ROYAL COMMISSION

ON

INDUSTRIAL TRAINING AND TECHNICAL EDUCATION

REPORT OF THE COMMISSIONERS

PART IV

PRINTED BY ORDER OF PARLIAMENT



OTTAWA PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1913

191d-Vol. IV-A

ROYAL COMMISSION ON INDUSTRIAL TRAINING AND TECHNICAL EDUCATION

OTTAWA, 31st May, 1913.

The Honourable T. W. CROTHERS, K.C., M.P., Minister of Labour.

.

SIR,-By direction of the Royal Commission on Industrial Training and Technical Education we most respectfully submit Part IV of the Report.

JAS. W. ROBERTSON, Chairman.

THOS. BENGOUGH, Secretary.

191d-Vol. IV-A12

PAGE

.

CONTENTS OF PART IV.

INQUIRY IN CANADA.

CHAPTER I. INTRODUCTORY..... 1639

Extent of the Inquiry; Cordial Co-operations; Industrial Development Found to be General; As to Present Equipment; Arranging the Information Obtained; Personal Narratives of Training; The Attitude of Organized Labor; Records of Inquiry at Two Places.

- Some Generalizations from Testimony; Those who Know the Trades Wanted as Instructors;.
- The Testimony of the Farmers; To Keep the Young People in the Country; Desire for Co-operations; Social Satisfactions in Rural Districts.
- As to Housekeeping Occupations; Conditions for Work and Recreation; Y.M.C.A. Appreciated; Usefulness of Libraries.
- Wastes and Losses after 14; Evening Classes Must be Attractive; Kinds of Provisions Required; Widespread Expectations.

Resolution by a Provincial Assembly.

NOVA SCOTIA.

CHAPTER II. (DUTLINE OF THE EDUCATIONAL SYSTEM	165 1
SECTION	1. Organization and Administration	1651
1 ~* 1	 Information obtained from Dr. A. H. MacKay; Specialist Teachers; Manual Training; The Technical College, the Universities and the Teachers. Che Normal College; The College of Agriculture; The Summer Schools of Science; Various Educational Agencies. 	
Section	2. The Public School Course of Study	1656
I	Public School Substitution Courses in Mining.	
SECTION	3. Normal School Training	1659
SECTION	4. The Summer School of Science	1663
Section	5. The Nova Scotia Universities	1664
ł	Cing's College; Dalhousie University; Acadia University; St. Francis Xavier.	

3 GEORGE V., A. 1913

CHADTER III BROWELONE FOR TECHNICAL INCTRUCTION	PAGE
CHAPTER III. PROVISIONS FOR TECHNICAL INSTRUCTION	1009
SECTION 1. THE NOVA SCOTIA TECHNICAL COLLEGE Courses in the Technical College; Aim of the Course and the College; Degree, Scholarships, etc. The Murray Laboratory of Mining Engineering. Trade School for Garment Workers; Co-operation from Merchants and Others.	1669
Section 2. Secondary Technical Schools	1674
 Scope and Plan of Schools. (1) Evening Technical Schools; Admission, Certificates, Deposits, Diplomas, Teachers, etc.; Value of these Continuation Schools; Courses at Evening Technical Schools. 	
(2) Coal Mining Schools; Value of the Schools for Coal Miners.	
 (3) Engineering Schools. Attendance at Evening Technical Schools; (1) Local Technical Schools; (2) Mining Schools; (3) Coal Min- ing and Engineering Schools. Cost of Technical Schools: Evening Technical Schools: 	
Coal Mining and Engineering Schools.	
Section 3. Further Testimony and Opinion of Professor Sexton	1685
Continuation Classes; Part-time Schools; Trade Schools; Evidence and Means of Progress; Need of Technical Textbooks; Correspondence Courses—Weakness and Remedy; Federal Aid Essential.	
Section 4. Opinions of Technical Teachers and Others	16
Value of Mechanical Drawing; Electrical Equipment Required; Views of Mine Superintendents; Useful Lessons from Great Britain.	
CHAPTER IV. AS TO STEEL, IRON AND COAL	1692
Section 1. Information Obtained from Mr. Graham Fraser at New Glasgow	169 2
Need of Practical Experience; Value of Night Schools; Part-time Plan Questioned.	
 SECTION 2. INFORMATION OBTAINED FROM MR. THOMAS CANT- LEY AT NEW GLASGOW Need of Technical Education; Extent of the Company's Operations; The Company's Welfare Work; Technical Education Discussed; What Germany Has Done; Causes of Germany's Success; What Great Britain Did; Progress on the Continent; What Nova Scotia is Doing; Vocational Work in Public and Special Schools; 	169 4

What Canada Must Have; Canada Better Prepared than
Germany was; Compulsory Attendance for 90 Days;
Germans and Canadians in Competition; Would
Canadians Stand Compulsion?; Skilled Work and
its Reward.

	Matthew J.	Mr.	FROM	Obtained	ORMATION	3. Ir	SECTION
1702			· · · · · ·	EY	., AT SYDN	ler, C	Buti
	roduction and	of P	ditions	d Men: Cor	get Traine	How t	

- Sale; High Character of Workmen; How Apprentices are Dealt with; Training of Engineers; Specialization Should be Dropped; Cause of Poor Conditions.
- Section 4. Information Obtained from Mr. Daniel Mc-Dougall at Glace Bay..... 1706
 - Law Regarding Apprentices; Evening Classes Helpful, but not Advertised; Manual Training, Drawing, Domestic Science; Work Hours and School Hours; How Education Would Have Helped; Education Safeguards Mining.
- Section 5. INFORMATION OBTAINED FROM MR. ALEXANDER MC-EACHREN AT GLACE BAY...... 1709 Social Betterment by Education.

CHAPTER V. SUMMARY OF TESTIMONY AS TO INDUSTRIAL WORKERS	1711
 SECTION 1. As TO CONDITIONS GENERALLY Education and Schools; Typical Local Industries; Build- ing Construction; Carriages, Wagons, etc.; Chemical Industries; Clothing and Textiles; Electrical Indus- tries; Metal Trades; Printing; Wood-working; Other Trades and Industries; Banking; Retailing (Dry Goods); Transportation. Trades and Labor Generally. 	1711
Section 2. Testimony as to Personal Training	1720
Section 3. Summary of Testimony as to Training of Apprentices	1721
Section 4. As to Training of Locomotive Engineers	1724
 SECTION 5. OUTLINE OF TWO APPRENTICESHIP SYSTEMS Apprentice System of the Robb Engineering Co., Amherst, N.S.; An Expert Organizer Employed; Evolution of System; Quarterly System Adopted; Giving Men Incentive to Improvement. Shop Methods Constantly Improving; Boys Instructed by Foremen and Journeymen. 	1725

PAGE

•

	3 GEORGE V., A	1913
	Training of Foremen; Combination of Theory and Practice Best; Fine Quality of Workers; System Develops Invention. Apprenticeship System of the Dominion Iron and Steel	PAGE
Section	 6. WELFARE ORGANIZATIONS. Dominion Coal Company Employees' Benefit Society; Dominion Coal Company Employees' Relief Fund; Dominion Steelworkers' Mutual Benefit Society. 	1731
CHAPTER VI. EDUCATION	AS TO AGRICULTURE AND AGRICULTURAL	1735
SECTION	1. NOVA SCOTIA AGRICULTURAL COLLEGE Information obtained from Prof. Melville Cumming; Progress of the Provincial College; What the Col- lege Provides; The College and the Rural School; Description of the College and its Work.	1735
Section	 OTHER AGRICULTURAL ORGANIZATION AND WORK Demonstration Orchard, Drainage, etc.; Provincial Agri- cultural Associations; School Garden Work; Cut Out the Dead Wood. 	1738
Section Napi	3. THE BRANCH DOMINION EXPERIMENTAL FARM AT PAN	1741
Section Devi	4. Summary of Other Testimony in Relation to elopment of Resources	1742
	Agriculture. Fisheries. Mining. General.	
CHAPTER VII. BY MRS. F. V	WOMEN'S WORK IN INDUSTRIES—STATEMENT W.SEXTON	1746
	 Women Workers in Canada; The Domestic Servant Problem; What is the School Doing?; Leading to Unskilled Industries; Two Classes of Women's Industries; Tests as to Suitability of Industries for Women. Girls' Trade School after 7th Grade; Trade Classes Day and Evening; Suggested Changes in Public Schools. 	
	PRINCE EDWARD ISLAND.	
CHAPTER VIII.	AS TO EDUCATION	1751
SECTION	1. INTRODUCTORY School Grades and Accommodation; Industrial Edu- cation Not Provided.	1751

Section	2. A PROVINCIAL COMMISSION ON EDUCATION Reforms Called For; Nature Study Recommended; Manual Training, not Domestic Science.	page 1753
Section	3. Information from the Chief Superintendent	1755
SECTION	4. SUMMARY OF OTHER TESTIMONY ON EDUCATION Views of Inspectors on School Gardens.	1756
Section	5. PRINCE OF WALES COLLEGE, CHARLOTTETOWN The Training of Teachers; Vocational Subjects Taught.	1757
SECTION	 MACDONALD CONSOLIDATED SCHOOL, HILLSBOROUGH Conditions Before Consolidation; How It Worked Out; Special Class for Farmers' Sons; Advantages of Con- solidation; What is Needed; Exhibition by the School. 	1759
CHAPTER IX.	AS TO INDUSTRIES AND RESOURCES Fish, Cheese, Cold Storage. Transportation and Fisheries; Transportation Difficulties; Oyster Culture; Difficulties with Bait; Lobsters being "Fished Out"; Education Needed for Fisher- men and Canners.	1763
CHAPTER X.	AS TO TRADES AND LABOR	1768
CHAPTER XI.	AS TO AGRICULTURE	1770
SECTION SECI	1. INFORMATION OBTAINED FROM MR. THEODORE ROSS, RETARY FOR AGRICULTURE Agriculture at Prince of Wales College; Agriculture Taught from Books; Why School Gardens are Few.	1770
Section	2. Summary of Points Presented in Testimony	1772
	 The Island's Varied Productions; Educating for the Farm; Education off the Farm; Nature Study at an Early Age; Teachers Should be Better Paid; Hostility to Cost of Schools. A Farmer's Experience at College; Three Demonstration Farms and Gardens; Training People to Leave the Island.; Special Teachers. Value of Agricultural College at Truro, N.S.; Farmers' In- stitutes, How to Improve; Seed Selection, Weed 	
	Help; Profit in Dairying.	

3	GEORGE	v.,	A.	1913
				PAGE

NEW BRUNSWICK.

CHAPTER XII. OUTLINE OF THE EDUCATIONAL SYSTEM	1780
SECTION 1. ORGANIZATION AND ADMINISTRATION	1780
Section 2. Information from Dr. W. S. Carter, Chief Superintendent of Education	1781
Under-work as a Menace; High School Courses; Change of Vacation; Larger School Districts; Occupations and Rates; Hand and Eye Training; Agricultural Instruction; Handwork of Value to All; Question of Homework.	
Consolidated High Schools; Evening Schools; Vocational Farm Schools.	
Section 3. As to Training of Teachers	1786
School Gardening at Normal School; Licenses to Teach; Scholastic and Professional Work; Hand and Eye Training and Nature Study.	
Section 4. As to Hand and Eye Training	1788
Elementary Handwork; Manual Training; Household Science; Training Teachers for Special Work; A Preparation for Industrial Training.	
CHAPTER XIII. CONSOLIDATED SCHOOLS	1793
The Superintendent's Review.	
SECTION 1. INFORMATION FROM INSPECTOR STEEVES Nature Study and Industrial Work; Larger School Dis- tricts.	1793
Section 2. The Riverside Consolidated School	1795
Section 3. The Florenceville Consolidated School	1796
Section 4. The Hampton Consolidated School	1797
CHAPTER XIV. FROM SCHOOL INSPECTORS' REPORTS	1799
Na'ure Study and c' ool Gardening; The Nature Study and Agr cultural Cour.e f r Country Schools.	
CHAPTER XV. SUMMARY OF OTHER TESTIMONY AS TO ELE-	1004
MENIAKY EDUCATION	1804

SESSIONAL PAPER No. 191d	
CHAPTER XVI SUMMARY OF OTHER TESTIMONY AS TO SEC.	PAGE
ONDARY EDUCATION	1805
Evening Classes.	
CHAPTER XVII. THE UNIVERSITIES IN RELATION TO TECH- NICAL EDUCATION	1808
Section 1. The University of New Brunswick From Dr. C. C. Jones.	1808
Section 2. The University of Mount Allison College, Sackville, N.B	1810
From Prof. Lawrence Killam. Mount Allison Ladies' College, Sackville, N.B.	
CHAPTER XVIII. AS TO INDUSTRIES	1813
Summary of Information from the Testimony; Building Construction; Boots and Shoes; Confectioners; Harness-Making; Metal Trades, etc.; Printing and Publishing; Textiles and Clothing; Furniture and Wood Pulp; Home-making and Housekeeping; Welfare Work.	
CHAPTER XIX. PERSONAL NARRATIVES OF TRAINING AND APPRENTICESHIP	1818
CHAPTER XX. AS TO AGRICULTURE	1823
Section 1. Work of Department of Agriculture.	1823
Illustration Orchards; Farmers' Meetings; Report of Provincial Agricultural Commission.	
Section 2. Information Obtained from Mr. W. W. Hubbard, Secretary for Agriculture	1826
Section 3. Extracts from Letters of Students who Attend- ed the Short Course at Truro, N. S	1828
Section 4. Other Testimony as to Dairying	1832
. Section 5. Other Testimony as to Potato Culture	اد ۲
CHAPTER XXI. TESTIMONY AS TO FISHERIES	1836
CHAPTER XXII. TESTIMONY AS TO LUMBERING	1837

QUEBEC.

