract of land large neough for a colony rather than settle and locate singly.

Q. Is that the case with the Germans?

A. Yes, the same with the Germans and other nationalities. It would be exactly the same with us if we were locating in another country.

By Mr. Maclaren (Huntingdon):

Q. You mean you do not want to reserve tracts of land for them?

A. We do not reserve the land in the sense of keeping others off, but we locate them in small colonies or groups, so that perhaps 25 or 30 or 40 settlers homestead in one locality.

By Mr. Ingram:

- Q. If not in very large groups I do not think it would be very injurious?
- A. No, I do not think you could settle them in any other way.

By Mr. Cochrane:

- Q. I do not find that applies in the riding I represent. I find that the old country people came out and scattered around through the country; they did far better than where they settled in groups.
 - A. I think you will find most of the old country people located in little groups.

by Mr. Clancy:

- Q. I suppose Mr. Speers is practically under your control?
- A. Yes.
- Q. You order him to go to the United States occasionally ?
- A. Sometimes he goes there—he goes to exhibitions to represent the department, and sometimes he has gone to look after offices where the agent has gone away for some purpose, or to assist the agent generally. He is at the disposal of the department for any service of that kind.
- Q. He speaks of having gone in January and February. Does he consult you before he goes ?
- A. He might be sent by the Commissioner or by the Superintendent at headquarters. He may not consult me personally about going.
 - Q. He would have to consult some one ?
 - A. Mr. Scott might tell him to go.
 - A. Does he ever go himself?
- A. (Mr. Scott)—He never goes unless he is instructed either by myself or the deputy minister or the commissioner at Winnipeg.
- Q. Take the case that he refers to in his report, do you remember what occasion arose that you sent him there?
- A. No, perhaps it was this way, during the slack months in the west we might send him over to lecture or do something of that kind.
 - Q. Would he be sent without your knowledge?
- A. Not without the knowledge of the department. He would get his instructions from the deputy minister or myself or the commissioner at Winnipeg.
 - Q. The commissioner is under you, I suppose ?
 - A. Yes.
 - Q. Would he send Mr. Speers out without consulting you ?
 - A. No, he would write to the department here.
- Q. Will you bring down the next time you come the correspondence with regard to Mr. Speers' trip?
 - A. Which one?
 - Q. The one to which he refers on page 121 ?
 - A. It is the meetings at Guilford, Whitesville, and Rosendale ?
 - Q. Yes.
 - A. In a trip like this he would also report the centres he has visited.
 - Q. I want to find the instructions under which he went there?
 - A. You want a copy of the instructions that were sent to him?
- Q. Yes. Not the letter of instructions for his going, but the correspondence in the department that led to his going?
 - A. Yes.
- Q. I want the correspondence not only in that particular case, but the whole year where he has gone to the United States, where he has been sent there. I do not mean

all the correspondence in the department, but only so far as it relates to that portion of his work.

The Committee then adjourned.

Having read over the above transcript of my notes, I find the same to be correct.

JAS. A. SMART.

House of Commons, Committee Room 34,

June 29th, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., the chairman, Mr. Douglas, presiding.

Mr. W. D. Scott, Superintendent of Immigration re-called and examined.

By Mr. Wilson:

Q. Can you tell us how many immigrants came from the United States last year altogether?

A. I think I answered that question before.

Q. Here is the statement, 28,332 (producing document).

A. No, that is the number by state agents, I think.

Q. Yes.

- A. And 6,000 and something by sub-agents. That does not represent the total immigration. The total was 49,408.
- Q. I see there is a difference in two of your statements as to the number of agents that you had?

A. Yes.

Q. How do you account for that ?

A. One gives the agents that are resident in Canada, not actual state agents.

Q. I have the heading-

- A. Rev. Father Vachon, Father Blais, and Father Lagoniere. Q. As far as I can see, there is no difference in the headings?
- A. The state agents are resident in the United States, but these men that we have working as well live in Canada, Fathers Vauchon, Blais and Lagoniere, and Mr. Gauthier. They have not got offices in the United States.

Q. I wish you would add all these two sets of agents up and see if they will agree ?

A. The difference is this, Mr. Wilson, one question-

Q. I am asking you now to add them up and find how many there are ?

A. I presume the figures are correct.

Q. I added them once, and they did not agree. I may have made a mistake. 1 only added them once.

A. (After adding the lists). These figures are correct.

Q. Is it right ?

A. I presume so.

TOTAL AGENTS IN THE UNITED STATES AND SALARIES.

Q. The other point to which I want to refer is this, Mr. Chairman. I think there are fifteen agents here, and their expenses total up to \$52,246.96 ?

A. \$32,450.

Q. \$52,246.96. Then there are 23 agents on this other return, upon which you have got nearly all the same people—all the same people on it, besides some extra, and if I have figured it up right the expenses are \$48,810.36 ? A. Yes, two different questions altogether.

Q. For instance, here is the total salaries ?

Q. There is the total living expenses ?

Q. And here is the travelling expenses ?

Q. That is for the larger number ?

A. Then in the other, there is office expenses as well.

Q. Which other ?

A. The other statement.

Q. Here is the amount for salaries, the number sent in, and the expenses. It docs seem to me that the list should have something a little better than that ?

A. That is exactly what that question asked for, Mr. Wilson.

Q. Why was not this in the other?

A. They are two different questions altogether.

Q. That I would look upon simply as an evasion altogether. He may not have intended it.

A. There was no intention of evading it. The information is all in the office. The clerks simply prepared what they were asked for.

Q. The gentleman in charge of that account should look over it and see that there

is some uniformity about it.

A. I looked over it and thought it answered the question. Q. Any person looking over that would not understand it.

A. They are two different questions.

Q. The headings are so similar: 'The names of the paid agents in the United States, showing the number of people sent in by each agent, showing the salary received, and the amount of expenses for 1902-3.'

Q. The other is, 'The list of immigration agents employed on salary in the United States during the fiscal year 1902-3, total salary paid to each, and the amount expended by each for travelling and living expenses.'

Q. Now, you simply say the difference is the cost of the offices?

A. Yes.

Q. There is quite a difference?

A. They paid a lot, you know, in postage and all that sort of thing.

Q. Quite a difference—something like \$8,000 for office expenses?

A. In postage, and so on.

Q. Not only that, but you paid the salaries of eight more men, and one gets \$1,000, another \$1,200, another \$1,125, another \$200, \$600 and \$500.

A. Salaries, do you say?

Q. Yes; and \$2,200.

A. There is no salary of that kind there.

- Q. I do not know whether there is or not. Here is your report. You can read it for yourself. I checked that over. It corresponds with the other as to names. I did not look at the salaries.
- A. Yes, it is perfectly correct. There were two different questions asked altogether.
- Q. I quite understand there is a little difference, as you say, but notwithstanding that there are eight more people employed here. There is a difference of about \$8,000 less than the other, where there are that many less employed.

A. Yes, because the other includes office expenses.

Q. Well, the office expenses are pretty expensive apparently? (No answer.)

By Mr. Blain:

Q. Would you state again the exact number of immigrants that came from the United States to Canada last year?

A. Last year, 49,408.

Q. Are all these credited up to your different agents? How many to each agent?

Q. What proportion is credited to them?

A. I had it figured out in my last evidence,—twenty-eight thousand and something, and 6,000 to sub-agents. We do not claim that our agents sent in every one.

Q. What number did you claim? In your report you give the number that came in without any assistance?

A. Well the difference is—

Q. That was brought out before?

- A. Twenty-eight thousand and something by state agents, 6,000 and some odd by sub-agents. I suppose the difference would—
 - Q. The balance would come without assistance ?

A. Yes.

By Mr. Wilson :

Q. My question with reference to the agent at Indianapolis is not answered very satisfactorily. Mr. E. T. Holmes, you say, had been there from January 12, 1900, to June, 1902?

A. That is when the office was opened.

Q. And you give no report as to what he sent in ? But there was one of your agents made a report through the public press—I dare say you saw it?

A. No.

Q. In one of the newspapers last spring it was stated that the agent had been there—I forget for how many years—and that he sent in about one or two persons—less than the number of years he had been there?

A. I did not see it.

Q. I think you should have some record of what Mr. Holmes was doing. He was there quite a little while—from January, 1900, to June, 1902, about two years and a half, and apparently did not do anything?

A. He did not send in any report.

Q. No. Well, now, these farm delegates: Have you any record of what people came in through their efforts?

A. Delegates to where ?

Q. To the old country.

A. No.

Q. How many of them were there ?

A. Fifty-six.

Mr. J. A. SMART, Deputy Minister of Interior.—Excuse me, I think I can give you an instance. Two or three Englishmen called on me last year who were delegates to the Chamber of Commerce at Montreal, to commend the work that the farmer delegates had done in England. I do not know what they were, they were from Canterbury. They said that the farmer delegates located there had done a great deal of good for Canada.

Q. The one at Canterbury ?

A.—(Mr. Smart.)—Yes, and they knew of ten or twelve people that had come to Canada directly through the efforts of that man.

Q. Do you remember which one was there ?

A. No, I do not know.

By Mr. Clancy :

Q. If that forms a part of the record it would be only fair that he should have the praise, rather than have it stated in general terms. You know that is a very cheap advertisement?

A. I am telling you what was told me by these gentlemen.
Q. You have no means of knowing beyond their statement?

A. I would have no means of knowing anything of their work beyond somebody's

Q. We know their work generally, but unless particulars are given-

A. Their work was exceedingly good.

Q. Let us see some of their reports.

By Mr. Wilson:

Q. I am not saying anything disparaging of them; I want some information about them?

A. It is rather a peculiar thing to ask the number of people that certain people bring out. Our work is most general, our advertising is general.

Q. I was not unpleasant with you nor said an unkind thing. You are taking

exception that I should ask such a question ?

A. I say it is impossible to answer a question of that kind. It has been asked every year that I have been before the committee, and it is impossible to say how many people come through the efforts of one particular person.

Q. It is very strange when you pay agents on commission ?

A. We do not know that they come directly through their efforts.

Q. You pay just the same ?

A. We certainly pay.

Q. How long were the farm delegates over there ?

A. Two or three months—some two, and some three months.

Q. There was a difference in them ?

A. Yes, there was a difference.

Q. What was the arrangement that you made with the farm delegates ?

A. That they should visit England for the purpose of bearing personal testimony as to their experience in farming in the Canadian west. That they should locate themselves at one of our offices, either at the general office of the government or the sub-agents' offices, which we had at that time, that is, the steamship offices.

By Mr. Clancy:

Q. Were they persons who had come out here and went back to give their experiences, or were they Canadians ?

A. A good many were English, and some were Canadians.

Q. Can you say what proportion ?

A. No, I think most of them were old country people-

- Q. Would it be important to select persons who had come from England, Ireland or Scotland?
 - A. Yes, that was an advantage.
 - Q. You are unable to say how many ?
 - A. No. A good proportion of the delegates were old country people.

By Mr. Wilson:

- Q. What instructions did you give them with regard to expenses ?
- A. The instructions were that they would receive their actual travelling expenses and living expenses.
 - Q. And tips ?
 - A. Of course, that is part of their travelling expenses.
 - Q. And insurance ?
 - A. No, I cannot say that.
 - Q. Well, you paid it ?
 - A. Maybe we did. That would be considered then as part of the expenses.
 - Q. I understand that you have done away with that ?
 - A. Yes, we have since last year.
 - Q. Why should you ever have had it?
- A. The reason was, in the first place, that nearly every one of our agents who charged insurance, was travelling on a pass on the railways..
 - Q. Yes
- A. And it was generally understood that a man accepting a pass from any Canadian railway relieved the company from any liabilty for accident, or death, or anything of that kind. It was said very properly when the matter was first brought up that if a man had a ticket that he might have a claim against the railway in case of accident. If he travelled on a pass and signed a release to the railway, he certainly would not have any claim.
 - Q. You are paying them sufficient to pay their own insurance ?
 - A. It was assumed that it was fair to pay the insurance.
 - Q. You have decided to pay them enough now ?
 - A. Yes.
- Q. I think that is right. I see some of them are very liberal, much more so than if the money was coming out of their own pockets for tips. Then they have sundries as well. Here is one pays \$21.22 for tips, another \$33.72 for tips. Here is a fellow (referring to statements) gets off with \$3.65 for tips, and another fellow \$7.93. He was acting as if it was his own money?
 - A. I would not say that.
 - Q. Tell us what you would say ?
 - A. I would not say that if a man paid more than another it was because he was
- spending other people's money.
- Q. I know a gentleman appointed to a government position in the last three years. When he travelled on the cars before his appointment, it was in a first-class coach. Since then he travels in a Pullman. He used to stop at a dollar a day house when he came here; now he stops at the Russell. Do you think he would do that if he was paying it out of his own money?
 - A. I do not know, it depends.
 - Q. If he did it before, out of his own money, why wouldn't he do it again ?
- A. We never ask agents about these things. The department never asks a man to travel on what one would call 'on the cheap.' He has a right to travel comfortably, and well, when travelling for the government.
- Q. We will suppose you are travelling from here to Kingston, or to Napanee in the day time. Is it necessary to take a Pullman?
 - A. No. I would not think so.
 - Q. I don't think many men would.
 - A. If I were going to Toronto, I think I would.

By Mr. Clancy:

Q. Before you leave that. No man wants to travel mean or live mean. No man in the employ of the government should be subject to anything of that kind, but there is a limit as to whether the Civil Service shall travel better than the people who are paying them in this country. There is a good first-class railway service in this country, good enough for most of us, good enough for me. I may perhaps be inferior in rank to these gentlemen who are taking that course, but I say they should not travel better than people who pay them. There surely should be some rule, and let us understand what the policy of the Government is, with regard to it. A gentleman going from here to Toronto, simply because the people are paying him, must not feel like doing things that his social position would not allow him to do. Take the men who go into the service, and see the comparatively small salaries; no wonder they would live like princes in expenses, because they can put it in their bill. There should be some line drawn with regard to that. It is not a new feature, I am not saying that, but it is one that should not go unchecked by any government.

A. It is one that does not, as far as we are concerned. We are very careful that the expenses should be reasonable. As far as these tips are concerned, it depends very greatly on the individual and a good deal on the circumstances. One man paid \$3.65 for tips and another \$33. There is no doubt that the man who paid \$33, if he had any idea of his position, would not deliberately throw the money away. It is not to be

expected that a man would do that.

Q. Is a man ordinarily called upon to do that in a long trip ?

A. I believe a man travelling to the old country, will very reasonably be called upon to pay fully that much money.

Q. It depends on how long he was there ?

A. If he is there three months. The steamships take of course the largest tips. It costs perhaps from \$8 to \$12 each way, but it depends on the ship.

By Mr. Wilson:

Q. Take another case. Tips, \$18; sundries, \$34.55 ?

A. I cannot answer for the sundries; I do not know how that passed.

Q. It should have been found in looking it over ?

A. Our regulations do not allow any such item as sundries.

Q. It is in the report ?

- A. You will find in the account that the items are all in for the sundries. What is his name?
 - Q. That is J. H. Metcalfe, the very first name on the list.

A. Yes.

Q. Mr. Noble was more moderate, \$7.42 for tips and sundries \$5.45.

By the Chairman:

Q. I do not like the appearance of the word 'tips' in any government account. I am opposed to the tipping system anyhow. It is imported from Great Britain, and we had better leave it on the other side of the water.

A. These payments were made there. One has to do as the Romans do when one

is in Rome.

Q. I do not like the system at all. It would be better to put it in the account if it must be paid.

A. Better call it what it is.

By Mr. Wilson:

Q. Here is a total of \$450 tips by these gentlemen, and the total cost of these farm delegates for going to the old country was something over \$25,000?