CHAPTER XXIII.	OUTLINE OF THE EDUCATIONAL SYSTEM	1838
SECTION 1.	Introductory	1838
Section 2. LaBrui	INFORMATION OBTAINED FROM HON. BOUCHER DE TRE, SUPERINTENDENT OF PUBLIC INSTRUCTION	1839

3 GEORGE V., A.	1913
Advocate of Tech-	PAGE

Drawing and Technical Training; An Advocate of Tech- nical Education; Repairing the Loss of Apprentice- ship; Improvement in Drawing; Training of Teachers; Night Classes, Nature Study, etc. Further Statement by the Superintendent.	
Section 3. Information Obtained from Dr. G. W. Parmelee.	18 43
Offices Rob the Schools; Preparatory for Technical In- struction; Nature Study and School Gardens; After School, What?	
CHAPTER XXIV. TESTIMONY FROM TWO AUTHORITIES ON PROTESTANT SCHOOLS	1846
Section 1. Information Obtained from Professor J. A. Dale.	1846
Work and Play; Flaws and Remedies; Compulsory Educa- tion; Continuation Classes; Other Continuation Classes; Improved Training of Teachers; Modification of the Curriculum; Employment Bureaux	
Section 2. Information Obtained from Mr. H. J. Silver	1853
CHAPTER XXV. AS TO DRAWING AND OTHER FORMS OF HAND- AND-EYE TRAINING	1856
Section 1. Professor Armstrong's Report on Drawing	1856
Criticism of Specimens and Methods; Suggestions for Improvement; Committee's Advance Steps.	
Section 2. Information Obtained from Mr. George E. Em- berley	1858
Hand-and-Eye Work; How the Work is Done.	
Section 3. Summary of Other Testimony	1859
CHAPTER XXVI. AS TO EVENING CLASSES Summary of Much Testimony.	1861
CHAPTER XXVII. CLASSES OF THE COUNCIL OF ARTS AND MANUFACTURES	1863
Section 1. Organization and Administration	1863
Classes in 1910-11; Organization and Benefits of Classes; Evening Classes Preferred.	
Section 2. Industrial Classes in Montreal	1864
How Architecture is Taught; Metal Workers, Electricians, Painters, etc.; Need of Freehand Drawing; Mechan- ical Drawing and Geometry.	

SESSIONAL PAPER No. 191d	
	PAGE
Methods in Drawing: Classes for the Building Trades	1807
sections in Drawing, classes for the Dunding Trades.	
CHAPTER XXVIII. CLASSES UNDER THE PROTESTANT BOARD OF SCHOOL COMMISSIONERS	1870
Section 1. Evening Classes	1870
Montreal Technical Institute Classes; The Teacher Prob- lem; Courses, Attendance, etc.; Occupations of Students.	
SECTION 2. THE COMMERCIAL AND TECHNICAL HIGH SCHOOL The Technical Course; Metal Work.	1873
CHAPTER XXIX. THE SHAWINIGAN TECHNICAL INSTITUTE, SHAWINIGAN FALLS, QUE	1875
The New Building; The Day Department; Co-operative Instruction; Evening Classes. The Needs of Shawinigan Falls; Numbers of Industrial Workers; The School Opportunities.	
CHAPTER XXX. THE MONTREAL TECHNICAL SCHOOL	1878
The Main Building; The Workshops; The Machine Shop; Forge; Foundry; Woodworking Shop; Electricity; Cost of Maintenance and Establishment; Adminis- tration and Staff; Objects and Courses; Day Courses; Evening Classes; Fees. Provincial Domestic Science School, Montreal; Courses of	
Study. Some General Matters.	
The Quebec Technical School.	
CHAPTER XXXI. THE POLYTECHNIC SCHOOL OF LAVAL UNIVERSITY, MONTREAL	1886
Program of Four-Year Course; Engineering Division; Architectural Division.	
CHAPTER XXXII. McGILL UNIVERSITY	1889
Section 1. Information Obtained from Dr. Wm. Peterson, Principal and Vice-Chancellor	1889
McGill a Pioneer in Technical Education; German and British Methods Contrasted; The Value of Leaders. Basis of Technical Education; Germany Generous to Technical Education; How to Establish Technical	
Education. Federal Assistance Necessary: McCill's Numbers Fin-	

Federal Assistance Necessary; McGill's Numbers, Finances, etc.; Value of Elementary Science.