A. Yes.

Q. Accident insurance—we paid for that \$125.95. I don't think we should have paid one dollar for that, nor one cent.

A. At the time that they travelled, that is a year ago last January, the department felt that it should allow it. They were travelling on passes to St. John, where they took the boat.

Q. If they had been able to get the pass on their own account they would have travelled on them, and I fancy would not have insured their lives, the bulk of them.

(No answer.)

By Mr. Blain:

Q. I see a letter here in the Toronto World which I just want to read. It is in the Toronto World of June 27, and is headed 'New settlers' views, and the chances to get work in the Canadian west.'

'After reading some of the letters in the Weekly Scotsman on Canada, I should like to give you some experiences of two young settlers who came to this country not long ago. Both left by Glasgow for Halifax, thence per rail to Winnipeg. They were informed by the delegate whom they saw that they would be met by government officials, who would see that they were properly looked after. On arriving at Halifax, they, along with the crowd of other passengers were allowed to find their way to the immigrant hall themselves, where they were packed just like a flock of sheep and put through pens before the doctor who stamped their papers put them through as medically fit. After that they were hustled off for their tickets for their destination.

'On arriving at Winnipeg officials are supposed to meet all immigrant trains, but like all the other government jobs, they could not be found. When you get them you are checked, and hardly allowed to express your wants. If you require to stay over night they tell you that you get bed, &c., in the hall, but if some saw the beds they would rather walk all night than lie on them. Then they send you to a situation up country, and on your arrival there you find it filled up. What chance has a young chap then? No wonder there are so many suicides here and round about. It is high time that something was being done to rectify matters a little, as the rush is getting greater every year. The delegates we believe tell the people in the old country that there is work and plenty of it. Well, there is work of a kind, such as navvying at 25 cents an hour, supplying your own pick and shovel, drawing stones or wood. But no young man wants to come to Canada or any other new country to do that sort of work. These delegates are supposed to be on board looking after the passengers, and to answer anything that is asked of the country, but they generally keep out of sight.

'(Sgd.) Frank Alexander and John Bruce, Manitoba.'

I don't wish to say that everything in the letter—and that is only a portion of it—is correct. I can understand that immigrants complain against the government. I would like to ask if there is any truth in the statement regarding the filthy condition of the immigrant halls at Winnipeg?

A .- (Mr. Scott) -- None whatever.

Q. And if there is anything in the statement that the officials are not civil?

A. The halls are kept perfectly clean anad every train is met by officials of the immigration departement.

Q. And the officials are civil?

A. I never heard a complaint.

By Mr. Wilson:

- Q. You said, Mr. Scott, that these agents were over for different periods, some for much longer than others?
 - A. Our agents ?
 - Q. The farm delegates.
 - A. All between two or three months.

Q. There was a difference between the time they were out.

A. (Mr. SMART) No, it generally was two or three months.

A. (Mr. Scott.) Some were away a little longer because they could not get the passage back.

Q. You made a difference in one man's case; you gave him \$100 more ?

A. (Mr. SMART.) Who was that ?

- Q. Mr. Arthur Kilburn.
 A. He was in Ireland.
 Q. Was that a crime?
- Q. Was that a crime?

 A. No, he was kept there two months longer than the others. The vessels were so taken up, all the ships sailing from Liverpool a year ago last spring, that it was impossible to get passage for some of our delegates, and they were delayed, some for two weeks, and up to a month.

Q. You had to pay their extra expenses ?

A. Yes. In Mr. Kilburn's case, I know that he was kept a good deal longer than

the others, nearly four months, I think.

Q. I notice there is a great difference. Well, now, he was very moderate about his living, board and lodging, \$100.09, while the gentleman whose name appears above his charged for board and lodging \$144.76.

A. The difference is that Mr. Kilburn was placed permanently in Belfast, and I

suppose got a special rate for his living expenses.

Q. Here is another gentleman who got \$150, but his board bill was nearly double; board and lodging \$196.08. How do you account for this difference?

A. Who is it?
Q. A. McPhail.

A. I think he travelled considerably in England. Of course, his bills would run

up there, if he did not remain in one place for any length of time.

Q. Here is another who goes one better, D. MacVicar, \$200.50 for board and lodging, and he had an accident insurance policy besides, \$15.20; fares, \$111; porters, \$7.73; stationery, \$10.50; views of farms, \$6; sundries, \$4.40, and of course his ordinary salary. There is a very great difference. Here is another man gets his board and lodging for \$7. There is a great difference in expenses which they charged. So far as printing is concerned, and everything in connection, some are very expensive and other by spending so little seem to be trying to act as if it were his own money.

(No answer.)

By Mr. Clancy:

Q. I understand some of these gentlemen had some friends in the old country?

A. I think perhaps most of those who were Englishmen or Scotchmen had friends.

Q. I judge from the report that they were furnished with a very favourable opportunity to go home and see their friends.

A. I dare say they did, many of them. We did not mind that as long as they did

their work well.

Q. Sometimes the other was the main object?

A. I do not know. It was not our object.

By Mr. Wilson:

Q. This letter about the Doukhobors. I see from this letter that the money was distributed among the Doukhobors generally.

A. Except those who came in the summer and who located west of Prince Albert.

Q. Did you make special loans to individuals in that case?"

A. No.

Q. How did you do it?

A. The money that was spent for general necessary supplies. They came out in the early winter of 1899 and were located in Winnipeg for a time; these people all

were located north of Yorkton, and the money is of course chargeable to these people generally.

Q. And I think they are all looking for a compromise, I think that is what will happen. You spent that money for the people generally, and will you tell us how you are going to take a lien against their land, they had taken none out at that time, and I do not think you can divide it up amongst them now and charge it against their land. I think the result will be a compromise.

A. We are going to try and divide it.

Q. Yes, you may try and get what you can.

A. I think we will get every dollar.

Q. You might possibly get the principal but not the interest.

A. That may be.

Q. From the tone of your letter I think you are willing to make a compromise. A. Willing to make a compromise in this way, that we are willing to divide the payments, there is no other suggestion that I know of.

Q. You can read this letter better than I can.

By Mr. Sproule:

Q. What about the expenses of that pilgrimage?

A. They paid that all themselves, every dollar of it.

This is really not a letter, but only a statement I prepared myself for the Committee.

'The amount due by the Doukhobors, according to the accounts, appears to be \$21,048.08. This amount was spread over the year 1899, and interest therefore at 5 per cent should begin about January 1, 1900, if interest is to be charged. This money was paid out on account of the Doukhobors generally who settled north of Yorkton. Instructions were given that no patents were to be issued until this amount was paid in full. In January of this year the deputy minister wrote to the acting agent of Dominion lands at Yorkton referring to the matter, and suggesting that some arrangement should be entered into by Mr. Verigin representing the Doukhobors-he is their leader now, he came in two or three years after tht Doukhobors were located-for a settlement of this claim, that is, to put it in definite form. The suggestion made by the deputy minister was that it should be divided into five annual instalments. The agent replied that Mr. Verigin was not aware that the Doukhobors owed this sum. The indebtedness was incurred, of course, two or three years before Mr. Verigin's appearance in this country. No definite settlement has yet been come to, but it is understood that Mr. Mayor is going to discuss the matter with the Minister of the Interior when he returns here. It appears that he had a discussion with the Doukhobors respecting this indebtedness, and he made a suggestion of compromise on behalf of the Doukhobors which, of course, the department declined to agree to.

By Mr. Blain:

Q. How much did you say the indebtedness is ?

A. \$21,048.08.

By Mr. McLennan:

Q. There is no money being paid out now for the Doukhobors? A. No, we have paid no money at all for nearly five years.

By Mr. Blain:

Q. What is your expectation in respect to settlers coming from the United States, are you expecting immigration to continue about the same as last year?

A. This year is likely to be less than last year, there are a number of reasons that have told against us.

Q. What are they ?

A. One of them particularly was the very late spring and the wet weather. Tracks were flooded both on our side and on the American side, that is our side where the larger number of Americans were going in, and many settlers were prevented from coming by floods that lasted for two or three weeks on the Soo line. Members of the Committee may not know, but the bulk of the American settlers who come into the Canadian west come from Minneapolis to Portal over the Soo line, Portal is the Canadian Customs office on the border where the Soo line joins the branch of the Canadian Pacific.

LANDS PURCHASED BY AMERICAN SYNDICATES.

Bu Mr. Richardson:

Q. There were some large tracts of land taken up or purchased by American syndicates, were there not ?

A. Yes.

Q. Have these been settled?

A. Yes, well I think in perhaps most cases, the even numbered sections, that is adjoining the land which are sold to these American syndicates have been homesteaded, and the idea of some of the companies has been to sell the adjoining quarter sections to the farmers who have homesteaded the even numbered sections. But of course there has been, I think, very few land sales this year, as far as I can gather, excepting directly to the settler.

By Mr. Blain:

Q. Are any of these settlers going to British Columbia ?

A. A few, not many, you could almost count them on your fingers.

Q. Are there any from Europe going to British Columbia ?

A. Yes, a few.

Q. You haven't at hand the figures ?

A. It is so small it is not worth mentioning. Q. What is the prospect of settling up British Columbia ?

A. Well there is not much prospect from an agricultural standpoint. It is quite true that a number of people have homesteaded there, but it seems that nearly all available land adjacent to the railways has been taken up.

Q. What is the position of those who have taken up land, and been there some

years engaged in farming; are they prosperous?

A. I think so. There is a great deal of ranching done in British Columbia in the valleys of the various streams, and we have been leasing small tracts for grazing purposes within the last two or three years, but outside of that the number of homesteads granted at the offices at Kamloops and New Westminster is very very small, comparatively speaking.

By Mr. Stewart:

Q. Are these vacant tracts of land open?

A. Yes they are all along the valleys of the various rivers.

The CHAIRMAN.—It costs \$125 per acre to clean the timber off the land in British Columbia, and that keeps the people off the wooded land.

Mr. BLAIN.—Do you mean that it costs that much over and above the value of the timber that is taken off.

The CHAIRMAN.—It costs that much to get the wood off the land so as to put a crop in.

Mr. McEwan.-Will that take the stumps out too ?

The CHAIRMAN.—They blast them out; that clears off the timber.

Mr. SMART.—There is a falling off of 5,000 or 6,000, as I said before, and another reason for the falling off is, it is said, that the presidential year in the United States

has the effect of keeping the people at nome. Those who would likely move are influenced by others to remain until after the presidntial election. Then a further reason for the falling off is attributable to the fact that there have been a number of Indian reservations in the United States thrown open to entry by the government. There has been a tremendous rush to these reservations by persons living in the various states in the west who have taken up land there. In addition to that we have, ever since it has been seen in the United States that there is a movement to Canada, to the Northwest, the competition of the railways, who have been expending a very considerable amount of money in advertising, and endeavouring, by quoting lower rates than settlers can get to our country, to induce them to go to the different states, Texas particularly, and I think also Western Nebraska. I noticed only a few days ago an advertisement in a Canadian paper inserted by the Union Pacific Railway Company, offering as an inducement 640 acres as a free grant in Western Nebraska to each settler. This will give an idea that our work is not all easy sailing. We have competition, but I think notwithstanding that, the majority of those who are moving in the states are moving to Canada.

Mr. Blain.—Have you any information as to the number of Canadians who are

going over to the United States each year.

A. No, we have not. There are no particulars kept. The United States immigration authorities publish an annual report by the Commissioner General of Immigration, which shows the number of people arriving from British North America, but it is not reliable. There are so many points where they can cross the line, and there are so many people crossing, that it is impossible, and they do not make any attempt, to keep a correct record.

Q. That is a matter that in my opinion your department should give some attention to. I see the difficulty of course in arriving at the proper estimate, but still it

would be an important thing from a Canadian standpoint to know.

A. Well, for many years, in fact ever since I have been here, that is one of the things I have endeavoured to arrange, that is, to see if it were possible to have some record; that our work should be not only bringing people into the country from outside, but also keeping our own people here if possible, to have a record of the people going to the United States. I think myself the number is comparatively small within the last few years. But there is always a movement, and there are a great many come over from the United States to Canada across the border that we cannot keep record of, that we do not know of.

By Mr. Sproule :

Q. How do you get a record of those who come in ?

A. That is kept at Winnipeg. Every person is reported at Winnipeg and at Portal and at Coutts, on the Alberta Railway line. There are a number of customs ports that we have taken year by year, which is not included in the others; there are about eight or nine, I think, altogether, but there are a great many that do cross the border of whom we have no record at all, and it is not possible to get it.

By Mr. Stewart :

Q. Have you heard what any of the Americans that have gone in have to say with regard to the soil and climate?

A. I have heard of some few people who have returned and complained; I have seen some letters in papers from perhaps two or three persons altogether, persons who said the country was a very cold country, and making a great complaint about it. But I have seen people myself who have returned only last year while visiting the offices in the United States, particularly in Omaha, where probably 8,000 or 10,000 people have left for Canada; I saw some people who had returned for a visit, and they were simply delighted with their prospects; they had gone home for Christmas, to spend it at their old home in Nebraska, and they were simply delighted with their location and prospects.

By Mr. Blain :

Q. Our country is not any colder than theirs.

A. No, it is very different from their country in winter. We are not subject to the storms they often have, winter or summer; the cyclones and the blizzards to which they are subjected are very little known in our country.

Q. Is there any land boom on in the west now ?

A. No, I would not say there is a boom; I do not think that the sales this year have been as large as last year.

Q. What is about the price of land generally ?

A. The prices seem to keep up pretty well. The Canadian Pacific Railway Company decided on a policy some months ago not to sell any more land in large quantities, but to sell to actual settlers. Whether they carried that out or not I do not know; they get perhaps a better price by selling to the actual settlers, and they have made such large sales they can afford to adopt such a policy now.

Q. That would be in the interest of the country would it not ?

A. Very greatly so.

By Mr. Lefurgey :

Q. What is the range of prices there now ?

A. I do not know, it is is pretty hard to tell; they vary according to the districts. I think you might say that the price of land generally in the Canadian west, tributary to railways or projected lines is from \$6 to \$10 per acre.

Q. That is to settlers, of course.

A. To any who will buy.

Q. In small lots ?

A. Yes, but that, remember, applies only to the North-west, because the lanad in Manitoba tributary to railways has reached a very much higher price, going as high, I think, as \$30 and \$35 per acre.

Mr. Scott.—The Canadian Pacific Railway gives different terms to the actual settlers to those given to speculators. The settler gets ten years to pay and the speculator has to pay in six years, at the same rate of interest.

By Mr. Blain:

Q. Is there any disposition in the province of Manitoba on the part of the farmers farming 600 acres of land to reduce the size of their holdings?

Mr. Scott.—Not that I have heard of.

Mr. SMART.—They are rather increasing their holdings.

Mr. Scott.—That is what the merchants are complaining of in the North-west, that the farmers are buying too much land.

Q. If that continues you cannot expect the population to increase in the rural

districts.

Mr. SMARE.—Not unless they divide up the farm among their sons.

Q. Is there much land farmed in the Northwest by people who live in the cities or towns in the winter?

A. Yes, a great deal.

By Mr. Vrooman:

Q. Do you anticipate any interference by the United States authorities with your

A. I have always seen some difficulty, or the possibility of some difficulty there, but so far there has been no interference. The legislature of Minnesota three years ago took up the question of the movement of population from the state of Minnesota into the North-west and proposed to adopt a vigorous policy to retain their own people and to bring new people into the state, but the movement seems to have died out.

Outside of that there has been little or no suggestion of government interference, but it is one of those things regarding which we can never tell what may happen.

By Mr. Blain:

- Q. Have you any means of knowing the number of settlers that come from towns and cities, as compared with the number coming from the rural districts of the United States into Canada?
- A. There are practically none from the towns and cities; I do not think they amount to anything at all, they are all from the country, farmers.
- Q. Are they farmers who are selling their farms in the United States and coming to Canada.

Mr. Scott.—Yes, and renters.

Q. What are renters?

A. People who rent farms in the United States, and they are giving up their farms and selecting lands in Canada in preference.

By Mr. Sproule:

Q. Is the government selling any land in large tracts?

Q. We see from time to time reports of companies buying large tracts.

A. They have bought them from railways which have made some very large sales, and the Canadian Northern is selling, I understand, their lands through the Saskatchewan Valley Land Company, and they are selling large quantities.

Q. What price are they selling lands at?

A. I understand they are selling their land as high as \$10 per acre, but they have a scale of prices, a man can buy wholesale from them, a very large quantity of land, at a much lower rate than they sell in smaller quantities.

Q. At what rates do they sell in quantities?

A. I think from \$5 to about \$10, and these tracts are a considerable distance from the railway yet, but, of course, all these lands are adjacent to a projected line.

SETTLEMENT BY THE SASKATCHEWAN VALLEY LAND COMPANY.

By Mr. Roche:

Q. The land that the Saskatchewan Valley Land Company purchased from the

government, are they getting many settlers this year for these lands?

A. I do not know. The question of their title to these lands has not been settled yet. They bought them conditionally. But up to last year, they had not fully completed their contract to entitle them to the land. They may have since done so, it is not settled yet.

By Mr. Clancy:

Q. Have none of the lands been allotted to them yet?

A. Oh, yes, certain townships were allotted to them. They had to bring in and settle twenty people on free homesteads, and they had to settle twelve more settlers in each township, that is 32 altogether, one-half of the even hundred sections to entitle them to the patents for the balance of the land.

Q. Provided each took a section ?

A. No quarter section, each would take a quarter section, that is, 20 on free homesteads and 12 on land that they sold to the settler.

Q. That is, they had the option of both the even and odd numbered sections? A. No, the odd numbered sections they bought from the railway company, it was the land grant of the Long Lake railway.

Q. You get paid for the even numbered sections ?

A. We sold them 44 quarter sections in each township. I understand that 32 settlers were put into each township.

Q. What rate did you give them that land at ?

- Q. \$1 per acre.
- Q. When was that purchased?
- A. Over two years ago.
- Q. Provided they fail to carry out their obligations, how will the settlers that have gone on that land come out? I take it their title will be in default as well.

A. It is only those that they have sold to that would be affected.

- Q. Well, I mean those that they have sold to ?
- A. I do not know how that would be adjusted, certainly we would protect the settler.

By Mr. Roche:

- Q. And having placed these 32 settlers, they then have the option of getting all the rest of the even numbered sections in that township, have they not?
 - A. That would be 32 more, at \$1 per acre.
 - Q. Do you know how much they are selling that land at ?
 - A. No, I do not.

By Mr. Clancy:

- Q. How much lands have been allotted to the company by the government ?
- A. Of the railway company's land ?
- Q. Yes.
- A. I think there were nearly a million acres.
- Q. That has been settled upon ?
- A. Yes, there is a balance, I think, that has been withheld on account of the subsidy that has not been settled yet.
- Q. There was some dispute as to the lands that they should take for a time, was there not ?
- A. Yes, the railway company refused these lands, they said that the lands that were given them as their grant were to be lands fit for settlement, farm lands, fit for settlement, and they contended that these lands were not fit for that purpose. The matter was in fact going to the courts, every preparation had been made for a special case to be taken to the courts to be tried, when this company appears to have come along and bought it, or made an arrangement with the railway company to buy their lands, and the suit dropped.
 - Q. You are done with the company, then ?
 A. We have done with the railway company.
- Q. Have they bought such lands as were originally allotted to the railway com-

A. That is the contract, they are the assignees of the railway company.

Q. In other words, they are precisely in the same position as the railway company?

A. Certainly, to select lands out of a certain area.

- Q. Did they take the lands that the railway company refused?
- A. Yes, they took the right to select that quantity of land, so that as far as the difficulty between the railway company and the government was concerned, was entirely wiped out.
- Q. I am not quite clear about that. I understand that the railway company refused to take the land.
 - A. Yes.
 - Q. These lands were offered to them.
- A. These lands were offered to them,—well a large tract was offered them out of which they could select their land.

2-55

- Q. And they refused to select their land from that area?
- A. Yes; they said it was not fit for settlement.
- Q. When the company bought out the land grant of the railway company, did they still select their land from those lands from which the railway company refused to select?
 - A. Yes.
 - Q. Then they did not object at all?
- A. No; in fact the railway company at one time were given the option of selecting almost any lands in the country that were at the disposal of the government, but this land company when they selected it did so out of a much smaller area. I think they had an area of about two million acres.
 - Q. There was no change in the land which was offered to the railway company?
 - A. No.

By Mr. Lefurgey:

- Q. How much land did the Saskatchewan Land Company take?
- A. They bought all the railway company's land grant.
- Q. How much did they get from the government?
- A. Two hundred and fifty thousand acres.
- Q. And as each township was settled up, according to this arrangement, they would be entitled to buy the land?
 - A. Yes.
 - Q. And their contract would be good as to that, and lapse as to the other.
 - A. Exactly.
 - Q. Then they could take whatever they wanted?
- A. No; they have a certain tract, and they have to take all the land in the town-ships.

By Mr. Clancy:

- Q. How long did this company have to carry out its arrangement with the government with regard to settlement?
 - A. I think five years.
 - Q. Were they to make a certain measure of progress each year.
 - A. Yes.
 - Q. Have they been able to do that?
- A. I think so; I could not say from memory. They had not fully completed, although they had almost completed their settlement last year. Since then I do not know what they have done. There has been no application for patents or anything of that kind.
 - Q. Is there any report?
 - A. No.
- Q. Who is the inspector whose duty it is to look after that part of the work to see that they have carried out their contract?
 - A. To see whether they have settled properly?
 - Q. Yes.
 - A. We would depute one of the officers of the department to do that.
 - Q. Have you sent any one there to do that yet ?
 - A. No.
 - Q. Notwithstanding the fact that it is over three years?
 - A. It is only a little over two years since they started to take in settlement.

By Mr. Sproule?

- Q. Isn't Mr. Speers looking after that?
- A. Not that part.

By Mr. Roche:

Q. Is it not a fact that there are a good number of parties who entered for home steads but did not go on and perform settlers' duties on those lands?

A. I could not say that.

Q. That would not be taken as evidence by the government.

A. No, when I said they had almost completed their contract as far as settlers are concerned, it was the homestead entries I referred to. We have not had any definite report as to the people actually on the ground.

Q. Well, now they have five years in which to perform their duties, but in the

event of their failing to do that, what then ?

A. I really have not seen the contract for so long that I cannot speak from memory.

Q. I think Mr. Turiff gave evidence here last year on that ?

A. I think so.

Q. How long have they to settle up 250,000 acres ?

A. Five years.

Q. And they have to place a certain number of settlers in each township?

A. Yes.

Q. Supposing they place them in one-half the townships, and supposing they did not finish up the 250,000 acres with settlers, according to this arrangement, would they be entitled to the sections they had settled up?

A. No, they would not be entitled to buy anything.

By Mr. Clancy:

Q. Failure in one part is failure in the whole ?

A. No, I cannot say that, I suppose if they completed a township, I do not see any reason why we should not let them have the balance of the land in that particular township.

By Mr. Lefurgey:

Q. That is what I say, if they settled any particular township under this agreement, they would be entitled to the balance of it?

A. I suppose so.

By Mr. Clancy:

Q. That is an important point, they have undertaken to put so many settlers on a certain quantity of land. Supposing they go and settle up, certain townships with the numbers required, will they be permitted by the department to take those townships, leaving possibly the balance of the tract unsettled?

A. I think so.

Q. Well, is that the provision of the contract?

A. I think so, but I will have to look it up, it is so long since I read it.

Q. Now, it will be well that we should see that contract ?

A. Perhaps we have it here—it is not here, I will have to look it up.

Q. I think that is rather a good contract, it means none at all ?

A. None what ?

Q. If they are permitted to settle up certain townships, and the arrangement is carried out, notwithstanding that all the balance is abandoned, it means no contract for the whole at all?

A. It is certainly a township sale, by townships.

Q. But including certain larger areas than townships?

A. Not necessarily, I do not say that.

Q. I understand they purchase these lands from the railway company?

A. Yes.

 $2-55\frac{1}{2}$

Q. They purchase other lands from the government at \$1 per acre ?

A. Yes.

Q. The conditions were that they were to put 20 settlers on free homesteads in each township, and 12 other persons who became purchasers in these townships.

A. Yes.

Q. That involves how many acres each dealt with that way?

A. It means 32 quarter sections of the even numbered sections.

Q. In how many townships?

A. That will take about 25 townships.

Q. Now they undertook to settle 25 townships?

A. Yes.

Q. At least.

A. Yes.

Q. Supposing they only settled ten of these, and you carry out your arrangement, and they abandon the balance, after selecting the best lands, what does it follow?

A. They paid the first payment on the land, they forfeit the balance, they would

be the losers any way.

Q. They might be quite willing to forfeit the balance, because they are taking the best land.

A. I do not know, I think the land is all pretty much the same.

Q. I would say it is a matter so important that we ought to have very definite information with regard to it.

A. I cannot tell you exactly the provisions of the contract, if I had the contract before me I could tell you.

By Mr. Roche:

Q. They have not put up any cash deposit have they?

A. They made a first payment on the whole 250,000 acres, it was \$50,000 I think.

Q. Fifty thousand?

A. I think the deposit is \$50,000, they have made the first payment on the whole business.

By Mr. Clancy:

Q. And you say you have made no inspection during that period of what has been done?

- A. No, we have no report. Of course it is a year since this was brought to my attention before, it is a year since I have had anything to do with it at all. There have been no demands from them of late for anything in the shape of patents. Early last year there was a suggestion, but nothing was done at all, and since then I have not taken it up at all and I do not like to express any opinion without looking up the matter.
- Q. And no person in your department has gone near these lands to see what has been done?

A. Oh, I think they have.

Q. Can you call to mind who they would be, would it be Mr. Speers, who does general work?

A. Mr. Speers has been through the territory there, whether he has made any inspection, or not I do not know, I do not think he has made any inspection.

By Mr. Roche:

Q. Has Mr. Turriff any connection with the Saskatchewan Valley Land Company?
A. Not that I know of.

By Mr. Lefurgey:

- Q. Who are the principal men in this concern, Mr. Smart?
- A. Colonel Davidson.

Q. He is an American.

A. Yes, a former Canadian, I think, most of them are Canadians. Then there is Mr. Howe—I must say I have forgotten the names of the others, there are about six or eight altogether.

Q. Mr. Adamson?

A. Yes, he is one, and Mr. Macdonald, these are the only two in Canada.

Q. Mr. Turriff and Mr. Speers?

A. No.

By Mr. Roche:

- Q. It is the general impression that Mr. Turriff is also interested in that company.
- A. I cannot answer any question for Mr. Turriff, of course, I cannot say.

By Mr. Lefurgey:

- Q. What railway lands were these they bought in that section?
- A. The land grant of the Regina, Long Lake and Qu'Appelle Railway.

By Mr. Sproule:

Q. Where are these lands located?

A. They are all located along the line of the Regina, Long Lake and Qu'Appelle Railway.

By Mr. Cochrane:

Q. Does the railway have alternate lands?

A. Well, they had the selection from a large tract that was set apart for them.

By Mr. Sproule:

Q. That is from Regina to Prince Albert?

A. Yes.

By Mr. Roche:

Q. The Saskatchewan Valley Land Company bought outright from the railway company their land grant?

A. I understood so.

Q. Do you know how much they paid for it?

A. No, I cannot tell you. I heard at the time that it was something like \$2 or \$1.75. I do not know exactly.

Q. Did I understand they had the privilege of selecting outside the area offered

to the railway company?

A. No. In the case of every land grant the government sets apart a tract of land, perhaps two or three times greater than the amount of the land grant, and the railway company selects the number of odd numbered sections they are entitled to out of that.

The Committee adjourned.

Having read over the above transcript, I find the same to be correct.

JAS. A. SMART.

House of Commons,

Room 34,

July 5, 1904.

The Select Standing Committee on Agriculture and Colonization met this day at 10 o'clock a.m., the chairman, Mr. Douglas, presiding.

Mr. James A. Smart, Deputy Minister of Interior, was present at the request of the Committee, and said:—

Mr. Chairman and Gentleman, I may say that the matter that I was asked to bring before the Committee is one which has been already up for discussion. It was very fully gone into last year. I found by reference to the printed report that Mr. Turriff, Commissioner of Dominion Lands, discussed every phase of the question, as far as I am aware, before the Committee, and I presume that anything I could say now would be simply to repeat what Mr. Turriff has said.

By Mr. Lefurgey:

Q. Is there a report of Mr. Turriff's examination?

A. It is printed in the report, yes; but I have brought the agreement, at least the Order in Council, upon which the contract was made, as between certain parties and the government for the purchase of certain lands in the Saskatchewan district. If the Committee wish me to do so, I will read the document. (Reads.)

'On a report dated May 9, 1902, from the Minister of the Interior, submitting that he has received a proposition from Mr. A. D. Davidson, of Duluth, Minnesota, on behalf of himself and his associates, Messrs. G. F. Piper, A. L. Warner, Geo. C. Howe, D. H. McDonald, and A. J. Adamson, for the purchase at the rate of one dollar an acre, of the even numbered sections in a tract of land situated along the Qu'Appelle, Long Lake and Saskatchewan Railway, on condition of placing a certain number of settlers on lands in each of the townships affected.

'The Minister states that the Commissioner of Immigration and the General Colonization Agent have very strongly recommended the proposition for the favourable consideration of the department, particularly in view of the fact that the lands applied for have hitherto been entirely passed over by incoming settlers as not being of a sufficiently desirable quality to induce their taking them up for settlement pur-

'The Minister recommends, after giving the matter very careful consideration, that the proposition of Mr. Davidson and his associates be complied with to the following extent:—

(1) That the lands shall be selected in townships twenty-two, in ranges twenty-eight and twenty-nine west of the second meridian; townships twenty-three and twenty-four in ranges twenty-six, twenty-seven, twenty-eight and twenty-nine, west of the second, and in ranges one and two west of the third meridian; in townships twenty-five, ranges twenty-six, twenty-seven, twenty-eight and twenty-nine west of the second meridian, and in ranges one, two, three, four and five west of the third meridian. Also in townships twenty-six, ranges twenty-seven, twenty-eight and twenty-nine west of the second, and in ranges one, two, three, four and five west of the third meridian; townships twenty-seven, twenty-eight, twenty-nine, thirty and thirty-one in ranges twenty-seven, twenty-eight, and twenty-nine west of the second meridian, and in ranges one, two, three, four, five and six west of the third meridian.

(2) The area to be disposed of to the company is not to exceed in all 250,000 acres, and the price is to be one dollar an acre.

(3) That the purchasers shall deposit with the government the sum of \$50,000 as security for the carrying out of the conditions of the sale; the said amount to be retained by the government until all the lands have been earned, then this money shall

be applied in payment of the last 50,000 acres of land.