3 GEORGE V., A. 1913

PA	\mathbf{GE}
	~~~

	PAGE
<ul> <li>SECTION 2. INFORMATION OBTAINED FROM DR. FRANK D. ADAMS</li> <li>Growth of the Faculty; Graduate School; Courses of Instruction Offered; Where the Students Come From; Length of Session and Character of Instruction.</li> <li>Work During Vacation; Reading and Languages; Buildings and Equipment; Number of Graduates in the Faculty of Applied Science; Cost of a Course of Instruction in the Faculty of Applied Science.</li> </ul>	1893
Section 3. Information Obtained from Professor Clement McLeod	1902
Section 4. Information Obtained from Dr. J. B. Porter, Professor of Mining Engineering	1903
Section 5. Information Obtained from Mr. R. J. Durley, Professor of Mechanical Engineering	1904
<ul> <li>Shop Work given to Students; Need of Shop Experience; Evening Class Work; Needs of Technical Education in Canada.</li> <li>Suggestions for Training Foremen, etc.; Employers and Unions should Co-operate; Combined School and Workshop.</li> </ul>	
Section 6. Information Obtained from Miss Carrie M. Derick, Professor of Botany	1908
CHAPTER XXXIII. THE ROYAL VICTORIA COLLEGE OF Mc- GILL UNIVERSITY	190 <b>9</b>
Section 1. Information Obtained from Miss Ethel, Hurl- batt, Warden	1909
Section 2. Information Obtained from Miss Susan Cam- eron	1910
CHAPTER XXXIV. INQUIRY AT ST. HYACINTHE: A TYPICAL TOWN	1912
CHAPTER XXXV. STATEMENT ON BEHALF OF THE SHER- BROOKE BOARD OF TRADE	1928
CHAPTER XXXVI. MEMORANDUM FROM THE MAYOR OF VICTORIAVILLE, QUE	1933
CHAPTER XXXVII. TRAINING FOR THREE SPECIAL INDUS- TRIES	1934
SECTION 1. THE CANADA PAINT COMPANY, LIMITED, MONT- REAL	1934

SESSIONAL PAPER No. 191d	
SECTION 2. THE C.P.R. SYSTEM OF TRAINING APPRENTICES Order of Talks on Shop Work for Apprentices.	page 1935
Section 3. Dominion Bridge Company's Classes for Apprentices	1939
Young Men Benefit by Classes.	
CHAPTER XXXVIII. SUMMARY OF OTHER TESTIMONY AS TO INDUSTRIES	1940
Section 1. Industries and Workers (Including Foremen)	1940
Section 2. Apprentices	1943
Section 3. Kinds of Schools Called For	1944
CHAPTER XXXIX. OKA AGRICULTURAL COLLEGE	1947
The Library; Laboratories; Entrance Requirements; Manual Work; Short Courses; Examinations; Fees.	
Section 2. The Work of the Agricultural Missionaries	1951
CHAPTER XL. MACDONALD COLLEGE	1954
Section 1. General Statement.	1954
Entrance Requirements; Living Expenses; Tuition Fees; Building and Equipment; Day School and Students' Residences; Farms; Grounds, etc.	
Section 2. The College in Direct Relation to Agricul- ture	1957
Liberal Additional Endowment; Further Federal Grants; Provincial Governments should Control Farms; Ottawa Staff a Reserve Corps.	
<ul> <li>Cereal Husbandry; Value of Research Work; Improvement in Corn Culture; Alfalfa for Quebec Farms.</li> <li>Horticulture. Statement by Mr. Wm. S. Blair.</li> <li>Farming at Macdonald College; Information obtained from Mr. John Fixter. A College Farm that Pays;</li> </ul>	
Comparison of Crop Yields; Comparison of Value of Crops; Importance of Demonstration Farms; Kind of Demon- strations Needed; How Boys Profit by Demon- strations.	
Section 2. The College in Relation to the Training of Teachers	1964
Information obtained from Dr. S. B. Sinclair. The Ideal Education; Need of Training through Work; When Studies Should Begin; Natural Powers should be Developed.	

٠

3 GEORGE V., A. 1913

ł

	PAGE
Section 3. The College in Relation to Household Science and Arts	1967
Information obtained from Miss Catherine A. Fisher. Demand for Trained Women; Training of Supervisors.	
Section 4. The Bearing of Sciences upon Education and Rural Life	1968
<ul> <li>Biology. Information obtained from Mr. Wm. Lochhead. Short Courses, Illustration Plots, etc.</li> <li>Physics. Information obtained from Dr. C. J. Lynde. Correspondence Course Suggested; What a Boy should Know.</li> <li>Nature Study. Information obtained from Dr. John</li> </ul>	
Men and Women Assist Teachers.	
Chemistry. Information obtained from Dr. John Snell.	
CHAPTER XLI. SUMMARY OF REPORTS BY THE LOCAL COUN- CIL OF WOMEN, MONTREAL	1974
Section 1. General Report on Women's Work	1974
Group 1: Women in Clerical and Commercial Positions; Group 2: Saleswomen in Shops; Group 3: Women in Industrial Establishments; Recommendations of the Local Council of Women.	
Section 2. As to the Canadian Handicrafts Guild	1980
Section 3. As to Domestic Service	1982
Section 4. Report of Sub-Committee on Education	198 <b>3</b>
Section 5. Report of a Sub-Committee of Nurses	1984
Section 6. Educational and Employment Bureaux for Young Workers	1985
Section 7. Girls' Clubs in Montreal	1985
Section 8. As to Vocational Schools	1 <b>9</b> 86
Section 9. The University Settlement of Montreal	1986
CHAPTER XLII. LA FEDERATION NATIONALE DE SAINT JEAN BAPTISTE	1988
Women as Industrial Workers; Domestic Servants; Nurses; Les Ecoles Menagères Provinciales.	
CHAPTER XLIII. SUMMARY OF OTHER TESTIMONY AS TO WOMEN'S WORK	1991
Section 1. As to Domestic Science and Art	1991
Section 2. As to Industrial Occupations	1992

ONTARIO.

#### CHAPTER XLIV. AS TO PROGRESS IN EDUCATION..... 1994 SECTION L. INFORMATION OBTAINED FROM MR. ARTHUR H. U. Colouhoun 1994 Function of the Department of Education; Supervision of Schools; Manual Training and Domestic Science; Revision of the Curriculum; Continuation Schools; Special Grants for Technical Work; Inspection for Efficiency; Special Grants for Teachers; Special Courses for Teachers; Scholarships for Teachers to Attend Technical Colleges. District Representatives of Agriculture; Interest in Agriculture and Industrial Training. Dr. Seath's Investigation and Report; Co-operation with Federal Officials. SECTION 2. INDUSTRIAL, TECHNICAL AND ART EDUCATION..... 2000 The Industrial Education Act of 1911; Definition of Names; Classes of Schools; Advisory Industrial Committees; Departmental Direction; To Bring About Oualifications for Admission. Establishment of Schools. Municipal Grants and Distribution of Legislative Grants; Regulations for Evening Schools; Courses of Study; Regulations for Day Schools. Courses of Study for General Industrial Schools; General Industrial Schools for Boys; General Industrial Schools for Girls. SECTION 3. INFORMATION OBTAINED FROM MR. A. H. LEAKE. 2009 Household Science; Manual Training. Technical Schools; Hamilton, Sault Ste. Marie, Sudbury, Toronto, Woodstock. Recommendations by Inspector Leake; Process of Establishment; Publicity; Organization and Management. SECTION 4. LATER DEVELOPMENTS IN ONTARIO..... 2015 (1) Industrial, Technical and Art School, Hamilton; Equipment and Value; Day Courses; Evening Courses; Art Department; Items of Interest. (2) How Technical Education Grows and Develops. SECTION 3. METHODS OF ADVERTISEMENT AT ST. THOMAS.... 2020 CHAPTER XLV. TESTIMONY FROM VARIOUS AUTHORITIES... 2024 2024 SECTION 1. INFORMATION OBTAINED FROM MR. WILLIAMS ELLIS Separate System Preferred; The Old Type of School; The New Type of School; Technical Training a Thing Apart; Higher Technical Education; Three Classes of Schools Needed; Government Direction Essential. 191d-Vol. IV-B

PAG**E** 

3 GEORGE V., A. 1913

PAGE
------

Statement 2	INFORMATION OFFICIER FROM DE L E ENDER	PAGE
Tech	nical Courses in High Schools; Two Year Technical Courses; Night Continuation Classes during School Year; A Profitable Investment; Science Schools and Language Schools; Actual Work in Shops; Consoli- dated Schools Needed.	2027
Section 3. Evans	Information Obtained from Professor John	2030
SECTION 4. I Inexi	INFORMATION OBTAINED FROM MR. SUGDEN PICKLES pensive Industrial Training Scheme; Manual Train- ing as Preparation; Trade and Technical Schools.	2031
SECTION 5. Cene Gene	INFORMATION OBTAINED FROM MR. J. S. MERCER ral; More Specific; Weighty Opinions by Notable Men.	2033
Section 6. 1 Draw (	INFORMATION FROM MISS AUTA POWELL	2034
CHAPTER XLVI. S	UMMARY OF OTHER TESTIMONY	2037
SECTION 1. ( Views I I I C	ON HAND AND EYE TRAINING s of Teachers; Views of Employers; Attitude of Labor Leaders; Correlation with School Curriculum; Results of Experience; Manual Training in Evening Classes.	2037
Section 2. (	ON DRAWING AND ART	2040
Empl A	oyers' Views; Employees' Views; Evening Clnsses; Artistic Training Needed.	
CHAPTER XLVII. A	AS TO EVENING SCHOOLS	204 <b>2</b>
SECTION 1. H The	FROM DR. JOHN SEATH'S REPORT Industrial and Technical Evening School.	2042
Section 2. I At To	EVENING SCHOOLS AT VARIOUS PLACES	2043
SECTION 3. S As to U v O G	VARIES OF MUCH TESTIMONY Value; As to Attendance; School Buildings to be Jsed; Financial Support; Teachers; Evening Class s. Correspondence Course; Effect of Evening Classes n Character; Evening Classes for Women and Eirls; General Conclusions.	2044

٠

CHAPTER XLVIII. AS TO CORRESPONDENCE COURSES	PAGE 2049
Section 1. Summary of Much Testimony	2049
SECTION 2. CORRESPONDENCE COURSE OF THE INTERNATIONAL TYPOGRAPHICAL UNION Lessons and Their Purpose.	2050
CHAPTER XLIX. SUMMARY OF OTHER TESTIMONY AS TO EDUCATION	2054
SECTION 1. MOSTLY AS TO ELEMENTARY EDUCATION	2054
Section 2. Mostly as to Intermediate Education	2054
Section 3. Mostly as to Co-Ordinations Between Schools and Occupations	2055
SECTION 4. As TO THE TRAINING OF TEACHERS	2057
Section 5. As to the Views of Manufacturers	2058
SECTION 6. As TO GENERAL CONCLUSIONS OF WITNESSES	2059
CHAPTER L. THE UNIVERSITY OF TORONTO	2060
Section 1. Information Obtained from Dr. Robert A. Falconer, President	2060
Unique University System; What the Colleges Teach; Function of the University; Faculty of Applied Science; Growth in Faculties and Students; Con- nection with Agriculture, Veterinary and House- hold Science.	
As to Technical Education; Research Work Part of the University's Duty; Problem of Secondary Tech- nical Education; University's Offer to the Grand Trunk Railway.	
Training of Technical Teachers; Teachers for Mining; What is "Practical Education"?; Applied Science, Forestry, Mining, Fisheries, etc.	
University and Secondary Education; How the University Could Train Technical Teachers; Preparation Necessary for University; What Leaders Should Know; The Resources of the University are Limited.	
Section 2. Faculty of Applied Science of the University of Toronto	2067
"Options" a Serious Obstacle; University Forced into Elementary Work; Familiarity with Trades Essential; Summer Work at Trades Encouraged.	
191d—Vol. IV—B ¹ / ₂	

-	
DΔ	CR
1	

Not Training Technical Teachers; Difference between Trades and Professions; Different Kinds of Expert- ness; Qualified Teachers Must Be Trained; How Technical Teachers Might Be Had.	PAGE/
CHAPTER LI. QUEEN'S UNIVERSITY AND THE SCHOOL OF MINING AT KINGSTON, ONT	2072
Section 1. Information Obtained from Dr. Daniel, M. Gordon, Principal of Queen's University	2072 [.]
The School of Mining; Degrees and Courses of Study.	
Section 2. Information Obtained from Dr. William L. Goodwin, Director of the School of Mining	2073
Section 3. Information Obtained from Professor Nathan F. Dupuis, Professor of Mathematics and Dean of Faculty	2075
Section 4. Information Obtained from Professor William Nicol, Professor of Mineralogy	2075
Section 5. Information Obtained from Mr. Lester W. Gill, Professor of Electrical Engineering	2076
Section 6. Information Obtained from Dr. Archibald P. Knight, Professor of Animal Biology and Physiology	2077
CHAPTER LII. THE ROYAL MILITARY COLLEGE OF CANADA	20 <b>79</b>
Bridge Building and Surveying; Long Hours—Strenuous Duties; Attention to Physical Training; What Be- comes of Graduates.	
CHAPTER LIII. THE ONTARIO COLLEGE OF ART AT TORONTO	2081
Past Efforts Bearing Fruit; Organization; Objects and Courses; Duration of Courses, Admission, etc.; Fees; Scholarships; Enrolment and Attendance.	
CHAPTER LIV. THE CANADIAN MANUFACTURERS' ASSO- CIATION AND TECHNICAL EDUCATION	2084
<ul> <li>Decline of Apprentice System; Need of Competently Trained Foremen, Superintendents, etc.</li> <li>Provide Technical Courses in Secondary Schools; Shop Practice; Night Classes; Provide for Individuality of Pupils if Possible; Question of Cost;</li> <li>Native Canadian Industries; Alternating Classes—Shop and School; Local Conditions to be Considered.</li> </ul>	
Further morniation obtained nom MR. G. A. HOWRLL.	

#### CHAPTER LV. THE TORONTO BOARD OF TRADE..... 2093

- Synopsis of Record of Action by the Board; Conference Appoints Delegates and Committee; Report of Special Committee *re* Technical Education; Deputation to Dominion Government;
- Correspondence with Educational Authorities; Conference with University Senate; Commercial Courses not Prosperous; Successful Work at Technical School.
- Further Information obtained from Mr. R. S. Gourlay, Trend of the Curriculum; Demands of a Commercial Community; Commercial High Schools,; Industrial Pursuits Should Be Encouraged; The Dignity of Labor; Cannot Drive a Nail; Fundamentals Lacking.
- Need of Commercial Training; A Certain Man had Two Sons.

#### CHAPTER LVI. OTHER BOARDS OF TRADE AND TECH-NICAL EDUCATION...... 2105

- The Ottawa Board of Trade; Resolutions Favoring Technical Education; The Circular Letter; Provincial Action Favored; Appointment of Dominion Commission Urged; Deputation Waits on Federal Government.
- (2) The Chatham Board of Trade.
- (3) The Sault Ste. Marie Board of Trade.
- (4) The Fort William Board of Trade.

#### 

- The Report of the Commission; Complexity of Industrial Classes and Training; Apprenticeship Disappearing; What the Craftsman is Losing; Gulf Between Skilled and Unskilled Trade Widens.
- Substitutes for Apprenticeship; Substitutes Reveal Need of Industrial Training.
- The Commission's Suggestions; What the Young Men's Christian Association Might Do.
- The Recommendations.

#### CHAPTER LVIII. AS TO OTHER Y.M.C.A. CLASSES...... 2119

Co-operation of Y.M.C.A. with Industries at Kingston; Y.M.C.A. Night Classes in Galt.

CHAPTER	LIX.	INQUIRY	$\mathbf{AT}$	BERLIN: A	TYPICAL	CITY	
IN ONT	ARIO.		• • • • •	••••		••••	2121

Names of Witnesses.

PAGE

xviii DOMINION OF CANADA ROYAL COMMISSION ON	
3 GEORGE V., A	. 1913
CHAPTER LX. SOME REPRESENTATIVE COMMUNICATIONS RECEIVED	раде 2143
<ol> <li>The Building Trades; Kingston; Toronto; Windsor.</li> <li>Custom Cutters' Associations; Toronto; Guelph; Training for Tailors.</li> <li>Training Required in Piano-making.</li> <li>Training of Prospectors and Miners.</li> <li>Lake Seamen's Union, Kingston.</li> </ol>	
CHAPTER LXI. SUMMARIES OF STATEMENTS OF SOME WITNESSES REGARDING THEIR PERSONAL TRAINING	2152
. Textiles; General Engineering; Metal Trades; Wood- working Trades; In Relation to Evening Classes.	
CHAPTER LXII. SUMMARIES OF MUCH OTHER TESTIMONY AS TO INDUSTRIES AND WORKERS:	2156
Section 1. Labor, as to Amount Available, and Its Quality	2156
Section 2. As to Apprentices and Apprenticeship	2159
Section 3. As to Kinds of Schools Called For	2164
CHAPTER LXIII. SPECIAL APPRENTICE SYSTEMS	2166
<ol> <li>Grand Trunk Railway Apprentice System; How the Plan is Promoted; Secures Better School Education; Information from the Master Mechanic.</li> <li>New York Central Railway Apprentice System; A General Foreman's Statement.</li> <li>Apprentice Training at Peterboro.</li> <li>Apprentice Training in Hamilton.</li> <li>Training of Apprentices at Sault Ste. Marie; Day Continuation Schools Needed.</li> </ol>	
CHAPTER LXIV. AS TO PUBLIC LIBRARIES	2176
Summary of Testimony; Use of Public Libraries in Tech- nical Education; Views of Ontario Library Asso- ciation <i>re</i> Technical Education; Utilizing Public Lib- raries; Recommendations by Committee of the Library Association.	
CHAPTER LXV. SUMMARY OF MUCH TESTIMONY AS TO WELFARE WORK	2181
ditions of Working and Living; Public Health; Super- vised Playgrounds; As to Child Labor.	

CHAPTER LXVI. AS TO AGRICULTURE	PAGE 2183
SECTION 1. STATEMENT OF DR. C. C. JAMES, DEPUTY MINISTER OF AGRICULTURE FOR ONTARIO	2190
The Agricultrual Societies; The Institutes; The Dairy Branch; The Agricultural College; As to District Representatives.	
Agriculture in the Public Schools; Salaries Must Go Up; On Machinery and Labor.	
SECTION 2. STATEMENT OF MR. G. C. CREELMAN, PRESIDENT, ONTARIO AGRICULTURAL COLLEGE	2190
Courses for Rural Teachers; Farmers' Institutes; Ex- tension Work; The College Graduates; The District Representatives; Funds Scarce and Hard to Get. Evening Classes and Demonstration Farms; For Consider- ation by Railways and Banks; The Study of Rural Economics.	