(4) It is agreed that the purchasers shall place twenty settlers on free homestead lands in each township, and twelve settlers on lands which may be sold by the purchasers before they shall be entitled to the remaining even numbered sections; in other words, there shall be in each township twenty quarter sections to be settled on by homesteaders and twelve by the company on other sections which the settler may purchase, to entitle the purchasers to buy from the department the balance of the even numbered sections at the disposal of the Department of the Interior.

(5) It is understood that this arrangement shall extend over a period of five years, but that the purchasers shall be obliged to perform at least two-fifths of the conditions as to settlers being placed on the lands within two years from date hereof, and onefifth each year thereafter, otherwise they shall forfeit the right to purchase and the

amount of money deposited with the government as security.

(6) The department agrees that as soon as certain townships have been settled in accordance with this agreement, the purchasers may receive the balance of the lands to which they will be entitled in such townships under the agreement at one dollar per acre, with interest at four per cent, beginning two years from this date, to the dats of such payment. No interest shall be allowed the purchasers by the department on the deposit of \$50,000.

(7) It is further agreed that the department will accept payment for these lands

in cash or scrip as the purchasers may desire.

(8) Any entries granted to settlers, or any settlers who may have taken up land without entry, and who have made improvemnts on their holdings, within any of the townships named, are to be protected and maintained in their right to free homestead

(9) It is further understood that as soon as the deposit is made in connection with this purchase, the government will proceed with the sub-divisional survey of any

of the townships mentioned, which have not yet been sub-divided.

The Minister recommends, Mr. Davidson having signified his consent on behalf of himself and associates, to accept the above terms, and having duly deposited the stipulated sum of \$50,000 in scrip, that he be authorized to carry out the arrangement on the terms and conditions above set forth.

By Mr. Clancy:

- Q. There is an agreement founded upon that ?
- Q. No agreement made ?
- A. Nothing but this.
- Q. Nothing but that ?
- A. This authorized the sale.

Q. Was there no undertaking on the part of the company?

A. Nothing more than this. The undertaking, the condition is this: If they do not comply with the conditions, they won't get their land.

Q. There is a map showing the land allotted ?

- A. Yes.
- Q. Will you bring that down ?
- A. I have got that with me.

By Mr. Henderson:

- Q. I understood those were to be selected lands ?
- A. Within a certain tract.
- Q. Can you tell me the area of this tract ?

A. I understood they have already been selected and the area of the tract is something like 300,000 acres in round numbers.

Q. In all these townships?

A. There is more than that in those townships.

Q. But what would be the area of the entire tract out of which they were to make the selection ?

A. About 500,000 acres, I think.

Q. Well, it seems to me it is an extraordinary good bargain for them? A. They do not say so.

By Mr. Roche:

Q. Well, what is the date of that agreement?

A. May 24, 1902.

Q. Have two-fifths of the conditions been complied with ?

- A. I understood all the conditions have been complied with. They put in about 1,600 settlers.
 - Q. Those twenty on the homesteads would be on the odd numbered sections ?

A. No, the even numbered sections, free homesteads.

By Mr. Clancy:

Q. Will you bring down all reports made with regard to that as to how far they have complied with the conditions at the next meeting?

A. I have got them all here now.

Mr. CLANCY.—I move this be made the first order at the next meeting.

Having read over the foregoing transcript of my statement, I find it correct. JAS. A. SMART.

> House of Commons, COMMITTEE ROOM 34, OTTAWA, FRIDAY, July 8, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 9.30 o'clock, Mr. Douglas, Chairman, presiding.

Mr. James A. Smart was present and said:

Mr. Chairman and gentlemen, at the last meeting I was asked to submit a plan showing the land selected by Mr. Davidson and his associates who purchased land from the government two years ago. I now submit the plan asked for, along with an outline of the district out of which the Qu'Appelle, Long Lake and Saskatchewan Railway can select their odd numbered sections for the land grant. I also submit a report by Mr. C. W. Speers upon his inspection of work done by the Saskatchewan Valley Land Company, which was asked for.

HOMESTEADING IN THE UNITED STATES.

By the Chairman:

Q. I suppose this is pretty nearly up to date, is it?

A. Yes. Perhaps, if there is nothing else to be discussed just now, I might read to the committee for their information a letter which I received yesterday from the inspector of United States agencies, with regard to the work of homesteading in the United States.

By Mr. Wilson:

Q. Who is he?

A. Mr. White.

Q. Our own agent?

A. Our own agent.

' MANKATO, July 4, 1904.

'My Dear Mr. Smart,—During my recent trip out to North Platte, Neb., to see for myself the character of the land and the stamp of the people who are taking up land in Nebraska opened up by the "Kincaid Homestead Act," a copy of which I send you, I met an official of the American government and concluded from his remarks that this vast tract of land would not have been opened up but for the desire to keep Americans in their own country.'

Mr. SMART.—I might say the 'Kincaid Homestead Act,' is an Act of the United States Congress which set apart 8,800 acres in Western Nebraska owned by the federal government of the United States for settlers. The homesteads granted under this Act were 640 acres each. Evidently the reason for giving 640 acres was in consequence of the fact that the lands are not what we would call agricultural lands, that is in the sense that they were fit for cultivation or at least a very large proportion of them fit for cultivation, they being nearly altogether grazing lands. The letter goes on to say:

'It was not possible to legislate to keep them from going to Canada, but they hoped to prevent considerable immigration by opening up the Indian reservations. The "Rosebud" in South Dakota was fairly good; the Thief River Falls in Minnesota was reasonably good. The "Devil's Lake,' in North Dakota was good, but the vast tract in Nebraska and the west embodied in the Kincaid Bill was mostly fitted for ranching, and so, the giving of 640 acres.

'That this enticement of so large a tract has its influence is seen in the fact that in every town in Western Nebraska are hundreds making entry for these lands. It was not possible for us to get in touch with these people as in the Dakota and Minnesota points as they are so scattered.'

Mr. SMART.—I may say that there are about ten times as many people rushing to these reservations as can really get lands there, and our agents take advantage of that fact and go to the point where the lands are allotted to the settlers and distribute our literature. We have exhibits as well, which we take to the same points.

'Again I wish to point out to you the difficulty of keeping up our record with such opposing influences exerted. There is a greater cry for land to-day than ever, and with these propositions out of the way we will be on excellent footing again and making greater headway than ever.'

I was asked at the last meeting how to account for the falling off in the numbers of persons who have come from the United States in this year, and according to the reports just made the loss in immigration from that country is 6,300.

Q. For the year?

A. For the year, that is the year ending June 30, 1904. Last year we had a total of 49,473, this year it is 43,173, or a loss of 6,300. Of course, there will be some additions to these figures, probably two or three thousand when the complete returns are in, but these are the approximate returns. There certainly will be an increase when

we make our final statement. The total arrivals for 1904, I may say, however, were 130,329, against 128,364, a net gain of about 2,000. The gain was altogether in British immigration, which was increased by 9,123.

Q. Have you the relative proportions?

A. Not yet.

Mr. Smart.—This gives you an indication of the fact that we are meeting with opposition in the United States. It is really a wonder that we have not met with it before, seeing the large numbers of people who have been crossing from the western states into Canada during the last three or four years. This fact has prompted the United States Congress to take steps to open up large tracts of land in various states owned by the federal government. I might say in passing that that is not the only state where they have immense tracts of land fit for settlement. The idea that has been prevalent that the United States lands were all filled up is an entirely erroneuos one. They have lots of land yet. I am told that there are five or six hundred million of acres of land, some of it fit for settlement, and much poor land, in various parts of the United States. Of course a good deal of this may be only broken land fit for ranching purposes, but it can be regarded as agricultural land just the same. I thought it as well to read Mr. White's letter in order to give the Committee some idea of the opposition we are having in the United States, and which may account to some extent for the loss in immigration compared with the previous year.

By Mr. Blain:

- Q. How does the land owned by the United States compare with the land which Canada has? Is it just as fit for settlement?
 - A. The 500,000,000 acres?

Q. Yes.

- A. Of course it is of a different quality; you cannot compare it at all. They have quite as much land as we have, and probably more accessible at present than we have, unless we go to the far north, but it is land I suppose that would not be taken up, at least a great deal of it, except in immense blocks.
 - Q. Taken altogether you think our land is superior?

A. Yes, I do; there is no question about that.

By Mr. Stewart:

Q. Mr. Smart, you spoke of land about Devil's lake. I wish to point out that the Devil's lake country is 100 miles south of the Manitoba boundary line, and that as you go north to Manitoba the land improves.

A. Yes.

By Mr. Wilson:

Q. The map you produced, I do not see how we can get it into the report.

A. The map was prepared in order to give the Committee an idea of the country. However, you can get it into the report if you wish.

Q. I call attention to the fact that it was desirable to get that map into the report.

A. Then we would require—

Q. —To give the lots?

A. To attach some explanatory information to it. Q. Do you not think it would be better to do that?

A. I think we could do it.

By Mr. Davis:

Q. Is this land taken up?

A. The red indicates the land out of which the Saskatchewan Land Company, or to be more accurate, Mr. Davidson and his associates, were sold the 250,000 acres.

Q. What does the blue represent?

A. It represents land they did not take.

By the Chairman:

Q. And why the other line?

A. The outline is the district out of which the Saskatchewan Land Company or the Qu'Appelle and Long Lake Railway Company were to select their land grant.

By Mn. Davis:

Q. Have you any return of the settlers placed upon this road by the Saskatchewan Valley Land Company ??

A. Yes.

Q. Is it here?

A. Yes, I have it here.

By Mr. Lefurgey:

Q. This portion marked in red includes the 250,000 acres ?

A. That is the district out of which they were sold the 250,000 acres. These are the townships out of which they selected their land. I may say that application was made by the company, or at least by Mr. Davidson's company, for certain patents within the tract and before granting them Mr. Speers was asked to make a general report, that is, before the department undertook to consider the company's application. We also got a certificate from the agent of the Dominion lands as to the number of entries which have been granted in the district. Mr. Speers, in his report, says:

'WINNIPEG, MAN., December 2, 1903.

'SIR,—In compliance with the instructions contained in your letter of the 16th instant, requesting a report on the work done by the Saskatchewan Valley Land Company, who had made application to the department to have patents issued for 15,000

acres of land. I beg herewith to submit the following report.

'At this season of the year it would be difficult to give you a list of the actual residents occupying the lands within the limits of this colonization district, and the 'matter of personal inspection over the district would have to be deferred until May or June. I beg to refer to the fact that in May, 1902, when the agreement was entered into between the company and the department, there was no settlement between Lumsden and Saskatoon. I am pleased to report to you that at present the entire district presents a scene of agricultural activity, and settlement can be observed as far as the eye can see on either side of the railway covering this entire district. I might refer to the towns of Craik, Davidson and Hanley, with a population of over 200 souls in each village, also an elevator at Disley, and improvements at other little centres which would bear out the fact that agricultral and commercial progress has been made, and is apparent. I am very pleased to report the wonderful transformation that has come over this district. In February, 1901, I prepared a map and submitted it to the department with the request that 10,000 acres of land be broken at expense of the government to establish the fact that grain could be produced in this district. I am pleased to report to you to-day that within the prescribed limits of this same district at least 10,000 acres of land has been brought under cultivation, fairly distributed over the entire country, and there is a bright prospect of this land being put to In connection with this cultivation I might refer to one S. G. its proper use. Ditchon, who has broken 1,400 acres in the vicinity of Davidson, and J. W. D. O'Grady, who has broken 1,200 acres, and has it ready for crop in the vicinity of Hanley; and Mr. Waddell, who has broken 600 acres in the vicinity of Girvin. I also beg to point out that the acreage prepared is not. as the above would indicate by speculaters altogether, although these extensive farms are very desirable. I would say that some 250 other settlers have broken over the entire district from five to 120 acres each.

REPORT OF MR. SPEERS ON HOMESTEADING.

'I also submit for you consideration in connection with this report, the certificate of the Dominion Lands Agent at Regina, Mr. McCannel. I have before me the list of names of actual homesteaders on each quarter section; however, this is very cumbersome, and it is my intention to leave it on file in the omce of the Commissioner of Immigration in Winnipeg, where it will be available should you require it at any time in the future. But I beg to submit the actual number of homestead entries in the townships and ranges in the colonization district as follows:—

Γownship.	Range.	Meridian.	Total Number of Entries.	Township.	Range.	Meridian.	Total Number of Entries.
22	28	W. 2	11	27	3	W. 3	31
22 22	29	"	40	27 27 27 27	3 4	"	19
23 23 23 23	26	II.	28	27	5	11	15
23	27	11	26	27	6	· II	12
23	28	11	31	28	1	"	30
23 24	29 26	II.	29	28	2 3	"	15
24	27	11	36 23	28 28	3	"	28
24	28	11	28	28	5	- 11	2 5
24	29	11	22	29	2	11	28 2 5 6
24 25	26	-11	1	29	3	1 "	25
25	27	11	22	29	4 5 2 3 4	"	20
25 25	28	tt .	20	29	5	"	19
25	29	11	8	29	6	11	24
26 26	27 28	- 11	7	30	3 3	- 11	3
26	28 29	11 .	21 14	30 30	3	11	28
27	27	11	2	30	* 5 6 3 4	11	13 21
27	28	"	8	30	. 6	"	19
27 27 28 28 28 28 23 23	29	11	10	31	3	11	14
28	26 27	- 11	. 1	31	4	11	45
28	27	11	6	31	5	- 11	15
28	28	11	19	31	6	11	18
23	$\begin{array}{c}1\\2\\1\end{array}$	W. 3	24	23	25	W. 2	28 35 38
24	2	11	12 24	24	25 25	11	35
24	2	11	13	25 26	25 25	. 11	38
24 25	2 1	"	23	27	25	11	31
25 25	2 3	11	37	28	25	"	31 24
25	3	11	30	29	7	W. 3	27
25	4	- 11	50	29	8	11	27
25 26	5	11	46	30	7	11	40
26	1	II II	22	30	8	- 11	18
26	2 3	0 7	18 23	30 31	9	- 11	43 29
26	4	"	23 29	31	25 25 7 8 7 8 9 7 8	"	5
26 26	5	11	18	31	9	11	13
27 27	1	11	28	01	J	11	10
27	2	"	42				1,642

'It would thus appear that there are 1,299 homestead entries made in the district, and in range 25, townships 23 to 28 inclusive, west 2nd meridian, and also in ranges 5 and 9 on townships 30 and 31 west 3rd meridian, you will observe there are 343 homestead entries made. I might refer or may not be included within the limits of the old colonization district. It will thus be seen that a total of 1,642 homestead entries have been effected through the work of this colonization company in other districts does not directly affect the obligation devolving upon them to colonize the portion of land they agreed to, yet by way of reference I beg to submit to you other creditable work in adjacent districts affected from the energy of these people. They have established in the Hoodoo district north of the river the German Catholic Society, who have made 2,000 homestead entries and have actually settled on the land 600 families within fifteen months. I beg also to point out that the large Mennonite

colony at Quill Lakes, where 500 settlers will be placed, has been established through the efforts of this company. Under their contract with the Canadian government (if I remember correctly) they were obliged to place 1,120 settlers, more or less. It will thus be seen that 1,300 bona fide entries have been made, and allowing range 25, 1,642. I might say that I have been brought in touch with the actual work of this company. They have had a competent staff of officials; they have done all they could to make preparation for the reception and care of their people; they have ever been a potent factor in assisting in immigration work during the last two years. They have kept livery horses and wagons at Davidson and Hanley; they have built hotels and boarding houses; they have given free board and free livery to all who came in; they have supplied sleeping accommodation and blankets while on journeys in the country, as well as food, and have endeavoured to give that special attention to immigrants coming into the country, which is commendable.