CHAPTER LXVII. AS TO AGRICULTURAL INSTRUCTION IN PUBLIC SCHOOLS.	2196
Section 1. Statement of Prof. S. B. McCready, Director of Elementary Agricultural Education for the De- partment of Education	2196
The Summer School; Rural Village and School Work; In Connection with the Experimental Union; Sup- plies of Materials for Schools.	
SECTION 2. COMBINED CONSOLIDATION SCHOOLS AND CONTINU- ATION CLASSES	2201
Statement of Mr. Joseph H. Smith.	
Section 3. Betterment of Rural Education	2204
Information from Mr. John Dearness: How Time is Mis- spent; Improvements Suggested; Rural School In- spection; Proper Teacher-Training; Courses of Study.	
SECTION 4. RURAL SCHOOL IMPROVEMENT	2206
(A) Information obtained from Mr. James Smith: School Gardens; School Exhibits at Fairs; Con- tinuation Classes; Benefits of Short Courses.	
(B) Information obtained from Mr. J. E. Tom: Special Classes for Backward Pupils; Evening Classes; Fifth Classes in Rural Schools; The Teacher Problem.	
Section 5. Educational [®] Work in Agriculture in Essex County and Essex High School	2209
SECTION 6. THE VALUE OF BOTANY TO AGRICULTURE	2202
Section 7. Summary of Other Testimony as to Education for Rural Communities	2212

3 GEORGE V., A.	1913
CHADTED I YVIII OTHED TESTMONY AS TO TECHNICAL	PAGE
EDUCATION FOR AGRICULTURE.	2214
SECTION 1. STATEMENT BY MR. W. C. GOOD, B.A., BRANTFORD	2214
Section 2. Statement by Mr. W. O. Sealy, M.P., for Went- worth County	
Various Forms of Technical Education Suggested.	
Section 3. Statement of Mr. Thomas McMillan, Farmer, Constance	2218
Section 4. Prize Farm Competition	2220

# Section 5. Summary of Much Other Testimony..... 2221

#### MANITOBA.

## 

Educational Handwork; What After 14?; For Those Who
Have Gone to Work;
Two New Technical High Schools; Winnipeg's Forward
Manual Kinds of World and Too shares Courses of

Movement; Kinds of Work and Teachers; Courses of Instruction; Domestic Section; Night Classes.

Section 2. Information Obtained from Mr. W. J. Warters, Superintendent of Manual Training	2232
Hand and Eye Training and Manual Training; Domestic Science.	
Section 3. Information from Mr. William J. Sisler	2234
School Gardens in a City.	

# SECTION 4. AN ASPECT OF SECONDARY EDUCATION...... 2235

CHAPTER LXXI	. ON	CONDITIONS	AND	NEEDS	$\mathbf{OF}$	RURAL	
SCHOOLS					• • • • •		2236
SECTION	I. INF	ORMATION FROM	Mr. C.	J. HALE			2236
Section 2	2. Inf	ORMATION FROM	INSPECT	for McGui	IRE		2237
S	Suggesti	ions for Improve	ment.				

SESSIONAL PAPER No. 191d	
SECTION 3. INFORMATION FROM INSPECTOR JONES Consolidation of Schools; School Gardens.	page 2238
CHAPTER LXXII. MANITOBA COMMISSION ON TECHNICAL EDUCATION	2239
CHAPTER LXXIII. THE UNIVERSITY OF MANITOBA	2241
Seven Colleges Affiliated; Relation to Department of Education; Courses of Instruction and Degrees; Course in Electrical Engineering; Course for Land Surveyors; Not Training Apprentices or Foremen; Research Work; A Graduate's Views.	
CHAPTER LXXIV. FURTHER TESTIMONY AS TO INDUSTRIES AND EDUCATION	2245
Section 1. Some Testimony at Winnipeg	2245
Section 2. Some Testimony at Brandon and Portage La Prairie	2247
Section 3. Summaries of Other Testimony	2249
CHAPTER LXXV. THE MANITOBA AGRICULTURAL COLLEGE	2254
CHAPTER LXXVI. THE DOMINION BRANCH EXPERIMENTAL FARM AT BRANDON	2258

## SASKATCHEWAN.

CHAPTER LXXVII	. AS TO EDUCATION	2262
Section 1.	THE DEPARTMENT'S WORK	2262
SECTION 2.	The Normal School at Regina.	2263
SECTION 3.	Public Schools at Regina	2264
Section 4.	MANUAL TRAINING AND INDUSTRIAL ART	2266
Section 5.	Domestic Science in Regina Schools	2267
SECTION 6.	Public Schools at Moose Jaw	2267
Section 7.	Public Schools at Saskatoon	2268
SECTION 8.	RURAL SCHOOLS NEAR SASKATOON	2269
Section 9.	PUBLIC SCHOOLS AT PRINCE ALBERT	2269
Dra	wing as an Aid to Botany.	

3 GEORGE V., A.	1913
CHAPTER LXXVIII. THE UNIVERSITY OF SASKATCHEWAN AT SASKATOON	раде 2272
Technical Instruction Needed in Saskatchewan.	
CHAPTER LXXIX. AS TO AGRICULTURE	2276
Section 1. Information Obtained Chiefly from Mr. Alfred Mantle, Deputy Minister of Agriculture	2276
SECTION 2. THE SASKATCHEWAN COLLEGE OF AGRICULTURE Extension Work of Agricultural College.	2278
Section 3. As to Farming Conditions	2280
Section 4. As to Dairying	2282
Section 5. Summary of Other Testimony	2283
CHAPTER LXXX. TREE PLANTING IN SASKATCHEWAN	2285
ALBERTA.	
CHADTED I VVVI AS TO THE ODCANIZATION OF EDUCATION	1200

CHAPTER LXXXI. AS TO THE ORGANIZATION OF EDUCATION	2288
Section 1. Information Obtained from Mr. Duncan S. McKenzie, Deputy Minister of Education	2288
Section 2. Information Obtained from Dr. John T. Ross, Chief Inspector of Schools for the Province of Alberta	2290
Section 3. Information Obtained from Mr. James A. Fife, Inspector of Schools	2291
Section 4. Suggested Courses for Boys and Girls	2293
SECTION 5. THE ALBERTA NORMAL SCHOOL, CALGARY	2294
CHAPTER LXXXII. AS TO CITY SCHOOLS	2296
Section 1. Information Obtained from Mr. James McCaig, Superintendent of Schools, Edmonton Agriculture in High and Public Schools.	2296
Section 2. Information Obtained from Mr. Frederick Carr, Principal, Edmonton High School	2298
Section 3. Information Obtained from Mr. George A. McKee, Principal, Strathcona Public School	<b>2</b> 299
Section 4. Information Obtained from Dr. Arthur M. Scott, Superintendent of Schools, Calgary	2299

.

Evening Technical Cl Entrance.	asses at Calgary. Condition	PAGE s of
Section 5. Information Obt Supervisor of Manual T Schools	AINED FROM MR. JOSEPH F. LA RAINING IN THE CALGARY PU	YNN, BLIC 2301
Section 6. Information Of Stewart, Teacher of Schools	TAINED FROM MISS MARGA Domestic Science in Calg	ARY ARY 2302
Section 7. Information Ob Hamilton, Supervisor of	TAINED FROM MR. WILLIAM	A. 2303
Section 8. Information Obt Principal, the High Scho	AINED FROM MR. DAVID ANDRE OL, LETHBRIDGE	<b>≩ws,</b> 2304
Board of Trade's Sugg	estions.	
Section 9. The Public Scho	OOLS OF MEDICINE HAT	2305
PTER LXXXIII. THE UNIVER	SITY OF ALBERTA	2306
Section 1. Information Obt dent of the University.	AINED FROM DR. H. TORY, PR	ESI- 2306
Section 2. Information Ob mann, Professor of Cher	TAINED FROM DR. ADOLPH L	жн- 2307
Section 3. Information Obt wards, Professor of Civi	TAINED FROM MR. W. MUIR L AND MECHANICAL ENGINEER	Ed- ang 2308
PTER LXXXIV. SUMMARY OF	OTHER TESTIMONY	2310
SECTION 1. AS TO OCCUPATIO Building Trades; Meta ing; Watch and	NSul Trades; Printing and Publ Clock Makers.	2310 lish-
PTER LXXXV AS TO AGRICU	יז אַזוזאַ ד	2316
	<b>HIUIUIUIUIUIUIUIUIUIUIUUIUUUUUUUUUUUUU</b>	2010
Section 1. Information Obt court, Deputy Minister Conditions and Facilitie	'AINED FROM MR. GEORGE H OF AGRICULTURE es in Alberta.	[AR- 2316
Section 2. Information Obt. Superintendent of the D Farm at Lethbridge	ained from Mr. W. H. Fairfie Ominion Branch Experimen	ELD, TAL 2319
SECTION 3. INFORMATION FROM	M HON. ALEX. C. RUTHERFOR	D; 2320
SECTION 4 "THE UNITED FAI	RMERS OF ALBERTA"	2322
www.ion in the outling the	CONTRACTOR OF A CONTRACTOR CONTRACTOR CONTRACTOR	2022

3 GEORGE V., A. 1913

SECTION 5. As TO FARMING CONDITIONS Calgary; Edmonton and Strathcona; Lethbridge; Medi- cine Hat.	PAGE 2323
BRITISH COLUMBIA.	

CHAPTER LXXXVI. AS TO THE ORGANIZATION OF EDU- CATION	2328
SECTION 1. INFORMATION OBTAINED FROM MR. ALEX. ROBIN- SON, SUPERINTENDENT OF EDUCATION Evening Schools; Teacher Training; How the Curriculum is Arranged; Technical Education Should Be Uni- form.	2328
SECTION 2. MANUAL ARTS IN BRITISH COLUMBIA SCHOOLS Manual Training; Household Science; Line of Develop- ment Needed.	2331
Section 3. Information Obtained from Mr. William P. Argue, City Superintendent of Schools, Vancouver Evening Classes in Vancouver.	2332
Section 4. Information Obtained from Mr. John Kyle, Instructor in Drawing at the Normal School and for the Province	2334
SECTION 5. TESTIMONY OF A WOMAN SCHOOL TRUSTEE	2335
Section 6. The High Schools	2336
SECTION 7. THE MCGILL UNIVERSITY COLLEGE OF BRITISH COLUMBIA Course in Applied Science; Double Course; Shopwork.	2 <b>3</b> 38
CHAPTER LXXXVII. AS TO INDUSTRIES, WORKERS AND EMPLOYMENT BUREAU	2340
Section 1. Information Presented by Mr. William Dalton, on Behalf of the Council of the Vancouver Board of Trade	2340
Section 2. Information Obtained from Mr. Herbert C. Benson, President of the Trades and Labor Council, Vancouver	2341
Section 3. Information Obtained from Mr. John Peck	2342
Section 4. Information Obtained from Mr. John G. Lister	2343

	PAGE
SECTION 5. SUMMARY OF OTHER TESTIMONY AS TO APPREN- TICES	2343
SECTION 6. PUBLIC SCHOOL EMPLOYMENT BUREAU	2344
SECTION 7. INDUSTRIAL CONDITIONS OF WOMEN WORKERS	2346
CHAPTER LXXXVIII. AS TO RURAL OCCUPATIONS	2350
Section 1. As to Fruit and Agriculture	2350
SECTION 2. SUMMARY OF OTHER TESTIMONY Kootenay; Vernon and Okanagan.	2351
SECTION 3. As TO LIVE STOCK AND DAIRYING	2352
SECTION 4. RURAL OCCUPATIONS FOR WOMEN	2352
CHAPTER LXXXIX. AS TO FORESTRY PROBLEMS	2354

.

# INQUIRY IN CANADA.

# CHAPTER I: INTRODUCTORY.

The Commission visited the chief industrial and commercial centres throughout Canada, beginning at Halifax, N. S., on July, 18th, 1910, crossing the Dominion to Vancouver Island, and practically completing the enquiry in Canada by February, 1911. Itineraries were drawn up, and notifications of the intended visits were sent in advance to the Mayor, to the President or Chairman of the Board of Trade, and to other persons in each locality directly engaged in, or concerned with, industries and education.

The following places were visited:-

Nova Scotia.

Halifax, Dartmouth, Lunenburg, Liverpool, Bridgewater, Yarmouth, Digby, Middleton, Wolfville, Windsor, Truro, Sydney, Glace Bay, North Sydney, Sydney Mines, Baddeck, Antigonish, New Glasgow, Stellarton, Westville, Pictou.

#### Prince Edward Island.

Charlottetown, Hillsborough, Summerside.

New Brunswick.

Amherst, Springhill, Sackville, Moncton, Sussex, Hampton, St. John, Fredericton, Woodstock, Chatham.

#### Quebec.

Montreal and District, Macdonald College, Quebec, Three Rivers, Shawinigan Falls, Joliette, St. Hyacinthe, Victoriaville, Arthabaskaville, Sherbrooke, Hull. (Visits to Grand Mere and Sorel were cancelled owing to weather conditions which prevented making connections for the dates appointed.)

#### Ontario.

St. Catharines, Paris, Collingwood, Woodstock, Goderich, Listowel, Owen Sound, Barrie, Orillia, Lindsay, Oshawa, Cobourg, Cornwall, Smith's Falls, Ottawa, Brockville, Kingston, Belleville, Peterborough, Toronto, Hamilton, Niagara Falls, Simcoe, Brantford, Galt, Guelph, Berlin, Stratford, London, St. Thomas, Chatham, Windsor, Walkerville, Port Arthur, Fort William, Sault Ste. Marie.

191d-Vol. IV-1

#### Manitoba.

Winnipeg, Portage la Prairie, Brandon.

#### Saskatchewan.

Moosejaw, Regina, Saskatoon, Prince Albert.

Alberta.

Edmonton, Strathcona, Calgary, Lethbridge, Medicine Hat.

#### British Columbia.

Vancouver, New Westminster, Nanaimo, Victoria, Fernie, Nelson, Vernon.

#### EXTENT OF THE INQUIRY.

Altogether the Commission visited 100 places (cities, towns and localities) and held 175 sessions to receive testimony. It has transcripts of the evidence of 1471 men and women. Some of these occupy foremost positions in industries, agriculture, mining, lumbering and fishing. Others are engaged in educational work; they include Superintendents of Education, principals of Universities and Colleges, and teachers in institutions and schools of all grades. Others represent various trades, occupations, and housekeeping. The transcript of the evidence received during the 175 sessions, besides the notes taken by the members of the Commission on the occasion of their visits to the various industrial establishments and educational institutions, amounts to over 4,000 typewritten foolscap pages. Moreover, written memoranda, to the number of nearly 200, were received from witnesses.

#### CORDIAL CO-OPERATIONS.

In every province the Commission was received by the Premier, with other members of the Provincial Cabinet, or by some member of the Cabinet. In every Province the Commission received assurances of goodwill, and enjoyed the benefit of cheerful co-operation from all the Provincial authorities.

The Commission was usually met on its arrival at a town by the Mayor and the members of the Reception Committee, representing the City or Town Council, the Board of Trade, the Manufacturers' Association, educational institutions, and the Labor organizations.

The Commission visited industrial establishments and educational institutions during either the forenoons or the afternoons, or both. Sessions for receiving testimony were held during the evenings, and when not occupied as indicated, during the afternoons or forenoons.

Usually a list had been obtained from the local committee of representative men and women, who were prepared to testify regarding the need and present equipment of the place in respect to industrial training and technical education. The statements were taken under oath or solemn affirmation. The information

was usually secured by means of question and answer. The witness was given an opportunity to make any statement bearing on the matters enquired into, and to supplement oral testimony by a written statement. Many of the persons occupying the most important positions in industrial activities and educational administration were requested to furnish written memoranda. Opportunity was given to any person who desired to offer testimony, either orally or in writing. No one was summoned officially to appear before the Commission. Invitations were extended to representative men and women. Those who testified did so with evident frankness, and appeared satisfied that they had thereby contributed something useful in respect to Industrial Training and Technical Education, and in regard to the needs of the industries and the needs of the young people and workers of the locality.

#### INDUSTRIAL DEVELOPMENT FOUND TO BE GENERAL.

The members of the Commission were impressed by the numbers of thriving industries in comparatively small towns. Throughout all the eastern Provinces many establishments where visited, from which the products were being shipped throughout the whole of Canada. These towns enjoyed no special shipping facilities or any apparent advantages in regard to cheap power or nearnes to raw material. The enterprise, ability and energy of a few men had enabled them to make the beginning upon a small scale from which businesses employing from 50 to 200 persons have grown up. Factories were situated where abundance of fresh air and light prevailed, and where the workmen could provide homes under favorable conditions for their children. Instances which are typical and not exceptional may be mentioned.

A furniture factory located at Windsor, N.S., was shipping its Products throughout Canada, nearly one-half to the west of Winnipeg, and a portion to Newfoundland. Windsor, N.S., is not even on the main line of a through railway. At Truro, N.S., a cap factory, reported to be turning out nearly one-half of the caps required by the Canadian trade, was making headway under all existing competitions.

At Charlottetown, P.E.I., a machine shop was turning out gasoline engines, one-half of which were being shipped west of Winnipeg. About 100 men were employed and they were working overtime.

At Sackville, N.B., a stove works was doing a local trade and also supplying its products throughout the Northwest. The manager stated that favorable local conditions for the workmen enabled him to increase the business.

At Fredericton, N.B., a shoe factory employing over 100 persons was shipping boots and shoes to Montreal, to Moosejaw and other points in the West.

At Victoriaville, Que., four prosperous industries—furniture, chairs, iron bedsteads, clothing—were reported to have grown up within seven years. The products from each were being shipped all over Canada, in each case about onehalf to points west of Winnipeg. On the occasion of the Commission's visit one carload at each of two factories was loaded for Vancouver, B.C.

Instances of similar development and extension of trade could be cited from 191d—Vol. IV— $1\frac{1}{2}$ 

a score of places in Ontario. It has been made evident that the industrial development of Canada has been going on not only in the larger towns and cities.