'You will be in a better position than myself to judge many matters, but I beg to say that land that was considered valueless in 1902 meets ready sale to-day at \$5 per acre, and a change has come over the entire situation through the work and development brought about by this company. The evidence is before every traveller. Men representing houses of commerce in the east stop off to sell their merchandise, and do business where eighteen months ago there was nothing but prairie. This also has been a great benefit to the good country lying to the north, as now we have a continuous settlement and commerce well established all along the entire permanent way of the Saskatchewan, Regina and Long Lake Railway. The fact of the enhanced value of lands will stimulate the homesteader, who is yet not in residence, to enter upon his land the coming spring, and in my investigation of the matter I failed to find where there is one settler on the records of the Dominion Lands Office books who is not a bona fide settler, and put in in good faith by this company; so that, although the settlement is very great throughout the district at present, I might say that after the coming spring the entire completion of the agreement for this company with the government should be well consummated.

'I am also aware that the methods adopted by this company to bring about the best results for themselves is not of significant interest in connection with this report, but I might refer to the fact that within thirty days of the time they entered into this agreement they ran a special train from Chicago to Prince Albert containing 170 bankers, business men and grain merchants, and 30 newspaper men. This train was run free of charge, fully equipped, costing this company \$16,000. I merely refer to this to show that we have reaped a great deal of benefits from the expenditures of these people, and I think no business man in Canada can look upon their work without expressing admiration and commending them for their energy. The districts have been brought before the public; what was pronounced arid and valueless has enhanced in value, and although it was currently the opinion that neither these men nor any set of men could open up this district successfully, I am pleased to report to you that this has been done, done effectively, done in compliance with their conditions of colonization, and the evidences of development can be seen on every hand throughout the entire district.

'Your obedient servant,

'(Sgd.) C. W. SPEERS,
'General Colonization Agent.'

By Mr. Hackett:

Q. How far is that land from the railway ?

A. It is near the railway, along the railway.

Q. Purchased at \$1 an acre?

A. Yes.

By Mr. Lefurgey:

Q. And the Canadian Northern will run straight through this land at the loop there?

A. Oh no, that is away south. This is really supposed to be the poorest quality of all the land in the land grant.

By Mr. Hackett:

Q. What is the nature of the soil ?

A. It is a very light sandy soil. That is the reason why it was not settled long before; simply because it was of such a quality that people imagined that they could not make a success of farming in that district at all and there were practically no settlers there.

Q. Who are the gentlemen who have this land?

A. The purchasers were A. D. Davidson, G. F. Piper, A. L. Warner, George C. Howe, D. H. McDonald, and A. J. Adamson. They afterwards formed what I believe is the Saskatchewan Valley Land Company.

By Mr. Sproule:

Q. Am I correct in understanding you to say that the general character of the

land is a poor sandy soil?

- A. Yes, that is the general character. I have no doubt there are perhaps some good sections amongst them. You will not find anywhere in the country a large tract of poor or a large tract of the very best land; it varies very much. Even in one section you find it varies.
- Q. In looking over the field notes I see that one, two or three are considered fair land ?
 - A. Yes, I suppose it would be considered fair land.

By the Chairman:

Q. It is within my knowledge that the railway company refused to accept the land because it was too poor, I remember that very well?

A. That is very clear. The railway company really refused to accept the land. They said the land was not fit for settlement, at least with very little exception.

By Mr. Sproule:

Q. But they did accept it ?

A. They did accept it when they got the chance to sell. In fact the government in order to settle the matter with this railway company gave over all the land available out of which to select their land and they did not know what to do with it, but simply went on with the suit against the government for a sufficient quantity of land which would be fit for settlement. Then this company appeared on the scene and purchased the land grant. I do not know whether that is a very clear indication as to the general quality of the soli. The railway company had selected a small quantity, I think about 130,000 acres of land in the district, but there was a balance of nearly a million acres that they refused to select in the district.

By Mr. Boyd:

Q. How many acres of land did this company get altogether ?

A. 250,000 acres.

Q. How many acres out of that 250,000 did they get out of the vallway grant ?

A. They got it all out of the land set apart for the railway.

Q. The whole 250,000 ?

A. Yes, in the southern tract. That is the land south of township 31. The railway company have the whole of this tract out of which to select a million acres, or whatever the quantity is. It was from this tract that the land company were allowed to select 250,000. They were given a certain number of townships, out of which to decide what they would take.

Q. But it was really outside of what had been given to the railway company ?

A. No, it was the even numbered sections that were given to Mr. Davidson and his associates. They had a right to the odd sections, because they have bought the right to select from the railway company.

Q. The railway company ?

- A. No, from the railway company. The land company bought from the railway company their land grant, so that they owned the right to select from all the odd sections in that tract sufficient to make up the mount required to complete the limit of the grant. In addition to that the government sold them 250,000 acres located within a certain limited tract.
 - Q. Have they taken the whole of the land grant?

Q. And in addition to that they have what you have given them ?

A. Yes.

Q. And you have given them something in addition to what they got from the railway company?

A. Yes; we sold them an additional area of 250,000 acres. Q. How much did they get from the railway company?

A. Nearly a million acres.

Q. At the same rate?

A. No; they got the land from the railway company at \$1.53 per acre. We sold them at \$1.

By Mr. Lefurgey: .

Q. They got 250,000 acres from the railway company?

A. No, nearly a million.

By Mr. Wilson:

Q. What are the conditions upon which they obtained the land from the government?

A. The conditions which are imposed upon them are:-

'The area to be disposed of to the company is not to exceed in all 250,000 acres,

and the price is to be \$1 per acre.

'That the purchaser shall deposit with the government the sum of \$50,000 as security for the carrying out of the conditions of the sale; the said amount to be retained by the government until all the lands have been earned, then this money shall be applied in payment of the last 50,000 acres of land.

'It is agreed that the purchasers shall place twenty settlers on free homestead lands in each township, and twelve settlers on lands which may be sold by the purchasers before they shall be entitled to the remaining even-numbered sections. other words, there shall be in each township twenty quarter sections to be settled on by homesteaders and twelve by the company on other sections which the settlers may purchase, to entitle the purchasers to buy from the department the balance of the even-numbered sections at the disposal of the Department of the Interior.

'It is understood that this arrangement shall extend over a period of five years, but that the purchasers shall be obliged to perform at least two-fifths of the conditions as to settlers being placed on the lands within two years from date hereof and onefifth each year thereafter, otherwise they shall forfeit the right of purchase and the

amount of money deposited with the government as security.'

By Mr. Boyd:

Q. Have they only five years in which to earn this land? A. Five years, yes.

By Mr. Wilson:

Q. What is the date of that?

A. May 24, 1902.

By Mr. Boyd:

Q. They have three years yet?

A. Yes. I was asked at a previous meeting about the price paid by the company to the railway company for the land; that is, paid by Mr. Davidson and his associates. I did not know for sure at the time, and I said \$1.75 or \$2 per acre. That statement was made two weeks ago when I was before the Committee, and I wrote to Colonel Davidson to find out. I did not know whether he would give me the information or not, but I wrote him anyway. In my letter I said:—

'I understand that you will be in Toronto for a day or two, and am anxious to get some information that I may give to the Committee on Agriculture at its next

meeting, if you are able to give it to me.

'The question was brought up in the committee this morning respecting the price your company paid for the lands purchased from the Qu'Appelle, Long Lake and Saskatchewan Railway Company. I made the statement that I understood the price was \$1.75 or \$2. What I would like to know definitely is the actual price paid by you, and what conditions were attached to the purchase of those lands. I wish particularly to have the information regarding that portion which was set apart for you out of which you should select the 250,000 acres sold to your company by this department, and as to whether you are bound to take everything that came out of certain townships or whether you could select any quarter-sections or sections as you wish. You might let me know also what was the quantity of odd sections out of which you were to select your lands.'

Mr. Davidson wrote me in reply as follows:

'Replying to your favour of 29th instant, in regard to the price which our company paid the Qu'Appelle, Long Lake and Saskatchewan Railway and Steamboat Company, will say that we purchased in May, 1902, 450,000 acres from their grant south of Saskatoon at \$1.53 per acre, and were given six months from date of purchase, in which to make payment.

'At the time we purchased this land the Qu'Appelle, Long Lake and Saskatchewan Railway and Steamboat Company had the right to select their grant, not only from the odd-numbered sections, within the area reserved for them by Order in Council, but also from any available odd-numbered sections at that time at the disposal of the government, both in the province of Manitoba and the whole of the North-west Territories, and in some parts of the North-west the right to select even-numbered sections as well.'

By Mr. Wilson:

Q. When was that permission given them ?

A. In 1901. It was an effort to settle a very difficult position which existed between the government and the Qu'Appelle Railway in regard to the land grant. We wanted to effect some settlement with them; they refused to take any of the land in this district, so the government simply decided that they would let them select lands in Manitoba and in a large portion of the North-west Territories in order to satisfy them.

- Q. Which made the land grant very much more valuable, there is no doubt about that.
- A. They did not undertake to select their lands even then. I do not know what was the matter with them.'

Colonel Davidson in his letter continues:

'When the assignment from the Qu'Appelle, Long Lake and Saskatchewan Railway and Steamboat Company was made to the Saskatchewan Valley Land Company,

the government restricted the area within which these lands were to be selected, but we still had an area containing several times the amount of land that we purchased to choose from, and there were no restrictions placed on the selections in any way, that is, we could take one quarter-section of land or all available odd-numbered sections in any township, and of course there were no settlement duties or conditions of any kind imposed. I might add, in this connection, that we have been credibly informed that a short time prior to the date of our purchasing these lands and their more valuable lands in the northern part of their reservation were offered at \$1.25 per acre, with the same right of selection.'

Under the same date Colonel Davidson writes:

'As you are aware, under our colonization agreement with the Department of the Interior, we were to pay \$1 per acre for certain even-numbered sections contingent upon our bringing in a certain number of settlers within certain prescribed limits, something over 1,100 settlers. In doing this, we were obliged to locate between 2,500 and 3,000 homesteaders. These settlers were induced to come to western Canada by us, but after showing them the lands which we were colonizing, they took lands outside of this district, and in almost every instance we furnished land guides and teams free of expense to the settler to show lands outside of the limits as well as within.

"The first year that we did colonization work, we furnished free land guides,

teams, and also ran two hotels free to land seekers.

By Mr. Wilson:

Q. Were they not compelled to locate these people on each township that they bought?

A. Yes; what Mr. Davidson says is that in order to locate the number they were required to locate, they had to bring in about 2,500 to 3,000 homesteaders, and many of the people they brought in refused to go on this land.

Q. Did he get the necessary number to locate on this land ?

A. I think so; what he says is—I think he says he has more than enough now.

'During the season of 1902 we would have 40 to 50 people at these hotels daily, for which we made no charge, so you can readily see that the lands that we have purchased from the department on the colonization basis have cost us a great deal more than the lands purchased from the Qu'Appelle, Long Lake and Saskatchewan Railway and Steamboat Company, being the odd numbered sections in the same townships where the even numbered sections are situate and that our colonization agreement pertains to.

In addition to the colonization work that we have done within the limits of this district, will say that through our efforts something like 800 families were brought into the German colony north of the Quill lakes in Saskatchewan, and at this writing we are establishing a Mennonite settlement northeast of Long lake in Assiniboia, in which something like 300 settlers have taken homesteads during the past 60 days, and we expect by the end of this season the colony will number 600 families. In this connection may say that the first of these Mennonite families located in the district in which we were doing colonization work and were brought in through our efforts, but were not as well satisfied with the lands as they are with the land northeast of Long lake.

'In locating these colonies our company has gone to great expense in the way of advertising, employing public speakers, furnishing free land guides and teams to show the lands. As one instance, we ran a free train from Chicago to Prince Albert and return, of over 200 people. Of this number 150 were leading bankers from the Middle Western States, 25 to 30 were editors or publishers of newspapers, and the balance of the party was made up of prominent grain men from Chicago, Duluth and Minneapolis. We believe that the advertising that was derived from this excursion did more to advertise western Canada than anything that has been done outside of the work of your department.

'The writer has no hesitancy in saying that we would not care to make another colonization agreement if the lands were given to us.'

By Mr. Wilson:

- Q. They have three years to complete the arrangement made with you.
- A. Yes.
- Q. You do not know how far they are from finishing now ?
- A. I can tell you the number of people they have in.
- Q. The number of people might not indicate the number of homesteads.
- A. That there may be more homesteads than people you mean ?
- Q. I mean the reverse.
- A. Yes; there will be more people than homesteads.
- Q. Because I remember when you were before us last year you put in, I think it was, three and one-fifth persons to every homestead in counting the population.
- A. The number of settlers in this case would not mean men, women and children. It means homesteaders or people living on lands the company have sold them.
- Q. That is what I want to know, because the homesteaders would be a great deal fewer in number I should think than the people who went in.
- A. There would be fewer homesteads, as many of those entering for land would naturally have families.

By Mr. Wilson:

- Q. Now, these are the homesteads you are going to give us?
- A. Yes. The number of homestead entries which have made out of the tract up to last December were 1,642. It would thus appear that there are 1,299 homestead entries made out of the tract. There are 1,299 entries, the number they were to locate altogether was something like 1,100, so that they have exceeded the number. The entries may be made and the persons may not be on the land, so we have to get our homestead inspector to go to the tract and to visit every township, giving the names of the settlers and the description of the land, so that we will know whether the actual number of settlers are on the land. It is not a question of homestead entries altogether. We will have to have the inspection before we complete the deal.

By Mr. Sproule:

- Q. Up to what date would that be?
- A. Up to the present.
- Q. That letter is written about the present date.
- A. A little time ago—not long ago. You want the report, of course?

By Mr. Boyd:

- Q. You have not the report of the inspector yet?
- A. No, it is a long undertaking. It will take the whole summer to do it, because he will have to travel through every township. That is the only way to do it. We would not undertake to close out the sale without having the report of the inspector, showing that so far as settlers are concerned the conditions have been complied with.

By Mr. Cochrane:

- Q. In connection with the amount of lands, can you tell us how much land that company have got from the government and from the railway companies?
- A. I am not prepared to say how much they got from the railroad company, but I understand it was something like 800,000 to 1,000,000 acres, and they got 250,000 acres from the government.

By Mr. Wilson:

- Q. They have to do the same settling duties as they would on government land.
- A. Yes, as far as the homesteads are concerned.

By Mr. Boyd:

Q. I understood you to say that they had power to select lands in Manitoba; have they selected any?

A. That was the old arrangement with the railway companies.

Q. Not with the present company?

A. No.

By Mr. Wilson:

Q. They have the right to do that?

A. No, when the railway company declined that arrangement, of course, the offer was withdrawn, but at one time in the original contract that was reserved, and it was then that they sold their land to this company.

Q. What did you read from there—your report?

A. That was Mr. Davidson's letter.

Q. Did'nt he hold they were entitled to some of the lands?

A. No, they did'nt have it at the time the sale was made, they entered action, and of course the offer lapsed.

By Mr. Boyd:

Q. This company have to put settlers on each township within the purchase.

A. Yes, that is, twenty actual homesteaders on freehold and twelve others on land which they sell.

Q. That is regardless-

A. It might be more than that, of course.

By Mr. Wilson:

Q. They must be in different townships. It will not do to put them all in four or five townships.

A. No, that would hardly be a compliance with the terms of sale.

By Mr. Armstrong:

Q. About how many freehold townships have you granted in these townships where they located.

A. In the district out of which we were selling these lands ?

Q. Near where they are selling these lands ?

A. The report is, about 1,300.

By Mr. Sproule:

Q. I understood you to say that the government had sold them the even numbered sections at \$1 an acre?

A. Yes.

Q. And that the railway company would take the odd numbered sections. How can that be if the government had sold the even numbered sections, how can they put

twenty homesteaders in each township on free grants?