The Commission observed the establishment and growth of comparatively new industries, whose managers testified that they required increasing numbers of highly skilled and technically trained workers, as for example, electrical works and automobile factories.

#### As to Present Equipment.

In conducting the enquiry and in making the records, the Commission sought to gather information regarding the kinds of provision which existed for Industrial Training and Technical Education in the place visited, rather than to collect statistical data of the number of pupils receiving instruction in any kind of class or classes. The enquiry was directed to discover whether the existing provisions were efficacious and adequate for the training of the children, the youth and the adult workers of the place, and if not, what, in the judgment of those who testified, could and should be provided.

#### ARRANGING THE INFORMATION OBTAINED.

In arranging the material to be published as Part IV of the Report, it seemed that no good service could be rendered by the publication of the record of the testimony itself in full, and that it was unnecessary to describe the educational institutions visited in the several places with as great detail as the educational institutions which were visited and reported upon in other countries. In a few cases, where clearness of presentation required it, the latter course was followed. The information obtained from the witnesses connected with educational institutions, is to be taken as supplementing the printed documents issued by the several Departments or institutions, and as containing the witness's explanation or interpretation of what was being done, or should be done, in relation to Industrial Training and Technical Education.

In a few typical cases, where the testimony of men who control industries shed light upon the establishment, progress or management of an industry in such a way as to be illuminating and beneficial to Canada, considerable space has been given to it. In general, there was so much likeness and agreement in the opinions of those who control the various industries, as to the requirements of the workers for Industrial Training and Technical Education, that the records of these have been condensed or arranged in terms which include them all.

#### PERSONAL NARRATIVES OF TRAINING.

In some cases where a witness gave a statement of the training and experience which in his opinion had been suitable and adequate for his occupation, a condensed narrative has been prepared for publication. It was learned that it would be more agreeable to some witnesses not to have their names published in such narratives.

#### THE ATTITUDE OF ORGANIZED LABOR.

What has been said in regard to the testimony of those who control the industries, applies equally to the testimony of the employees, and of those who came before the Commission as representatives of organized Labor. No attempt was made to obtain formal resolutions of Labor bodies; but in practically every case the question was asked of those who appeared as representing organized Labor, whether they personally, and the Union which they represented, were in favor of adequate provision being made for Industrial Training and Technical Education for the workers. Without a single exception, they expressed themselves as being favorable towards Industrial Training and Technical Education as a public service, and desirous of seeing adequate provision made in the locality for the needs of all the workers.

#### RECORDS OF INQUIRY AT TWO PLACES.

The records of the Commission's inquiry at two places—Berlin, Ontario, and Ste. Hyacinthe, Quebec—are given practically in full as being typical and illustrative of much of the testimony received at other places.

#### SOME GENERALIZATIONS FROM TESTIMONY.

In general the testimony was to the effect that provision, for the systematic Industrial Training and Technical Education of handworkers and foremen, exists in comparatively few places, and in them not to an extent adequate to the needs of the industrial population.

The system of training young men and women as apprentices, is becoming less common than formerly. In some trades it has disappeared as a system and learners are expected and required to pick up the trade as best they can. The introduction and use of machinery where hand labor was formerly employed is given as one of the chief causes for the change. In a few shops, notably the shops of the railway companies, instruction classes and systematic instruction in the shops and at machines have been provided to meet the new conditions.

The rapid development of the country and the growth of towns and cities, have provided the lure of relatively high wages for boys and girls of 14 years and younger. That attracts them to leave school early. Frequently such young people accept places and begin work for which little training is required and in which experience does not lead to the acquisition of ability or skill in a trade or occupation which affords permanent employment or is suitable for mature years. Many witnesses were of the opinion that at least part of a remedy would come through schools or courses of study which provided more hand work of a constructive kind.

A great deal of testimony was received indicating that properly organized hand-and-eye-training with constructive work, was helpful in developing the powers of children from the kindergarten classes upwards. The teachers who had experience spoke highly of its value in qualifying the children to take up bench and table work in Manual Training and Domestic Science in later years; they also testified that the hand work contributed to the progress of the pupils in what are called book studies.

Those opinions found confirmation in the practice of schools observed in other countries, notably Munich in Germany, Edinburgh in Scotland, Leeds in England and Rochester in the State of New York.

#### THOSE WHO KNOW THE TRADES WANTED AS INSTRUCTORS.

Much practical and useful information was obtained from skilled workers as to the nature of the Courses in Continuation Classes which would be most advantageous and the kind of instruction which would be most helpful. A strong preference was expressed for instruction from "practical men" and women who knew the trade. The Commission had that testimony in mind when its Recommendations as to the Provisions for Industrial Training and Technical Education, contained in Chapter VII of Part II of the Report, were being formulated.

#### THE TESTIMONY OF THE FARMERS.

In preparing for publication the material which was presented to the Commission in connection with the Industrial Training and Technical Education of those engaged in agricultural and other rural occupations, a similar course was followed.

The farmers who appeared before the Commission were earnest in their convictions of their own needs, the needs of their children and the needs of their occupation, although they were not correspondingly clear or definite as to the means whereby these needs could be met through educational provisions. They were in agreement as to the advantages of specific knowledge regarding plants, seeds, soils, cultivation, rotations, manuring, live stock, etc. Not many of them had given thought to what was possible in the way of training the judgment of young people as to the best methods of applying, to the farming of the locality, such knowledge as might be acquired through classes, courses, reading, or other forms of instruction.

Nor did the Commission obtain many definite opinions as to means by which practical skill in the performing of farming operations could be developed more generally. By some it was hoped, rather than asserted, that Manual Training and work in the School Garden gave young people such ability in the use of tools and such a general desire for neatness and tidiness, that they were important factors in developing skill in doing farm work. Competitions, such as ploughing matches, field crop competitions, and children's work at agricultural exhibitions, were all cited as means whereby pride and satisfaction in the doing of the work itself, and in the quality of the work itself, as distinct from the financial returns from it, would be cultivated and accomplish a good deal.

#### TO KEEP THE YOUNG PEOPLE IN THE COUNTRY.

A general opinion on the part of the farmers who appeared before the Commission was, that the young people at and before the age of leaving school were less

interested in farm work and rural affairs than formerly. The remedy for that state of affairs was believed to lie in a change in the dominant object of the rural school. To the teachers and pupils the prime object has been lessons from books, and these often learned in order to pass examinations that had little vital relation to knowledge or ability applicable to farm life. The witnesses generally were of opinion that the school work of the pupils, in the lessons from books and in other respects such as Nature Study and School Gardening, should bring and keep the rural school more in touch with the homes and farms. What the Commission found was being done in this respect in other countries is reported on in Chapter IX of Part II of the Report.

#### DESIRE FOR CO-OPERATIONS.

Some testimony was received, much of it indefinite, in content of both knowledge and opinion, as to what was desired and what may be expected from Co-operation in rural communities. It was stated to the Commission that there would be advantage through Co-operation, in connection with the business of the farms, in selling and buying. It was stated also that benefit had come to farmers from discussions at Farmers' Institutes and other meetings on methods of managing farms. Some information was obtained as to beginnings that had been made in the way of co-operation in planning the management of farms, by the farmers going together over their several farms and discussing together their systems and methods of conducting work.

Witnesses expressed a desire for such co-operation among the people of the localities as would develop more agreeable and satisfying social opportunities for people out in the country. Some hope was expressed that Consolidated Rural Schools would become centres from which co-operation in respect to the three matters indicated might grow, viz., co-operation among the farmers in the business of buying and selling; co-operation in planning for the management of the farms; and co-operation in providing and improving social opportunities.

#### SOCIAL SATISFACTIONS IN RURAL DISTRICTS.

In earlier days, singing schools, debating clubs, "bees", were instances of social gatherings. Under modern conditions, specific occasions for social gatherings are not so common or obvious as they were. Whether the formation of Neighbourhood Improvement Associations, meeting from time to time for specific purposes such as, consideration of the farming, the housekeeping, the education, the handicrafts of the locality, suitable games and recreations, singing, literary culture, and exchange visits with other Neighbourhood Improvement Associations, would meet the need and do good, was not pronounced upon by witnesses who appeared before the Commission; but the need for some means of enriching the social life of country districts was represented as urgent. That was in the mind of the Commission when studying the means whereby rural communities in the older civilisations were carrying on their education and rural life.

#### As to Housekeeping Occupations.

In preparing for publication the material in respect to Housekeeping Occupations, a similar plan has been followed. There was so much similarity in the testimony of those who appeared before the Commission in respect to domestic employments, that the testimony in one Province may be taken as representative of the convictions and attitude of the women of Canada. Some of the testimony submitted has already been presented in Chapter X, on "Education for Housekeeping Occupations", in Part II of the Report.

#### CONDITIONS FOR WORK AND RECREATION.

A good deal of evidence was presented to the Commission indicating that increasing attention is being given to the conditions under which occupations are carried on, and that more care is being taken that these shall be wholesome in respect to ventilation, suitable in regard to lighting and comfortable in respect to temperature.

The Commission did not receive any testimony which indicated that communities, as such, were active in organizing opportunities for the regular and adequate recreation of industrial workers in towns or young people in rural communities. When the question was discussed by witnesses, there was no difference of opinion on their part regarding the advantage to the individual, and afterwards to the occupation, from a suitable period and kind of recreation. A frequent statement made before the Commission was that "care should be taken as to the physical and mental welfare of the workers, otherwise they could not turn out goods properly". The stress seemed to be laid upon the quality of the marketable material, and not upon the quality of life in the worker.

The testimony of the factory workers particularly, indicated their opinion that over the whole field of industry there was a keen struggle for success as measured by immediate profits, that often the interests of the workers were lost sight of, and that returns on capital, and not the welfare of the community, were chiefly considered.

#### Y. M. C. A. Appreciated.

The Commission learned on all sides, directly from representatives of the Y.M.C.A.'s, and from employers and employed, of the excellent work carried on by Y.M.C. Associations in classes for general subjects, drawing, technical instruction, physical culture and singing. Such work has not been competitive with that of School Boards or private educational institutions, but has supplemented what they have done, and met the needs of those who for one reason or another did not avail themselves of other opportunities.

#### USEFULNESS OF LIBRARIES.

Testimony was received as to the usefulness of libraries and librarians in the technical education of workers. In many libraries special lists of books,

dealing with the industries of the place, were prepared and put at the service of workers. In other cases the librarian was known to be available for advice as to books and reading upon technical subjects dealing with the occupations of the area served by it.

#### WASTES AND LOSSES AFTER 14.

It was generally regarded that systematic education which comes to an end about the age of 14 is incomplete and, in view of the formation of character and the learning of some occupation by the boy and girl during the next 3 years, deeply unsatisfactory. Without attendance at a Continuation School or a School of some kind, the young person is represented as losing much of the effect of his previous education, and at the same time missing the growth of intellectual interests and particular training for the occupation which he follows. Such good and necessary habits as those of obedience, regularity, punctuality and diligence, which are among the first-fruits of the ordinary school education, are in a measure lost unless some school or educational contact helps to keep them vital from 14 to 17 years of age.

The impression left upon the Commission from the testimony, alike of employers and parents, was that all boys from 14 to 17 years of age need supervision, require some definite training, and should be able to see before them, as manhood and its responsibilities approach, the prospect of an opening in some form of occupation where a good living may be earned, and where diligence, aptitude and earnestness may win fitting rewards.

#### EVENING CLASSES MUST BE ATTRACTIVE.

Those who had considered the question were not hopeful that a large proportion of the young people in Canada who have left school and are at work, would voluntarily go to Evening Classes unless these were of a highly attractive and almost entertaining kind. The opinion generally expressed was, that where the classes entertained or interested the young people, there would be no injury to their growth or health by attendance two or three evenings a week. The difference in the kind of attention and mental effort called for, from those who were fatigued by the occupations of the day, would make some kinds of classes recreational, while also educational. What has been said regarding the attractiveness, or entertaining quality, of classes refers particularly to classes for those who are from 14 to 17 years of age. It was stated that after that age workers would more generally recognize the advantage to themselves from further training, and have a more serious and earnest attitude towards such work.

#### KINDS OF PROVISIONS REQUIRED.

The training required to fit a boy for a trade was spoken of as of two kinds, one general and the other special. The general training develops mental and physical qualities of alertness, intelligence, adaptability, and the other gives specific
instruction and definite training in the principles and practice of some particular industry or branch of industry in such a way as to produce a skilful worker.

The testimony was substantially unanimous in indicating that in respect to Industrial Training and Technical Education the following are among the pressing needs of the people:

1. Some opportunity in all schools for boys when they are past twelve, whereby the boy will gain experience in constructive hand work as well as book work and thus reveal to himself and his teacher and parents the bent of his ability to an extent that will give an indication of what he should choose, and how he should prepare, for his life's work.

2. Provision for the boys, from twelve to sixteen years of age who intend to go into some skilled trade, to learn in school how to use common hand tools for wood and iron working and to receive instruction in the qualities of materials which are fundamental to the common industrial occupations.

3. Courses or schools, of High School or Academy grade, adapted to the boys who are going into industrial and commercial life. Such schools or courses to give them preparation for their future work equivalent to what the present High Schools give to the boys going into the professions.

4. Some education to make up to the boy, after he begins to work, for what he does not now get through lack of an apprenticeship system; some forenoon, afternoon or evening classes to give him the further knowledge of mathematics and mechanical principles; and also some variety of shop work, to develop the skill of hand and the all-round ability in some trade, which the apprentices formerly got by their long and practical training. The manufacturers and other employers of labor have expressed a willingness to co-operate in helping to make such classes and courses effective.

5. Evening schools for workmen in the smaller cities and towns to fit them for advancement and promotion.

6. Some enlargement and improvements of the means whereby farmers' children may learn the elements of the scientific principles which underlie rural occupations such as the growing of crops, the feeding of live stock, the fighting of weeds, insects and plant diseases, and the maintenance of fertility and beauty; and the same in more advanced forms suited to the farmers themselves.

7. Instruction—the means and opportunity for instruction—of a similar character suited to the lives and occupations of the fisherfolk, and those engaged in the mining industries.

8. Classes and courses for the training of girls and women to give them clear concepts of the sanitary conditions which make for the safety, comfort and economy of the home, correct ideas of economical ways of providing food and garments and of using fuels; and some practice in domestic art that will further enable them to reveal and enjoy their love of the beautiful by making beautiful things for the house.

9. Correspondence study courses for persons who are unable to avail themselves of schools and classes; and the provision of visiting instructors in connection therewith.

In this connection it is to be noted that, from the many statements made to the Commission, it would appear that several hundred thousand dollars per annum have been paid by Canadians for correspondence courses provided by American institutions. Those who had taken the courses, or were taking them, testified that they derived benefit; although only a small percentage of the number appear to have carried the work through to the end of the course.

10. Intimate correlations and co-operations between those who manage industries and factories, the men and women most skilled in their trades and occupations, and the managers of the schools and classes where workers are trained.

## WIDESPREAD EXPECTATIONS.

The survey made by the Commission revealed a great measure of interest throughout the whole of Canada in the subject of Industrial Training and Technical Education.

The representatives of all occupations and interests, who testified, gave the Commission the impression that they expect further action to be taken in the near future in all the Provinces, such as will in result in meeting the needs which have been indicated by their testimony.

Persons, occupying important and influential positions in industry and educ tion, expressed the opinion that the Dominion Government should assist in d veloping Industrial Training and Technical Education by granting financial a sistance.

## RESOLUTION BY A PROVINCIAL ASSEMBLY.

The Commission received a copy of the following resolution with the statement that it was passed unanimously by the House of Assembly, New Brunswick, in its session of 1912, on motion Mr. Hatheway, seconded by Mr MacLachlan.

Whereas. The increase of the material wealth of Canada depends almost entirely on---

- 1st. The skill and science with which the farmer cultivates the land and produces his crops.
- 2nd. The careful work and knowledge of the miner and the lumberer in their several avocations.
- 3rd. The special skill and effic ency whereby the mechanical and other artisans transfer raw materials into finished and useful products.

And Whereas, The Dominion Manufacturers' Association and all its branches, the different Trades and Labor Congresses since 1900, and also the numerous Boards of Trade throughout Canada, have been continually urging the Dominion Government to investigate the needs of Technical and Agricultural Education in Canada in order to improve the skill and efficiency of the farmer, mechanic and all other artisans.

And Whereas, The Public School Systems of the different Provinces do not tend enough towards furnishing the masses of the people with either Agricultural or Industrial Education. Therefore Resolved, That it is the opinion of this Legislature-

1st. That the Federal Government of Canada should appropriate annually for the next ten years the sum of \$4,000,000 a year to be expended solely upon Agricultural and Industrial Education.

2nd. That such sum of \$4,000,000 a year be paid over by the Federal Government through the Minister of to the Government of each Province of the Dominion. in sums pro rata to the population of each Province, as shown in the census of 1911.

3rd. That each Province of the Dominion pledge itself to expend such sum solely and only for Agricultural Education by means of Agricultural Schools, Farms or Colleges, and for Technical Education of the miner, the lumberman and the mechanic by means of Manual Training, Technical Schools, High Schools and Colleges.

4th. That each Province appoint one of its Cabinet who will annually make his report to the Minister of Ottawa, showing in detail where and how such sums have been expended.

And further Resolved, That copies of this Resolution be sent to the members of the Legislatures of all the other Provinces of this Dominion, asking their cooperation and asking them to forward a similar Resolution to the Dominion Government.

And Further Resolved, That copies of this Resolution be sent to all the members of the House of Commons and the Senate of Canada.

۰.

## NOVA SCOTIA.

# CHAPTER II: OUTLINE OF THE EDUCATIONAL SYSTEM.

## SECTION 1: ORGANIZATION AND ADMINISTRATION.

Information obtained from Dr. A. H. MacKay, Superintendent of Education, supplemented by official reports.

Education in the Province of Nova Scotia is controlled by the Council of Public Instruction, which consists of the Executive of the Provincial Government. This Council regulates expenditures of funds, classification of teachers, books, programs, management of the Normal and Technical Colleges, Academies and Schools, inspectors, examiners, local managers and educational matters generally. Since 1908 there has been an Advisory Board comprising 5 members appointed by the Government, and 2 elected every two years, by members of the Provincial Educational Associat on.

The Superintendent of Education is appointed by the Lieutenant-Governor in Council, and is Secretary of the Council of Public Instruction. The Director of Technical Education, who is also Principal of the Technical College, is appointed by the Lieutenant-Governor in Council, and is under the direction of the Council of Public Instruction. The 12 Inspectors, appointed by the Council of Public Instruction on the recommendation of the Superintendent, form practically 12 local branches of the Education Office; they exercise large administrative authority, being ex-officio Secretaries of the 33 District Boards. Each inspector has about 200 school departments under supervision,.

The system in Nova Scotia consists of (1) Common School Course of 8 years grades 1 to 8, and (2) High School Course of 4 years—grades 9 to 12. The High Schools are simply the Public Schools from grades 9 to 12, to which the Common Schools lead directly without any hiatus, the whole forming a 12 years' course articulating with the Universities, Normal College and teaching profession, and with special schools and institutions. The High School program allows numerous options.

The "Common" schools are supported by funds from three sources:-

(1) Sectional Assessment, which is the main support. The school trustees present their estimates for the year to ratepayers who assemble at annual meetings and in parliamentary fashion vote the amount to be levied on the section for all school purposes, also elect new trustees, etc. The total vote levied and collected in 1912, was \$859,284, an increase of \$55,159 over 1911.

(2) Grants for Municipal (County) School Fund. Each of the 24 Rural Municipa'ities levied 35c on the Munic pality for each of the population according to the latest census. This amount is levied on the assessable property and collected with other municipal rates, the fund being paid out to School Boards on the order of the Superintendent at the end of the school year as follows:

(a) \$25 for each teacher employed.

(b) The balance to be distributed in proportion to the attendance of pupils in each School Section after allotting \$100 for every pupil from the municipality attending institutions for deaf, dumb and blind

(3) The Provincial Aid, consisting of grants to 5 classes of teachers employed in local schools, based on professional training and attainment of the following grades of scholarship:

Grade 9, \$60; 10, \$90; 11, \$120; 12, \$150.

For Academic Class (Scholarship, University Degree), the grant is from \$180 to \$210. To those who hold a Rural Science License and are teaching an approved course in a Rural School with a School Garden equipment \$15, \$30, \$60 or \$90 additional, according to character of qualifications and work. Kindergarten teachers can qualify for any except the Academic branch. In 1912 the total amount of Provincial Aid to teachers was \$228,570.

Salaries of male teachers are supplemented by an allowance from the Dominion Department of Militia and Defence, when they instruct Cadet Corps. The Teachers' Annuity system enables a teacher to retire, with the continuation of the Provincial Aid, after 35 years of service, or at 60 years of age, or in the case of disability after 20 years' service. This may be supplemented by the School Sections, or (as in Halifax) by contributions from the teachers.

## Specialist Teachers.

In connection with the Public School system in Nova Scotia, there are special teachers in Manual Training, divisible into three classes, (1) Mechanic Science, (2) Domestic Science, (3) Rural Science.

## Mechanic Science.

This is similar to what is called Manual Training in other provinces. It is mainly woodwork, and is taken by boys in the 7th and 8th grades.

Cardboard work has also been introduced, and in the Kindergarten more elementary forms are being developed. It is intended to take some of this work in the High Schools, but as the Province is not very wealthy, and in many places not very prosperous, and teachers are only beginning to receive preparation, the Department does not expect rapid extension.

In Halifax every pupil has opportunity of taking Mechanic Science and Domestic Science, for which special accommodation is made. In Sydney, Glace Bay, North Bay, Pictou, and New Glasgow buildings are devoted exclusively to that work. High School pupils in many places take those courses when they have the opportunity.

It is found that Mechanic Science, while increasing the usefulness of roys in fixing things up about the house, does not interfere with the progress in academic work. Some teachers say that it stimulates the pupil, and Superintendent MacKay has heard it said, that the severest punishment would be to prevent a pupil from attending a Manual Training class, because they prefer that work to ordinary school work.

All teachers passing through the Normal College take the ordinary Mechanic Science course, so that they may be able to do such work as pupils are expected to do in school. Hence, they can teach Mechanic Science, or Rural Science or Domestic Science, in small communities without an expert being required.

There was a time when every teacher in training (women as well as men) at the Normal College took Mechanic Science. The Provincial grant enables any locality to purchase the equipment prescribed by the regulations.

## Rural Science.

Rural Science is specially for country schools, because in rural places with small populations, it is too expensive to establish Mechanic or Domestic Science. Regulations advise that Rural Schools should have at least a bench, in a small annex to the school room, and many schools have one or two benches where pupils can work during noon hour, taking part of their play time.

Grants are given teachers who have taken the diploma at the Rural Science School, and have conducted a school garden up to one of three standards, the higher being for superior work which is really of agricultural value, the two lower laying the foundation. This allows the smallest school to do a little, while the largest school can have a more developed department and do more extensive work. All the students at the Rural Science School at Truro are studying with a view to this work.

## MANUAL TRAINING.

Since 1900 Manual Training Schools are of two kinds:---

(1) Mechanic Science, mostly attended by boys, maximum annual Provincial grant for school, 600. The total estimated expenditure in 1912 on these schools was 11,184, of which 4,528 came from the Provincial grant.

(2) Domestic Science, mostly attended by girls, maximum annual grant \$300 per school, estimated expenditure in 1912, \$8,979, of which \$4,905 was from Provincial grant.

The Government gives a pro-rata grant, maximum \$300, for Mechanic Science and Domestic Science teachers, having a certain number of pupils. In many cases this is the largest portion of the salary, and is a very large grant compared to that given to ordinary teachers, who receive only from \$60 to \$120 or \$150 in case of superior schools. The Provincial Government thus gives as much assistance to these three branches which relate to Industrial Training, as to any other part of the school work. THE TECHNICAL COLLEGE, THE UNIVERSITIES AND THE TEACHERS.

The Technical and Mining Schools are of still later origin than the Manual Training Schools. The Technical College, with its staff of 6 professors and other assistants, being affiliated with the various Universities in the provinces of Nova Scotia and New Brunswick, which have adopted the standards of admission and study, for the first and second years, has to deal only with the third and fourth years.