A. We have not sold them that number. We sell them the even numbered sections after the settlers are on. The settlers are supposed to first go on free grants. They cannot go in and take up all the lands in the townships to the exclusion of those who want homestead entries. They are really able to purchase all the even numbered sections, except twenty in each township which must be—

Q. There must be twenty reserved for the free homesteads ?

A. Yes, that is the only way it could be done.

Q. They have to put an additional twelve settlers on their own land?

A. Yes. 2—56½

By Mr. Boyd :

Q. Are they compelled to comply with the homesteaders' regulations?

A. Oh, yes.

Q. In each instance. Can they do as they wish on their own ?

A. They will have to comply with the regulations the same as other homesteaders?

Q. Those other twelve settlers ?

A. No, they can do as they like about them.

Q. It is only on the twenty that they get from you ?

A. Only on the free homesteads that they have to comply with the conditions.

By Mr. Robinson (Elgin):

Q. What is the amount of school lands reserved in each township ?

A. 1,280 acres. Of course, these are reserved until sold. Then there are the Hudson Bay lands—

Q. In what way do you select these school lands ?

A. Numbers 11 and 29 in each township are school lands.

By Mr. Sproule :

Q. Am I correct in understanding that they have five years to fulfil this bargain?

A. Yes.

Q. And if it is not done the land reverts to the government?

A. Under the agreement they were given five years to complete the settlement, but they were to complete in two years two-fifths of it. Of course, when they have completed two-fifths of it they will be entitled to patents for that proportion of it.

By Mr. Robinson (Elgin):

Q. Two years have expired now ?

A. Yes. They say now they have really more than completed the whole of their conditions.

By Mr. Wilson:

Q. There is an order in council in connection with this matter ?

A. That has been put in.

Q. Then there is the report of Mr. Speers, the whole report of Mr. Speers should go in ?

A. It goes into the general progress of the settlement.

Mr. Blain.—Is Mr. Smart to appear before the Committee again ?

The CHAIRMAN.—I think he is about finished.

Mr. Blain.—Mr. Clancy said he would like to put some questions to Mr. Smart, and would like him to appear once more. He was unavoidably called away to-day.

WITNESS.—With regard to this same subject, if the members would refer to last year's records they will find that this matter was gone into very carefully.

By Mr. Cochrane :

- Q. In connection with the land grant, I would like to ask Mr. Smart if I have got it correctly in my mind. Do I understand, Mr. Smart, that there is a certain portion—we will not go over how much—that is reserved by the government for homestead entries in this territory by any person; that there is a certain portion then sold by the government to this company, and this company is bound to do settlement duties—we will not refer to the details—and then the balance of the territory, this million acrest that was bought from the railway company, they are not compelled—that is, their own land without any condition—
 - A. Yes.

Q. That is, the homesteaders can go in on a certain land and improve it, and then they have got to put settlers on the portion bought from the government and improve that, and then they can do as they like with their own land.

A. Certainly. As pointed out, they have several times the area that they require

out of which to select.

By Mr. Sproule :

Q. There is nothing done with the school lands.

A. No.

Q. They are not allowed to be settled on ?

A. No, they are not. They are held to be sold by auction.

By the Chairman:

Q. What about Hudson Bay lands ?

A. They are there still.

Mr. Davis.—That is three-quarters of a section in every township.

By Mr. Blain:

- Q. Is there anything in that school land regulation that the school boards can sell 'the lands at any time ?
 - A. The school boards cannot sell them.

Q. They have to be reserved for all time.

A. They are sold by the government from time to time.

- Q. There is nothing in the regulations that would compel these lands to be held for all time.
- A. No. The only reference to it in the Act is that school lands shall be sold by public auction.

By Mr. Maclaren (Huntingdon):

Q. What is done with the money?

A. It is funded and the interest is paid to the schools, 3 per cent on the total amount.

By Mr. Wilson:

Q. Would you explain the way the school lands are sold ?

A. School lands are sold by public auction and are put up at an upset price. In the Territories within the last year or two the upset price has been \$7 an acre, but of course the sales are only held in the thickly settled districts where there are likely to be a good many buyers or prospective buyers; and the same in Manitoba.

Q. The same price ?

A. \$5 in Manitoba. Of course, we have not had any sales in Manitoba for the last two or three years.

By Mr. Cochrane :

Q. The territorial government determines the time of the sale?

A. Not necessarily. There have been consultations between the governments in connection with it.

By Mr. Blain:

Q. Mr. Chairman, the reason I am asking is this, that in the province of Ontario—take my own county, for example, in the settlement of the county of Peel in the early days some of the school boards were short of money and they sold the school lands for a very small amount in order to relieve the early settlers from paying taxes. In other cases the land was retained, and I know of a section in my own county, in fact more than one, where the land was retained and the proceeds of the 200-acre

farm is now used to pay the whole of the school taxes, so that the whole section has not been taxed for school purposes for twenty years. I think the land should be retained for all time. The school board, in the case I have mentioned, have built a brick house upon the farm and erected a large banked barn, and from one farm they get \$500 a year rent. If the country is at all settled these school lands will grow in value and the revenue from them will go a long way towards supporting the schools.

A. The only point in connection with that is that the present settlers, the pioneers

of the country, would get no advantage whatever from the land.

Q. What advantage can they get when they sell the land for a very small amount?

A. The land has been sold as high as \$30 and \$35 per acre.

The Committee adjourned.

Having read over the foregoing transcript of my evidence, I find the same correct.

J. A. SMART.

House of Commons, Room 32, Friday, July 15, 1904.

The Select Standing Committee on Agriculture and Colonization met here this day at 9.30 a.m. Mr. Douglas, the Chairman, presiding.

Mr. James A. Smart, Deputy Minister of the Interior, was again present, at the request of the Committee, and gave the following evidence:—

By Mr. Clancy:

Q. I want to ask Mr. Smart—have you had any report with regard to the lands granted by the Order in Council of May 24, 1902, have you had any report with regard to what progress has been made in conformity with that Order in Council by the Long Lake and Saskatchewan Railway Company, other than that of Mr. Speers', dated December 22, 1903.

A. No.

Q. Well, do you know what the condition of affairs now is yourself, as to that?

A. The department has asked, or has instructed the homestead inspector for the Regina district to make a report as to the progress made. The department has given instructions to the homestead inspector for the district to inspect the land with a view to ascertaining how many actual settlers are upon the land in order to decide as to whether the company has completed the conditions with regard to certain townships or not.

Q. According to the agreement with the company unless they have placed two-fifths of the required number of settlers upon the lands now, I understand that they

would forfeit the right to purchase ?

A. Well, they have done more than that. There are already according to the reports in the department now in the 52 townships within the tract which is shown on the map here, (map produced)——

By Mr. Wilson :

Q. Have you figured that out since the last meeting ?

A. This is a better map than the one I produced the other day. They have placed in these 52 townships 1,120 homesteaders, that is, there are 1,120 homesteads taken up within this district, which gives an average of over 21 settlers to the township, and that is more than required by the contract, provided they have a balance of twelve other settlers to each township which is also required by the contract. But so far as the actual homesteads are concerned they have more than complied with the conditions of their contract.

By Mr. Clancy:

Q. Well, you say that is an average of more than twenty settlers to the township ?

A. Yes.

Q. But the contract is not for an average of settlers?

A. No, the contract requires twenty on free homesteads.

Q. In each township?
A. In each township.

Q. Therefore no averages should be taken ?

A. Well, I have given it to you as it is.

Q. Well, I am asking you what the contract is ?

A. I think that is a matter of decision for the department.

Q. Well, I will read this clause in order that there will be no mistake in regard to that. This clause four if you will turn to it, Mr. Smart?

A. Yes

Q. '(4) It is agreed that the purchasers shall place twenty settlers on free home-stead lands in each township, and twelve settlers on lands which may be sold by the purchasers before they shall be entitled to the remaining even numbered sections. In other words, there shall be in each township 20 quarter sections to be settled on by homesteaders and 12 by the company on other sections which the settler may purchase, to entitle the purchasers to buy from the department the balance of the even numbered sections at the disposal of the Department of the Interior.' Would you say there was an average to be taken into consideration there?

A. The reason I mentioned it was, I did not say it was to be absolutely taken, but the the reason I suggested that was this, in a large number of townships, in a good many towships there are nearly two or three times as many homesteaders as are required under the agreement. It would be impossible to work out a contract of that kind without taking two or three townships together and making an average, so as to

give the company what is reasonably fair.

Q. Do you propose to adopt that policy ?

A. When the contract was made it certainly was intended they should settle each township separately, as you suggest.

Q. Do you propose to recommend that you should depart from that ?

A. I am not prepared to say what I would recommend, I am not prepared to express an opinion upon that now.

Q. You have expressed the opinion that the average should be taken of more than

one township ?

A. I hardly think I would make a suggestion of that kind for the whole 52 townships, but in the case of a small group of townships I might do it.

Q. Even though that would be a violation of the contract ?

A. I am not prepared to say. Of course, I do not know whether the government would accept my recommendation even if I made it.

Q. I do not think there are two opinions about that, that it would be a violation of the contract. You say you have information in the department; are you referring now to Mr. Speer's report?

A. About what ?

Q. About the number of settlers ?

A. No, this is the official record I am speaking of, which shows that there are so many entries in these townships, 1,120 homestead entries.

By Mr. Roche (Marquette):

- 'Q. You do not mean to leave the impression that these people are settlers there; these are merely entries for homesteads, and they are not necessarily on the land, are they?
- A. Certainly, they must be on the land; how can a man take a homestead unless he is on the land.
- Q. I have read in the public press that the homestead privileges have been abused by that very company, men making homestead entries, and holding the land and not living on it.

A. The department could not undertake to say that.

By Mr. Clancy:

Q. Have you a printed report there ?

A. No.

Q. Where is that taken from ?

A. The departmental record.

Q. That is not very clear. What records is it taken from ?

A. From the department at the head office.

Q. Who by

A. The figures are given by Mr. N. O. Cote, one of the officials at the departmental office.

Q. Who is he?

A. He is assistant chief clerk of the patent branch of the department, where all these records are kept.

Q. How long had he been there ?

A. 20 or 25 years.

Q. He compiles these from the returns, from the printed returns?

A. No, not from printed returns, but from returns that are made from every land office every month, showing the names and full particulars of every homestead entry.

Q. Does he say the entries are those of actual settlers ?

A. He shows the names.

Q. Does that mean entry on the land ?

A. It means that the man who enters for the land must go on the homestead, he

cannot perform the conditions without going on the land.

Well, we will see what Mr. Speers says about that. Under the Dominion Lands Act he is given six months to go on that land and complete his entry. I do not argue that these entries mean that these people are actually on the land at the time.

Q. Does that statement mean that now they are on the land?

A. No, it means that they have made entry.

Q. Does it mean that they wil I ever go on the land?

No answer.

The CHAIRMAN.—They will lose the land if they do not go on it.

Mr. Roche. Not necessarily so.

By Mr. Clancy:

Q. This company has sold large quantities of these lands and received money for them. Supposing when the company fails to perform its portion of the contract, in what position will these persons who have gone on the land be in in regard to their patents?

A. I do not think there is any danger of the company failing in its contract.

Q. I am not saying there is a danger, but in the event of their failing ?

A. I cannot answer that just now; I cannot say exactly what position that would put the matter in.

By Mr. Clancy :

Q. You are administering that department; it is an important question.

A. I do not think such a contingency is at all likely to arise.

Q. Suppose it does arise, what would be the position of those persons who have paid their money to the company ?

A. Well, I cannot tell you that, I cannot say.

Q. I suppose they would be unprotected, would they not ? A. Yes, unless the government wished to see them through.

- Q. To sustain the lease, in other words.

 A. They might be protected by some special arrangement. That is the only thing that could be done.
- Q. Is this company paying for any portions of the land they have sold in contemplation of final completion of this agreement ?

A. They were not required to pay until they applied for patents.

Q. Have they applied for patents?

A. Yes, for 150,000 acres of land, and paid \$150,000 for it.

Q. They paid \$150,000 when they applied ?

A. Yes.

Q. When was that application made ?

A. In December.

Q. Of last year ?

A. Yes.

Q. Were they entitled to it?
A. To the patents?

Q. To have that \$150,000 acres given to them, handed over to them.

A. That was the subject upon which Mr. Speers' was asked to report. Before any action was taken Mr. Speers was instructed to make a general report on the district, and that is the report that he has made.

Q. Yes.

A. The report was considered satisfactory and patents have been issued for 140,-000 acres.

Q. On this report of Mr. Speers ?

A. On this report of Mr. Speers 140,000 acres out of the 150,000 acres that they

Q. It has been issued to the company.

A. To the company and its nominees.

Q. On the report of Mr. Speers.

A. Yes.

Q. It does not say that they have complied ?

A. What does it say?

Q. Probably it is just as well I should read what he says.

Q. I thought after reading Mr. Speers' report that he was an advance agent for the company. There is a very strong opinion that he is a participant in the profits of that company.

A. I would not like to say that.

Q. I may say that there are very strong reasons that we are in possession of for believing that it may or may not be true. I will just read a paragraph here from Mr. Speers' report: 'At this season of the year it would be difficult to give you a list of the actual residents occupying the lands within the limit of this colonization district, and

the matter of a personal inspection over the district would have to be deferred until May or June.' That is May or June of this year ?

A. Yes.

Q. In a settlement like that ?

A. Read the letter through, please.

Q. Well, I will read it through.A. I think there is something more with reference to that.

Q. 'I beg to refer to the fact that in May, 1902, when the agreement was entered into between the company and the department, there was no settlement between Lumsden and Saskatoon.' That does not affect it in any way. 'I am pleased to report to you that at present the entire district presents a scene of agricultural activity,'-I am going to give you now the advertisement for the company, or perhaps I had better read it all-'and settlement can be observed as far as the eye can see on either side of the railway covering this entire district. I might refer to the towns of Craik, Davidson, and Hanley, with a population of over 200 souls in each village,'—is that included in that section in the report?

A. Which is that?

Q. The population of the villages?

A. I dare say it is.

Q. In the list of settlers?

A. No, no, these are the towns.

Q. Or taken in as having made entries?

A. No, I hardly think that.

Q. (Reads) 'also an elevator at Disley, and improvements at other little centres, which would bear out the fact that agricultural and commercial progress has been made, and is apparent. I am very pleased to report the wonderful transformation that has come over this district. In February, 1901, I prepared a map and submitted it to the department with the request that 10,000 acres of land be broken at the expense of the government, to establish the fact that grain could be produced in this district. I am pleased to report to you to-day that within the prescribed limits of this same district at least 10,000 acres of land has been brought under cultivation, fairly distributed over the entire country, and that there is a bright prospect of this land being put to its proper use. In connection with this cultivation, I might refer to one S. G. Ditchon, who has broken 1,400 acres in the vicinity of Davidson; and J. W. D. O'Grady, who has broken 1,200 acres and has it ready for crop in the vicinity of Hanley; and Mr. Waddell, who has broken 600 acres in the vicinity of Girvin.' Now, just turn to that of Mr. O'Grady and see how many settlers are on that.