University co-operation is further stimulated by a new testing examination established by the Council of Public Instruction for University graduates as the scholarship basis of the highest class teacher's license, called the Academic.

With a view to avoiding the waste of High Schools overlapping the work of the numerous and unequal institutions enjoying University privileges, graduates of Universities which require a four years' course after matriculation from the Public Schools (fourth year of the High School) are eligible for this examination on 6 of the more essential University subjects. The passes in the University are accepted for other necessary subjects, such as psychology, philosophy and sociological and historical courses. As most of the Universities in Nova Scotia are under denominational control, and their views of history and philosophy might differ, the Department does not give examinations in those subjects.

Thus each University will be standardised, and required to keep to the same standard in order to be recognized. It is hoped that these graduates, who are becoming numerous, (the attendance at the Universities being over 1000) will man the High Schools of the Province, and educated men at the head of the County Academies, who have had the benefit of University, Technical College or Agricultural College training, will be able to plan courses for the Academies that will suit the necessities of the Province better than anything the Department has been able to arrange in the past.

The Department is moving to simplify the mechanics of education, throwing out from the courses anything that kept the teachers back, and laying stress on essentials, being guided to some extent as to what the people need by Dominion Government returns, showing the numbers of people engaged in various callings. Teachers are encouraged to prepare themselves to give practical instruction in Nature Study, leading up to an appreciation of the underlying principles of technical education of all kinds. The Collegiate Agricultural Course is to be used in training teachers for the Rural Science Diploma, and any High School is allowed to establish a commercial course with book-keeping, shorthand and other subjects, as is done in Halifax.

Additions are made to High School work in the form of technical schools in all the principal towns, doing such work as they need in coal mining centres, teaching coal mining and engineering, etc., and in towns where there is a large body of labor, which might not be benefited by special technical education, provision will be made for them.

## THE NORMAL COLLEGE.

The Normal College, situated in Truro, opened in 1855, as a Provincial Normal

School. Until 1893, it was simply one of the various institutions (High Schools, Academies and Colleges) which train for teachers' licenses, but since then the level of Normal Training has been raised, and candidates must attain scholarship standard in High School or elsewhere, the Normal College being a Professional Training School. Courses in Mechanic Science for males, and Domestic Science for females are compulsory.

## THE COLLEGE OF AGRICULTURE.

The College of Agriculture was opened in Truro in 1885 as the Provincial School of Agriculture in affiliation with the Provincial Normal School to develop the industrial side of the teachers' training. After its destruction by fire in 1898, the present College of Agriculture was opened in 1905, having absorbed the School of Agriculture started in Wolfville in 1893, and vastly extended its range of work, still retaining affiliation with the Normal College. Agricultural Education belongs to the Department of Agriculture, under the same Minister as the Department of Education. Summer Schools are subsidized and encouraged by the Government.

## THE SUMMER SCHOOLS OF SCIENCE.

The Summer School of Science for the Atlantic Provinces originated in 1887, and is held in a different place each year for three weeks during vacation, receiving a small grant from the Education Department. In 1910 about 500 teachers from the Maritime Provinces attended such schools voluntarily and mostly at their own expense. 250 teachers, many of them from Nova Scotia, attended the summer School of Science at Liverpool, nearly  $\frac{1}{4}$  of them taking Nature Study; while at Truro another 100 were attending the Rural Science School. The third Summer School was held under the direction of St. Francis Xavier College at Antigonish, one of the first University Colleges to secure this work.

Since 1908 the Rural Science School has been conducted at Truro, at the Agricultural College, for six weeks in summer under the joint administration of the Agricultural and Normal Colleges, with the object of developing a kind of instruction more suited to rural conditions, in which teachers can qualify during vacation. The Provincial Government controls the school, charges no fees, and pays the minimum travelling expenses of teachers to and from Truro.

## VARIOUS EDUCATIONAL AGENCIES.

Teachers' Institutes are held in different inspectoral divisions in alternate years, with the Provincial Educational Association which meets every two years.

The Nova Scotia Institute of Science and the Mining and Historical Societies receive grants from the Province and report annually to the Department.

Schools for the Deaf and Dumb and the Blind, also Reformatory and Industrial Schools for Incorrigibles, are located at Halifax, and receive educational aid.

191d-Vol. IV-2

The Victoria School of Art and Design at Halifax, was incorporated in 1888, has an endowment fund of about \$8,000, and receives a Provincial grant of \$800 and a city grant of \$500. Its policy is to encourage a taste for art in all its branches, and no one is refused admission to the class on the score of poverty. It devotes special attention to good taste in building, furniture, designs on book-covers, advertising, and scores of minor industries, the manufacturing and architectural classes having been taken over by the Technical College.

## SECTION 2: THE PUBLIC SCHOOL COURSE OF STUDY.

A Committee of 16, appointed in 1906 by the Provincial Educational Association, revised the Common School course and effected a close correlation between the Common and High Schools. In a very comprehensive report they ably discussed, among other subjects, the function of the public schools as elementary technical schools, and what school studies should be. The following is a summary of the report in so far as it bears directly upon the enquiry of this Commission:—

As education proceeds from and builds on the past experiences of the learner, and from those states of mind which are likely to arouse curiosity or awaken feeling, every lesson should seek to be a renewal and an increase of that connected store of experience which becomes knowledge, emotion, taste, will, in short, character and culture, which fit a child for good citizenship, create and foster aptitude for work and for intelligent use of leisure, and develop those features of character most readily caused by school life, such as loyalty to comrades and institutions, unselfishness, and an orderly and disciplined habit of mind.

Hence it follows that the value of any branch or lesson lies only partly in its direct intrinsic utility; over and above this should be the increased disposition in the pupil to act for himself and on his own initiative, not only in school problems, but in all matters where some relation to the thing taught suggests itself. For example, though a lesson on the life-history of the cabbage butterfly may have no direct value to the children of a fruit-growing district, yet when effectively taught it is fertile in suggestions of similar problems and study processes. The effective-ness of teaching can be largely measured by the intensity of the stimulus it gives to the study of related problems lying within the field in which lie the child's interest and natural activities.

In this sense the Common and High Schools should in large measure function as the elementary technical schools of the Province. Vocational training is capable of being made cultural to a certain extent, just as a vocation is practised not for itself alone, but in all its relations and implications—social, moral, domestic and sometimes esthetic and traditional. Preparation for vocation does not exclude direct and purposive efforts of a purely intellectual character; on the contrary, these must continue to form a considerable part of the school program, because the intellectual, social and spiritual qualities, they are specifically designed to nourish, will never cease to be regarded as the finest fruits of education.

What has been fundamentally lacking in Common and High School instruction

is the ability of the teacher to take, as the point of departure in any study, the concrete example, the personal experience of the pupil—that stimulus to the "apperceptive mass" which the environment always provides. For the ordinary mathematical problems of the smith, carpenter, builder, mason, etc., the Common School and lower grades of the High School ought to be and can be made the industrial and technical schools in the Province. They already profess to deal with a body of mathematics and science extensive enough to meet the requirements of these crafts; it remains only to pay due regard to mathematics, drawing and science as actually related to them.

We live in a new land in a world of great opportunities, and amid economic and social resources comparatively unexploited and unexplored. Our economic progress and our civilization depend largely on our capacity to recognize phenomena and deal with actual conditions and concrete realities.

The school, in seeking the cultivation of the pupils' character, practical efficiency and knowledge, should proceed through the pupils' activities, which spring from impulse or native interest; the school should carefully select from the realm of human affairs those subjects best fitted to awaken and maintain the child's interest and self-activity, and to contribute to its ideal development.

The subjects should preferably be chosen from the domain of the really useful, for the utility underlying the study contributes not a little to the power of awakening and maintaining interest. The test of a topic in the program of studies is whether that topic is calculated to reveal to the pupil some important aspect of his environment, and thereby stimulate desirable mental or emotional motor activity. If so, then the knowledge said to be imparted is not only useful, but disciplinary in the true sense.

The so-called "three R's" while invaluable as tools or instruments of education, are not in themselves educative. They represent merely the several skills or acquisitions that render true education possible of attainment. Though of supreme value for the ultimate purposes of life, they are in themselves empty of content and meaning. Hence the child-mind starves in schools where only the three R's are taught. Thus it is that the European peasant, who is compelled by law to learn to read, ceases to read once he leaves school. Thus, too, the Nova Scotian, drilled solely in the mechanics of reading, writing and ciphering, has too often shown himself resourceless in the presence of diminishing fertility of the soil, and changing industrial and economic conditions.

To compass the ends of true education, the school must provide an intellectual content drawn from the whole realm of the child's activities, and where possible from matters dealt with in other branches of school study from which the exercises in reading, writing and arithmetic are to be developed. Hence the program of studies must be inter-related, and indicate a unified educative process and a unified subject matter.

The occupations which the pupils are likely to pursue furnish subjects quite as educative as those subjects traditionally consecrated to education, besides making the pupils conversant with fundamental principles of commerce, agriculture and every grade of industries, thus ensuring their capacity for further study.

191d-Vol. IV-21

Illustrations and applications should spring also from present needs, interests and environment of pupils.

The course of study should fit the increasing capacity and developing interests of the successive grades of pupils. The aim should be to provide the pupil with abundant contacts with material things and with society, and to proceed from his own concrete experience to interpret the material, social and moral order in which he lives. It is not prudent for a course of study to comprise only what the average child can fully retain in memory throughout the school period, or even throughout the year. In short, the program of study should be such in content and treatment as to ensure not merely the instruction, but the education of the child in point of character, culture and efficiency.

## PUBLIC SCHOOL SUBSTITUTION COURSES IN MINING.

The Province of Nova Scotia derives a revenue from Coal Mining of about half a million dollars a year, hence it is to their interest to enlarge the industry as much as possible. In coal mining communities practically everybody either expects to be a coal miner or derives his or her income from coal mining. The number who try to get into the professions is very few.

The Department of Technical Education believe that by adding more utilitarian training to the Public Schools the same educational value could be given. It is not necessary for boys in grades 8 and 9 who do not intend to be coal miners to take drawing, mining science and mineralogy. The drawing taught, instead of being ornamental, is mechanical drawing on a very carefully graded course, beginning with actual objects like a nut or bolt, and continuing in increasing difficulty the actual objects most common to a coal mine. Thus at the same time as they are drawing they are illustrating geometry and giving it a practical aspect. In two years a boy taking this course would have a good knowledge of mechanical drawing, could read blue prints, and in case a machine broke down could make an emergency sketch for a blacksmith or machine shop to have repairs made. The boys are taught practical chemistry as applied to the coal mine gases found in the mine, coal mine exudation, combustion of coal, etc., emphasizing what would be of practical value and teaching them the economic laws that underlie the subject. Instead of being given botany by picking flowers to pieces they are given mineralogy and zoology, and are told the story of the formation of coal, how it is confined practically to those rocks that illustrate the life then existing, and they learn general geological history. Throughout the whole of the instruction the motive relates to the coal mining industry and the people connected with it.

The evening class instructors were sent into the Public Day Schools to teach the above courses, the object being to make the education of utilitarian value to the boy, and also to give him some practical subjects that would incline him to stay longer in the school. Records of all men attending the Coal Mining Evening Schools show that a large percentage left school at the fourth, fifth and sixth grades, which means that their education was very deficient.

The number of boys who took these mining science courses in the Public

Schools under the direction of the coal mining instructors during 1911-12 and did excellent work was 123, as follows:—Springhill 43, Westville 25, Glace Bay 41, Sydney Mines 14.

This voluntary work is taken at the time boys would be taking work in ordinary classes taught by the regular teacher, but the special teacher comes in and the regular teacher takes the other subjects for which this is a substitute.

These classes are growing in favor with both pupils and parents, and serve to make the work in the upper grades of the Common Schools more interesting and of more practical value in preparing for industry those boys who leave the Public School system at the age of 14 or 15.

The boys show much more interest in mechanical drawing of common parts of colliery machinery than they did in the free-hand drawing of the regular Public School course. Elementary mechanics seems more vital to them than botany. The chemistry of colliery explosions and of combustion appeals to them to a far greater degree than the dry, formal statements of the atomic theory, the laws of chemical combination, etc.