A. The township?

Q. Yes. I think he makes some mention of that. That will be township 31, range 5, 3 west. How many are there on there?

A. There are thirteen homesteads in that township.

- Q. Well, the information I have is that there is just one outside of the party breaking up land, and these men are put down as homesteaders and they are not homesteaders.
- A. Well, I do not see how they could be put down as homesteaders unless they are there. If you knew the affidavit that a man has to take when he makes entry for land, which I have here, and can read to you if necessary-

Q. The best evidence is to put him on the land.

- A. I understand that. So far as the department is concerned, it certainly cannot decide that a man is simply going on there with any idea except to carry out the conditions, or going on without the idea of becoming an actual settler. At least he makes entry to secure a homestead. I will just read the oath—the Committee probably do not know what it is:-
- 'I...., do solemnly swear (or affirm) that I am over 18 years of age; that to the best of my knowledge and belief the land in respect of which my applica-

tion is made is of the class open for homestead and premption entry; that there is no person residing on the said lands nor are there any improvements thereon, and that this application is made for my exclusive use and benefit with the intention of residing upon and cultivating the said land, and not directly or indirectly for the use or benefit of any other person or persons whomsoever; and that I have not heretofore obtained an entry for a homestead on Dominion lands.'

The department certainly accepts that until they know differently. We accept the word of a man who makes an affidavit of that kind as a homesteader. I will take

a note of that particular township.

Q. The effect of the enhanced value of land will stimulate homesteading even

where they are not yet in residence.

A. That is quite correct. As I pointed out, the law gives every homesteader six months after he makes entry to go on his land. In a number of cases persons have applied for an extension of time, and through perhaps illness or some other substantial reason, we have extended the time for six months more

By Mr. Wilson:

Q. Is that map prepared for the report ?

A. No.

Q. I want to find out just what is what, that covers the whole territory.

A. Yes.

By Mr. Roche:

Q. It is possible that if he does not go on his land for the six months, is it not possible for a man to hold that land for three years unless in the meantime some one comes along and makes application to cancel it?

A. Yes; unless our inspector on going through the country takes note of the land being unoccupied, as they are instructed to do, so that lands that are really not being lived on by the homesteaders, may be cancelled, without cancellation proceedings.

Q. That does not occur very often?

A. Not very often; but they have instructions to that effect, and it can be done in that way. It is usually the case as suggested that when application is made for cancellation proceedings they are carried out.

By Mr. Blain:

Q. The applicant can obtain land in that way by declaring that it is his intention to become a settler?

A. No, he cannot secure the land without going on it, except in the two or three exceptions provided by law. For instance, a son living with his father, or a man who has land in the vicinity which he owns, in which case he is not required to put another house on his homestead; residence with his parent or on land he has purchased is sufficient to entitle him to a patent.

Q. I think Mr. Roche asked the question if it was not possible for a man to hold

his land and not be resident upon it?

A. Not to get a patent; he could not get a patent.

By Mr. Sproule:

Q. But unless some one applied for cancellation of the entry could he not hold it in his name?

A. Yes; but he would have no claim on the land.

By Mr. Blain:

Q. Would not the record show that the man was on that land when he might not be on it?

A. That is quite true; but it would not affect the case in any way.

- Q. But it would be rather misleading to the public, would it not? A. Yes, we are often misled in that way, but it is unavoidable.
 - By Mr. Clancy:
- Q. You granted 150,000 acres to the company?
- A. About 140,000 acres.
- Q. On Mr. Speers' report ?
- A. Yes.
- Q. Well, Mr. Speers says, 'total number of entries' he doesn't give this as the actual number of settlers?
 - A. No.
 - Q. You had no evidence beyond showing that there were so many entries?
 - A. That is in his report and the records here which corroborated that.
 - Q. Corroborated the entries or the settlers ?
 - A. The entries.

By Mr. Roche:

- Q. These entries, I think he says they were patented?
- A. No, no. They did apply for patents of course, but Mr. Clancy is speaking of entries.
- Q. You referred a few moments ago, I took note of it at that time, that they had already applied for patents for so many thousand acres?
 - A. Yes.
 - Q. When was that agreement made ?
 - A. In May, 1902.
 - Q. Well, how long does it take to obtain patents after making the entry?
- A. Three years, but that refers to homesteads, but the patents they asked for were for the lands they were purchasing.

By Mr. Clancy:

- Q. You had no evidence that these parties were residing upon the lands in compliance with the agreement, other than that the entries had been made?
 - A. That is all.
 - Q. And upon that you granted these patents?
 - A. Upon that we granted the patents for 140,000 acres.
- Q. Did you take any pains to know whether they were mere entries made there, or that the parties had settled on the land as well?
 - A. No.
 - Q. You took no pains to look about that ?
- A. It was impracticable at the time, it was at the beginning of the winter when it would be impossible for anyone to go over the district.
- Q. Would it have not been practicable for the government and the department to know all the facts?
- A. The department is perfectly secure in the fact that it has over \$50,000 on deposit, in addition to the 100,000 acres which are still held.
- Q. But the department is holding its own lands, not the lands of the company, these lands all the time were property of the Crown so that they did not form any security?
 - A. The company were given the right to purchase them.
 - Q. Yes, but the lands belonged to the government?
 - A. Until they were patented, of course.
 - Q. You said the company paid \$150,000, did they ?
 - A. Yes.
 - Q. What did they pay that in, scrip ?
 - A. I do not know.

Q. Will you give that information to the Committee ?

A. It would not make any difference to the department whether it was money or scrip.

Q. It would make some difference to know in what it was paid?

A. There is no difference as far as the department is concerned.

Q. I suppose we have the right to have this information whether there is a difference or not?

A. I suppose you have.

Q. Never mind, we will not argue about that, but it seems very strange that you do not know what it was paid in?

A. I was not here when it was paid.

Q. Well, the deposit was made in scrip ?

A. I think so.

Q. Will you get us that information ?

- A. Yes, scrip is pretty nearly as good as cash now you know.
- Q. Has there not been a new company formed up there ?

A. I understand so.

Q. I think there has been some change.

A. I think all the lands have been sold in connection with this company, except perhaps a portion sold by the department.

Q. In the transfer of these lands were the patents given to the old company, or

to the company now in existence ?

A. I think they were given to the old company, but I cannot say that. I was away at the time the patents were issued and the money paid, therefore I do not know personally.

Q. These parties, as far as this 140,000 acres of land is concerned, will be in a

position to grant deeds.

A. Yes, in cases no doubt where the land was paid in full the patents were issued directly to the nominees of the company.

Q. They will know in the department.

- A. They were in these cases.
- Q. And from the department.

A. Yes.

Q. I want to know in regard especially to Ditchen and Wadell, whether patents have been issued in their cases, as they are large holders I understand of land.

A. I do not know, except what Mr. Speers says, I do not know anything about that matter.

By Mr. Sproule:

Q. Is it not the intention of the government to have their homestead inspector go on that land and ascertain exactly how many quarter sections are occupied by actual settlers.

A. The homestead inspector has been instructed to do that.

Q. Do you not think that should have been done before the money was accepted from them?

A. I think it would have been better, but as the patents were only asked for a part of the land the department felt it could accept homestead entries as a fair criterion, the Department being reasonably secure in granting patents for that portion because of the deposit they held and the fact that they still held a large portion of the land grant.

Q. Do you not think this might take place, that there might be a few bad townships in it and that the settlement would be in the better parts; if the number required for all the townships were found in two or three of them, you would give them so much land, good land, and be holding back the balance which might result practically in throwing all the bad land on the hands of the government, while the company becomes possessed of all the good land?

4-5 EDWARD VII., A. 1905

A. It might happen that way, yes. Q. Was it the original intention?

A. The original intention was to deal with each township by itself.

Q. And unless you found twenty settlers in each-

A. The only difficulty is we had a large number of settlers rushing in. It is almost impossible to keep them out, and the company would have a claim for lands to make up any shortage in that case. For instance, I find in one township that there were no less than 49 settlers who had free homesteads.

Q. Yes, but still that would not be a compliance with the contract?

A. The company could hardly be blamed if the people went in there. They bring a let of people in, they take possession of the land and go down and make their entries for it. The company could hardly be responsible for people coming in in that way, and all the lands were not reserved from entry.

Q. No, you stipulated according to a certain agreement that there should be so many settlers in each township?

A. Yes.

Q. If the inspector went in and found half a dozen townships in the district sold where there were not a number of settlers, what would you do with those townships?

A. That is the question. I do not know.

By Mn. Roche (Marquette):

Q. Those who go in on the townships and make voluntary entries, are these included here in the number settled by the company?

A. Yes.

Q. As if they themselves settled them ?

A. Yes, it could not be done otherwise.

- Q. You take the entries as an evidence that the company has fulfilled their contract?
- A. We have accepted it in connection with the application they made, but the department is now making a thorough inspection of every township, and instructions have been given to that effect, and the inspector has been advised to see how far they have completed the terms of their agreemment.

Q. How soon will that inspection be made after the entry would be made, after the person makes entry for the homestead?

A. Some of the entries were made about two years ago.

Q. They located a certain number of people before you sent an inspector at all?

A. Yes.

Q. How soon after the entries was the inspection made? Would it be within six months?

A. Oh, no, the inspector is now to go over the whole ground. They say they have practically completed the terms of their contract in placing so many settlers on the land. We want a report as to whether the people are actually on the land or not.

Q. As to whether they are actually on the land?

A. Their agreement calls for actual settlers.

By Mr. Clancy:

Q. Nevertheless, you have granted 140,000 acres?

A. Yes, we have accepted the homestead entries as a fair reason for doing so.

Q. Pretty easy business, is it not?

A. I do not know. They did not think it was, They say they do not want any more contracts of this kind.

Q. Give the townships out of which you have granted the 140,000 acres?

A. They are scattered pretty well. There are small quantities in some and large quantities in others.

APPENDIX No. 2

Q. Township 26-

- A. They are all west of 3, I think ?
- Q. Have you anything in 23 ?

A. Yes.

Q. In 22, range 25?

A. No, they have no land from that township.

Q. None in range 25?

A. No; 26.

Q. Have they any in township 30, range 7 west?

A. No.

Q. Nothing in that?

A. No.

Q. It is not included in these lands?

A. No.

Q. Well now, the others; what is the first one you called off?

A. Twenty-six, one.

Q. There does not seem to be any 26 in my list,—yes, here it is; how many settlers in that?

A. Twenty-one.

- Q. What is the next?
- A. Twenty-five, two.
- Q. How many in that?
- A. Thirty-eight.

Q. Yes.
A. Then 26, two?

Q. Yes.

A. Fifteen homesteads.

Q. Yes?

A. Twenty-seven, two, 41 homesteads.

Q. Yes?

A. Twenty-eight, two, 17 homesteads.

Q. Yes?

A. Twenty-five, three.

Q. Yes?

A. Thirty homesteads.

Q. That corresponds pretty closely with Mr. Speers' report. I may say that you are indebted to Mr. Speers for this information?

A. No, it came from the official record that was made up at head office six months after Mr. Speers reported.

By Mr. Sproule:

Q. You appear to have a record of the reports made to you. Can you furnish the Committee with a copy of them?

A. The number of homesteads?

· Q. The number of actual settlers according to your report, and the townships in which they are located?

A. Yes, I can do that.

By Mr. Clancy:

- Q. How will I get that information with regard to how that money was paid in, in cash or scrip?
 - A. I think I can give it to you.
 - Q. You can put it in the evidence.

4-5 EDWARD VII., A. 1905

By Mr. Roche (Marquette):

Q. Do you know at what price the company have been selling their land? A. No, I have never heard—at least I do not remember having heard it.

Committee adjourned.

TABLE I.—Number of Homestead Entries in Townships selected by the Company.

Township.	Range.	Homesteads.	Township.	Range.	Homestead
23	26 W. 2	28	29	2	24
24		28 38	32	2 3 3 3 3 3 3	9
. 23 24	26 27 27 27 27 27 27 28	30	25	3	30
24	27	22	26	3	23
25 26	27	21	27	3	30
26	27	4 3	28	3	25 25
27	27	3	29	3	25
22	28	15	30	3	29
27 22 23 24 25 26 27 24	28 28 28	29	25	4	49 28
24	28	20	26	4	28
20	28	16	27 28	4	15
20	28· 28	22 10	28 29	4	3
21	29 (14.765 ac.)	26		4	19
25	29 (14 706 ac.)	6	30 31	4 W. 3	12
25 26 27 28 23	29 (14 669 ac.)	15	26	5	41
27	29 (9.834 ac.)	10	20	5	15
28	29 (9.830 ac.)	10	27 28	5	19 34
23	1 W. 3	21	29	5	16
24	1	28	30	5	17
24 25	i	18	31	5	13
26	1 W. 3	21	29	6	24
27	1	36	30	6	22
28	1	31	31	6	17
27 28 25	1 2 8 2 2	38			
26	8	15	52 townshi	ps and fractional	
27	2	41	townsl	nips	1,120
28	2	17		The second second second second	

Having read over the above transcript of my evidence, I certify the same correct.

JAS. A, SMART.

Names of paid agents in United States, showing number of people sent in by each Agent, salary they receive, and amount of expenses for year 1902-1903.

Name.	No. sent in.	Salary.	Expenses.
Grieve, Jas Laurier, C Crawford, J. S MacLachlan, J. M Holmes, E. T Bennett, W. V Pilling, Chas Williams, H. M Duncan, Jno. C Broughton, C. J Davies, Benj. for 6 mos Swanson, C. O McInnes, M. V Rogers, W. H Currie, T. O	2,160 103 1,680 305 7,871 3,228 4,572 181 151 343 571 845 2,469 2,110 1,743	\$ cts. 1,500 00 1,200 00 1,200 00 1,200 00 1,200 00 1,200 00 1,200 00 1,200 00 1,200 00 1,200 00 1,500 00 1,500 00 1,500 00 1,200 00 1,200 00 1,200 00 1,200 00 1,800 00 1,200 00	\$ cts. 881 89 1,674 92 2,820 89 1,731 23 4,065 36 2,932 93 2,381 39 2,156 64 1,050 16 2,163 77 1,012 46 1,087 82 3,838 15 2,239 45 2,336 42 32,373 48

List of Immigration Agents employed on salary in United States during fiscal jear 1902-1903, the total salary paid to each and the amount expended by each for travelling and living expenses.

D. Gauthier C. A. Burriss C. Ribout V. V. Bennett J. Broughton S. Crawford D. O. Currie Davies C. Duncan as. Grieve	\$ cts. 1,000 00 1,200 00 1,125 00	\$ cts. 374 05 50 50	\$ ets
R. A. Burriss L. Ribout V. V. Bennett J. J. Broughton S. Crawford D. O. Currie D. Davies C. Duncan as. Grieve	1,200 00 1,125 00		
R. A. Burriss L. Ribout V. V. Bennett J. J. Broughton S. Crawford D. O. Currie D. Davies C. Duncan as. Grieve	1,200 00 1,125 00		381 40
L. Ribout V. V. Bennett V. V. Bennett V. J. Broughton S. Crawford C. O. Currie C. Davies C. Duncan as. Grieve	1,125 00		37 50
V. V. Bennett J. J. Broughton S. Crawford J. O. Currie J. Davies C. Duncan as. Grieve		439 33	394 07
J. J. Broughton S. Crawford O. Currie B. Davies C. Duncan as. Grieve	1,200 00	338 00	462 48
S. Crawford O. Currie B. Davies C. Duncan as. Grieve	900 00	371 95	892 46
as. Grieve	1,050 00	740 50	324 41
3. Davies. C. Duncan as. Grieve	1,200 00	531 00	877 56
as. Grieve	800 00	136 25	164 21
as. Grieve	1,050 00	170 60	361 15
7 M II-1	1,500 00	133 80	160 96
L. T. Holmes	1,475 00	380 40	861 33
C. A. Laurier	1,200 00	566 65	603 00
. M. MacLachlan	1,050 00	383 85	749 19
I. V. McInnes.	1,800 00	415 50	550 39
Phas. Pilling	1,200 00	721 00	371 98
V. H. Rogers	1,200 00	544 50	904 7
O. Swanson	1,500 00	479 43	349 4
I. M. Williams	1,200 00	414 00	613 4
os. Young	200 00	256 25	62 0
lev. M. Blais	600 00	106 50	218 5
ev. L. Leganiere	150 00		53 6
Rev. H. L. Vachon	500 00	288 13	302 8
V. J. White	2,200 00	808 35	1,163 0
Total	25,300 00	8,650 54	10.859 8

4 EDWARD VII., A. 1904

STATEMENT of immigrant arrivals at Ocean Ports of Canada, during the fiscal year 1902-1903, by nationalites.

Arabian	46	Spanish	7
Armenian	113	Swiss	73
Australian	46	Syrian	847
Austrian	781	Scandinavian	
Bermudian	6	Danish	308
Bulgarian	7	Icelandic	917
Belgian	303	Swedish	2.477
Bohemian	16	Norwegian	1.746
Bukowinian	1,759	Turkish	43
Croatian	1	West Indian	17
Dutch	209	United States	65
Egyptian	1	Italian	3,370
French	937	Arabian	46
Finish	1,734	Armenian	113
Flemish	14	Australian	46
German	1,869	Bermudian	6
Galician	8,382	Bulgarian	7
Greek	193	Dutch	209
English	32,087	Egyptian	1
Welsh	423	Flemish	14
Scotch	7,046	Greek	193
Irish	2,236	Hebrew	2,066
Hebrew	2,066	Maltese	2
Hungarian	2,074	Newfoundland	335
Maltese	2	New Zealand	2
Mennonite	38	Polish	274
Newfoundland	335	Persian	40
New Zealand	2	Roumanian	437
Prussian	5	Moldavian	1
Polish	274	Servian	2
Persian	.40	Sicilian	1
Roumanian	437	Spanish	7
Moldavian	1	Swiss	73
Russian	5,505	Syrian	847
Servian	2	Turkish	43
Saxon	13	West Indian	17
Slovak	82	Italian	3,370
Sicilian	1	Miscellaneous	8,152

AGENCY AT INDIANAPOLIS.

Names of the different agents who have been stationed at Indianapolis since the opening of the office there, the salary of each one, and the number of immigrants sent in:—

- E. T. Holmes, January 12, 1900, to June, 1902, \$100 per month. Number of immigrants not reported.
- J. C. Duncan, June 23, 1902, \$75 per month. The records show that Mr. Duncan sent into Canada from June, 1902, to January, 1904, 327 immigrants.

List of agents in United States and Great Britain who are allowed living expenses at headquarters:—

J. S. Crawford.

T. O. Currie,

Charles Pilling, are the only agents who are allowed living expenses at head-quarters.

LOAN MADE TO THE DOUKHOBORS.

The loan amounts to \$20,000, and has been owing for four or five years, and it is intended to hold the advance as a lien against their lands; patents will be withheld until the claim is satisfied.

APPENDIX

TO THE

PRECEDING REPORT

ON

AGRICULTURE AND COLONIZATION

RESOLUTIONS ADOPTED BY THE COMMITTEE.

The following resolutions were adopted by the Committee as recommendations for the promotion of the agricultural and immigration interests of the Dominion:—

No. 1.—THE ELECTION OF A CHAIRMAN.

Moved by Mr. Davis, seconded by Mr. Ross (Ontario)—That Mr. Douglas, the Member for Assiniboia East, be Chairman of the Committee for the current session of Parliament.—Motion adopted.

Mr. Douglas then assumed the duties of the Chair.

Committee Room 34, March 24, 1904.

No. 2.—To take down Evidence.

Moved by Mr. Ross (Ontario) seconded by Mr. Maclaren (Huntingdon)—That the Committee report to the House asking leave to employ a short-hand writer to take down such evidence as they may deem proper.—Motion adopted.

Committee Room 34, March 24, 1904.

No. 3.—A Sub-Committee to Consider Evidence.

Moved by Mr. Davis, seconded by Mr. Lang—That a sub-committee be appointed comprising Mr. Wade, Mr. Wilson, Mr. Smith (Vancouver), Mr. Wright and Mr. Wilmot, to consider the evidence given by Mr. Macoun and report.—Motion adopted.

Committee Room 34, May 11, 1904.

No. 4.—DUTY OF STENOGRAPHER.

Moved by Mr. Ingram, seconded by Mr. Sproule—That the stenographer, hereafter, take down only the statements made by a witness before the Committee, including questions and answers thereto.—Motion adopted.

Committee Room 34, May 11, 1904.

N. 5.—To give Evidence on the Sale and Manufacture of Binder Twine.

Moved by Mr. Clancy, seconded by Mr. Wilson—That Mr. Joseph L. Haycock, Dominion Inspector of Binder Twine be summoned to appear before this Committee on Thursday next, June 2, to give evidence on the manufacture and sale of binder twine.—Motion adopted.

Committee Room 34, May 31, 1904.

*No. 6.—EVIDENCE OF MR. MACOUN ON THE PEACE RIVER DISTRICT.

Mr. Wade from the sub-committee appointed by preceding resolution No. 3 presented its report on the evidence of Mr. J. M. Macoun upon the Peace River District.

* Vide interim reports, p. 712.

4 EDWARD VII., A. 1904

It was moved by Mr. Davis, seconded by Mr. Loy 'That the report of the sub-committee be received and adopted," and the 'following amendment was then proposed by Mr. Blain, seconded by Mr. Ingram, 'That the report of the sub-committee be not adopted, and that in the opinion of this Committee, the publishing of the evidence taken before the Committee this session, regarding the Peace River District, would injure and possibly retard the further settlement of this important section of Canada, and that no report be published until a thorough examination of the country is made by the government.' This amendment was negatived on the following division:—

YEAS—Messrs. Blain, Broder, Clancy, Cochrane, Henderson, Ingram, Kidd, McGowan, Robinson (Elgin), Roche (Marquette), Sproule, Thomson (N. Gray), Wilson.—13.

Nays.—Blanchet, Erb, Gould, Johnson (Lambton), Lang, LeBlanc, Loy, McColl, McGugan, McLellan, Matheson, Oliver, Parmalee, Reid (Restigouche), Ross (Victoria), Schell, Smith (Vancouver), Stewart, Talbot, Turgeon, Wade, Wright.—22.

And the question being put on the main motion, it was adopted on the following division:—

YEAS—Messrs. Blanchet, Erb, Gould, Johnston (Lambton), Lang, LeBlanc, Loy, McColl, McGugan, McLennan, Matheson, Oliver, Parmalee, Reid (Restigouche), Ross (Victoria), Schell, Smith (Vancouver), Stewart, Talbot, Turgeon, Wade, Wright.—22.

NAYS—Blain, Broder, Clancy, Cochrane, Henderson, Ingram, Kidd, McGowan, Richardson, Robinson (Elgin), Roche (Marquette), Sproule, Thomson (N. Gray), Vrooman, Wilson.—15.

Committee Room 62, July 15, 1902.

No. 7.—To Print Evidence Taken before the Committee.

Moved by Mr. Ross (Victoria), seconded by Mr. Wright-

- 1. That the evidence of the witnesses from the Experimental Farm, taken by the Committee during the current session of Parliament be printed in pamphlet form for distribution to the same extent and as allotted in the year 1903.
- 2. That 50,000 copies of the evidence of Professor J. C. MacLennan, on the metric system be printed in pamphlet form.
 - 3. That 20,000 copies of the evidence of A. P. Stevenson, Nelson, Manitoba;
- 4. That 20,000 copies of the evidence of Samuel M. Genest be also printed in pamphlet form, all in the usual proportions of English and French, for distribution to members of Parliament for circulation amongst the farmers of Canada.—Motion adopted.

Committee Room 34, July 26, 1904.

No. 8.—Printing of Grain Act and Grain Inspection Act in Pamphlet Form.

Moved by Mr. Ross (Ontario), seconded by Mr. Wright—That the Committee recommend to the House that the 'Grain Act' and the 'Grain Inspection Act' with the amendments thereto be consolidated and printed in pamphlet form to the same extent of 50,000 copies of each, to be distributed to members of Parliament for circulation amongst the farmers of Canada.—Motion adopted.

Committee Room 34, July 26, 1904.

APPENDIX No. 2

No. 9.—PRINTING OF EVIDENCE ON IMMIGRATION.

Moved by Mr. Ross (Ontario), seconded by Mr. Wright—That one thousand (1,000) copies of the evidence upon Immigration and Settlement, taken in the current session be printed in pamphlet form for distribution by the Bureau of Immigration.—Motion adopted.

Committee Room 34, July 26, 1904.

No. 10.—Instructions to Printing Bureau for the Distribution of Pamphlets.

Moved by Mr. Ross (Ontario), seconded by Mr. Maclaren (Huntingdon)—That it be an instruction to the Government Printing Bureau that all pamphlets sent out thence to members be each wrapped under a separate cover and the title of the matter inclosed on the wrapper.—Motion adopted.

Committee Room 34, July 26, 1904.

No. 11.—COMPLIMENTARY VOTE TO THE CHAIRMAN.

Moved by Mr. Davis, seconded by Mr. Stephens—That the thanks of the Committee is hereby tendered to Mr. Douglas, for the manner and ability with which he discharged the business of this Committee, in the current session of Parliament.—Motion adopted.

Committee Room 62, August 3, 1904.

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, Secretary of Committee.

INTERIM REPORTS.

FIRST REPORT.

The Select Standing Committee on Agriculture and Colonization present their First Report, 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.

> JAMES M. DOUGLAS, Chairman.

House of Commons, March 24, 1904.

REPORT OF THE SUB-COMMITTEE APPOINTED BY RESOLUTION, No. 3, PAGE 709.

To the Chairman and Members of the Select Standing Committee on Agriculture and Colonization:-

We, the Sub-Committee, appointed to take into consideration the evidence recently given by James M. Macoun, before the Agricultural Committee, beg to report as

1. In our opinion, the evidence of Mr. Macoun had better be printed as reported, with such remarks by Honourable members as appear therein. Any elimination in

our judgment, might mutilate the same so as to mar the sense.

- 2. After carefully considering the evidence given by Mr. Macoun, before the Committee, we are of the opinion that he was not possessed of sufficient information to make a report upon the Peace River country, and that he was not warranted by the facts within his knowledge in making the report he did, and in arriving at the sweepingly unfavourable conclusions he has. Mr. Macoun spent less than three months in the Peace River country, travelling the greater part of that time on foot. The area covered by his report amounts to considerably over twenty million acres, and it is unreasonable to suppose that any man could, within that time, acquire sufficient knowledge to enable him to make the report and give the evidence which Mr. Macoun
- 3. We find that Mr. Macoun is in direct conflict, in most important particulars, with such eminent authorities as the late Dr. Dawson, the Rev. Dr. Gordon, Professor Macoun (father of the witness) and others. Dr. Dawson says of the Grande Prairie:
- 'The soil of the Grande Prairie is almost everywhere exceedingly fertile, and it is covered for miles together by a deep rich loam which it would be impossible to surpass in excellence.'

Mr. Macoun, in his report, says of this same district, in speaking of its soil:

'This loam, as I saw it, varies from four to six inches in depth; it may be deeper in places, but if so, such soil has not been seen by any one whom I have met in the country.

In his evdence, Mr. Macoun limits the depth of the soil to four or five inches, with an impervious clay sub-soil. Dr. Dawson, in his report, tells us that in the Peace River District there are at least fifteen million acres of good wheat lands, and that the country is well adapted to agriculture. This Mr. Macoun undertakes to dispute. We

APPENDIX No. 2

will not go into the other disagreements between Mr. Macoun and Dr. Dawson and the other gentlemen we have mentioned, but they are striking and irreconcilable. Mr. Macoun, in his report, cites Mr. Ogilvie in support of his contention that this country is not suited to wheat-raising. Mr. Ogilvie, on the same page that Mr. Macoun quotes from, says:—

Were it not for the difficulty of getting into and out of the country, stock-raising might be profitably engaged in. Hay is abundant and of good quality nearly every-

where; and in summer, grazing is excellent.'

Mr. Macoun condemns this country for stock-raising, and in his evidence, upon being asked: 'Isn't it good for either cattle or grain?' Said: 'That is what I say. I don't think it necessary to make it plainer. If you want it definite, it is less suited for cattle as an industry than for grain-raising. It is not only difficult to get hay for

winter, but it is difficult to get water.'

4. It is, in our opinion, to be regretteed that Mr. Macoun's report was ever printed or distributed, and we would earnestly advise that no more copies of said report be given to the public until a careful examination of the the country by reliable experts can be made, and in this connection, we would urge that the Government take immediate action to have this country thoroughly explored and reported upon by competent and reliable men.

5. We find ourselves unable to reconcile the different statements made by Mr.

Macoun in his evidence and in his report.

6. We consider this matter of vital importance to the interests of Canada, as the report of Mr. Macoun and the evidence given by him before the Committee must necessarily have a very serious effect upon the opening and development of this important section of the Dominion.

7. Your Committee cannot undertake to decide the differences that exist between Mr. Macoun and the reports of the other gentlemen, but we are strongly of opinion that he had not sufficient knowledge or data upon which to found the conclusions he arrived at.

F. B. WADE, Chairman of Sub-Committee.

SECOND REPORT.

The Select Standing Committee on Agriculture and Colonization present their secon report as follows:—

The committee recommend:

1. That 20,000 copies of the evidence of Dr. William Saunders, taken by this committee in the current session of parliament, be printed in pamphlet form forthwith, in the usual numerical proportions of English and French, as advance sheets of the committee's final report, for distribution as follows:—16,000 copies to the members of parliament; 3,000 copies to be allotted to the Department of Agriculture for distributions.

tion; and 100 copies for the use of the committee.

2. That 20,000 copies of the evidence of each member for the official staff at the Central Experimental Farm, who testified before this committee in the current session of parliament, be printed forthwith in pamphlet form, in the usual relative numbers in English and French, as advance sheets of the committee's final report, and distributed as follows:—19,400 of each to members of parliament; that 500 copies of his own evidence be allotted to each member of the said official staff; and 100 copies of each to the use of the committee.

3. That 50,000 copies of the evidence of Professor J. C. Maclennan on the metric system be printed forthwith, in pamphlet form, in the usual relative numbers of English and French, to be distributed as follows:—46,400 copies to members of parliament;

4 EDWARD VII., A. 1904

3,000 to the Department of Inland Revenue for distribution; 400 to the use of the witness, Professor MacLennan; and 200 to the use of the committee.

4. That 20,000 copies of the evidence of Mr. A. P. Stevenson, Nelson, Manitoba, be printed forthwith, in pamphlet form, in usual relative numbers in English and French, as advance sheets of the committee's' final report, and distributed as follows:—19,800 to members of parliament; 100 copies to the witness; and 100 copies to the use of the committee.

5. That 50,000 copies of each of the Grain and Grain Inspection Acts be printed in pamphlet form, under one cover, in the usual relative numbers of English and French, and allotted to the members of parliament—less 200 copies for use of the committee—for distribution amongst the grain-growing agriculturists of Canada.

6. That 1,000 copies of the evidence upon Immigration and Settlement, taken before the committee in the current session of parliament, be printed in the usual relative numbers of English and French, in pamphlet form, for distribution by the Bureau of Immigration.

7. The committee recommend that each and all of the aforesaid enumerated evidence form a part of their final report.

JAMES DOUGLAS,

Chairman.

House of Commons, July 28, 1904.