This mining science course is keeping the boy in school for a greater length of time than formerly, because he feels that the course in the Public School contains some instruction which aims to prepare him somewhat for his life struggle in the industry which is the greatest single centre of interest in a mining town.

There is no doubt of the boys' interest in the mining science classes, because in some cases they have come back regularly on Saturday mornings to do this work when room could not be found for it in the weekly program of the school. In one case where there was not accommodation for all the boys who applied to enter the mining science classes in a certain coal mining town, some of the boys who could not be admitted went home crying.

## SECTION 3: NORMAL SCHOOL TRAINING.

About half of the Teachers of Nova Scotia are trained in the Normal School. Not all are required to be trained, but the public is almost ready for much stronger legislation making teacher-training compulsory except perhaps in the lowest grade. In 1912 there were 293 students in the school, the highest in its history. For the lower rank of diploma the course is only four months; for the higher or senior class it is a full year. One great difficulty in the preparation of teachers is to obtain a large measure of practice.

Dr Soloan, Principal, believes that the Common School is the foundation of all industrial and agricultural success, and can and should accomplish all that is necessary up to grade 10 for the rank and file of workers. It should be the people's technical school, serving the great mass of workers of the nation in horticulture, elementary agriculture, drafting and designing leading up to carpenter work, masonry, smithing, etc. The reason the Common School does not do that, in his opinion, is that it cannot provide teachers, cannot pay them, cannot make the position attractive enough, pecuniarily and otherwise; but he looks hopefully for

the period within his own life time when the Common School will be the Industrial School.

Pupils go from the Common School to the Agricultural College well acquainted with the principles of physics, chemistry, horticulture, nature study and geology, and are thus ready from the outset to appropriate the instruction given there.

The Common School courses enjoy an independence which the High School courses do not, for the Colleges do not dictate terms to them, and they work out their own salvation in their own sphere of usefulness. Dr. Soloan states that the whole trend of the improved courses for Common Schools on which the Provincial Educational Association's Committee is working with the Superintendent of Education will be to overcome the tendency to proceed from abstractions to abstractions, and to make the instructions proceed from the concrete as far as possible, not only in mathematics and science but in the pupils' own language. The people are beginning to think in a more technical and practical way, and are desirous of having the course of studies improved in that way. This would be a very good preparation for any more specialized industrial training. The Education Department, in co-operation with the Technical College, now allows the substitution in Grades 7 and 8 of the elements of geology and mining, for other studies in mining communities.

To bring the High School courses into closest co-ordination with the pupils' activities involves expense, and he did not know where Nova Scotia and her sister Provinces were to get money for this. The High School course of study is decidedly in the interest of the well-to-do classes whose sons were to be clergymen, etc., and people who wish their sons and daughters sent to college want that program. The algebra and the abstractions of Euclid specified by the colleges do not serve much purpose except for those who are going to pursue mathematical studies at college. Dr. Soloan's suggestion would be to add to the High School course subjects such as agriculture, mechanic science and modern geometry; but the difficulty is to get teachers who can sufficiently demonstrate such programs. Owing to the small attractions offered to teachers, the schools are largely dependent on the services of women. The co-operation between High Schools and the activities of the community in general should be greater, Dr. Soloan thought, and the courses should not be designed too exclusively for college matriculation.

There should be some manual training, domestic science, and commercial study, and a program specially designed for girls. The present High School courses are not well designed for girls except such as are going to be "scholars," and this forcing may become a menace to the health of young women at that age; yet it is pretty hard to check false ambitions in parents and children, and people have a false respect for learning, regardless whether it bears on life or not. Nova Scotia has inherited the beautiful traditions of Scotland and respects learning, but Dr. Soloan thought that respect need not be less because the learning is of practical utility.

The course he had outlined for the High School would be far more cultural than the present, for to Dr. Soloan's mind the cultured man is the one who can

deal with many things in a proper and fitting way, and knows how to conduct himself in life and make a success of the business entrusted to him; and he had no such distinction in mind as to call a few language studies cultural and the rest non-cultural, for there were manifest examples of persons who had acquired a great deal of learning and yet remained boors. The modifications he had suggested would make men more cultured because more stress would be laid upon the interpretation not only of material, but of the moral, civic and social relations of our people in our time.

Agriculture, Dr. Soloan thinks, should be a subject of special care in Common and High Schools. The Provincial Government is spending a few dollars more than usual in bringing teachers to Truro for a course at the affiliated Agricultural College and Normal College, the Government's object being an economic one-the improvement of Agriculture. This plan costs more money, but not enough is being spent on it. After a lengthy course of training by Science Instructors, which is pretty expensive to those teachers, they receive a subsidy of a few dollars to indemnify them for such expense. Although there are moral satisfactions in being able to do better work, he thought there should be money subsidies commensurate with other things; otherwise the teachers retire into the social background and cannot do as effective work as they should. He hopes that the Province would subsidise school gardens by some thousands of dollars a year, so as to make it worth while to rural school teachers to teach elementary agriculture. Of course that money should be charged against the Agricultural Department and not that of Education. He believed the Federal Treasury should be drawn on for outlays of this sort, as such work done in the schools he considered technical or industrial education, the cost of which should be largely met by Federal revenues, thus leaving the Provincial revenue free for customary appropriations for general education.

The Maritime Provinces, having no school lands, have not, in Dr. Soloan's opinion, been so generously treated as those in the West, though it might have been arranged that some of the lands in the newly organized Western Provinces would be set aside for the benefit of education in the older provinces, just as the United States Federal Government set aside land in newly organized States for the benefit of Colleges of Agriculture and Mechanic Arts in the older States. It may be too late now to make that principle operative; but he believed the Dominion Treasury has means to do all this work without entailing any great burden upon it, and he hoped that the Provincial revenues would not be so largely drawn upon for technical education as they are in danger of being, for if the drain is so great as to impair the efficiency of the Common and High Schools, nothing but disaster in education is ahead. Federal aid, he argued, need not involve Federal control of education; but the Dominion Government might specify the purposes for which subsidies or appropriations must be used, and they might have a Bureau of Education, as the United States has, part of whose duty would be to foresee and check the expenditure as made with the several Provinces.

Dr. Soloan believed that Nova Scotia was ready to develop the agricultural side to the point suggested. It would not involve a very large number of teachers, as the teaching of elementary agriculture in rural schools does not make a large draft upon time, the school day in the country being six hours. Teachers who are

to do that work should be competent to do it so effectively as to draw a subsidy, and the Nova Scotia teachers are anxious to do it. In those communities in which industries are situated, a substitute should be provided for agriculture. Every teacher would have to be Normal-trained before the plan could be carried out completely.

In his report for 1912, Dr. Soloan enlarges on the need for more practical work in schools preparatory to the Normal training.

He remarks on the weak hold the normal student body has on fundamental principles, whether the subject be language, literature, mathematics, science or drawing. While they show proof of diligence and of ambition to improve, too often it is the blind diligence of the mechanical memorizer, not of the investigator, and weak ambition to excel in amassing information rather than in using it.

At regular intervals these students, while high school pupils, were subjected to examination of one and only one kind—examination in the statement of facts, principles and theories. But the written examination cannot very well probe the capacity of the pupil to deal with real things; to manipulate, to dimension, to construct; to observe, compare and classify phenomena and materials. The power to do these things must be left to the honesty and intelligence of the teacher to develop in his pupils.

## Dr. Soloan proceeds:--

It is unlikely, however, that this power to acquire knowledge for oneself from first-hand sources, to classify and to reduce phenomena to principle, to test and to verify statements of the textbook, shall ever be developed in a satisfactory measure until the public school makes the study of natural phenomena—natural and physical science—not merely imperative as a subject for annual written examinations but operative as a basis for method in all studies susceptible of what may figuratively be called "laboratory" treatment. Grammar, geography, nature-study, civics and, to a certain extent, history, all lend themselves to this treatment—the inductive method, the method of "trial and error," or whatever one may choose to call it.

Confidence, a firm grasp of principles and a comprehension of the nature of principles, will hardly come by mere good-luck to pupils whose mental activities are confined to conning literary gens, memorizing half-meaningless dates and place-names, ciphering and spelling, and, later, committing euclidean and algebraic abstractions and the accidence and rules of foreign languages. Such reasoning as is called for in these tasks is entirely inferential or deductive. Human progress has been made continually possible in modern times not thru deductive reasoning, but thru the process of inductive reasoning—the process of the natural and physical sciences. "Method" in teaching is an utterly incomprehensible and meaningless term to one unfamiliar with the inductive progress.

Recent changes in the syllabi of high school examinations are responsible for the admission to the Normal College of candidates for license lacking not only familiarity with processes of experiment, comparison and classification, but with the theoretical knowledge and even the simple technical terms of plant study, chemistry and nature-phenomena.

Immediately botany, chemistry, and physics were made optional instead of imperative, these branches began to be dropped in high schools and in villages and rural schools where candidates were being prepared for the provincial high school examinations. This is not remarkable. The natural sciences, to be effectively taught, demand from teacher and pupil efforts more varied and original than do the purely text-book subjects. Material preparation must be made for each day's lesson. Selective judgment must be exercised in the choice of topics and in determining of perspectives of importance and non-importance. So, the sciences are called "hard" subjects, and are dropped.

In determining of perspectives of importance and an array of the second second

Nor is it a satisfactory prospect for the friends of elementary training for the industrial life of the artisan, the factory hand, the miner; or, indeed, for any of those classes of society who are today in the greatest need of a diffusion among them of general intelligence, resourcefulness, and the power of sustained thinking, in order to hold their own against economic and social forces that threaten their very freedom.

In fact, where elementary science, applied mathematics, and constructive exercises are omitted from the daily round of school life, there is not much left except abstractions and merely formal facilities such as penmanship and spelling. There is little intellectual content. In such schools it is usually found that even the rules of English language are learned for recitation, not for use, and that what passes for the study of literature is a study of language-forms, not of content. Only thru a first-hand study of things, people, conditions, can a body of thought and experiences be obtained which will stimulate the learner to practical effort in clothing the substance of his thought with language accurate and appropriate and to purposeful effort at self-expression not only in language but in draftsmanship, in constructive tasks, and in general conduct.

A new regulation requires that applicants who have not a satisfactory percentage in the sciences of the several school grades must pass an entrance examination in these branches.

## SECTION 4: THE SUMMER SCHOOL OF SCIENCE.

This school was established 25 years ago to afford Maritime Province teachers and others the opportunity of combining study with Summer holiday outing, which combines work and recreation in an attractive way for three weeks. Mornings are given to lectures and laboratory work, afternoons to field work and excursions, and evenings to lectures and discussions, to which the public are invited. The true methods of teaching are exemplified by the best teachers of the Atlantic Provinces, while the excursions, public lectures, etc., afford teachers rare opportunities for acquaintance with the resources of those Provinces, as well as with prominent men and women. The companionship of congenial minds and a large amount of out-door exercise in collecting plants, minerals, shells, etc., combine to make it the most recreative of holiday trips and at the same time one of the least expensive. It increases the usefulness of teachers by enabling them to direct attention to those scientific subjects which to a large extent lie at the foundation of the material prosperity of the Atlantic Provinces of Canada.

Three classes of subjects are taught:—(1)Physical Sciences, including physical chemistry, zoology and mineralogy. (2) Biology sciences, including botany, physiology, geology, and entomology. (3) Miscellaneous, including literature, drawing, manual training, music, etc. A special course in physical culture and military drill is also given by instructors furnished by the Department of Militia and Defence from the garrison at Halifax.

For examination purposes, the work in each nature science subject is divided into three sections of equal value (a) Prescribed text books and lectures; (b) Practical and original work such as dissecting, experimenting, etc. in the laboratory, (c) Collections, mountings, apparatus. The purpose of this arrangement is to lay stress on real knowledge of a practical character, rather than upon that derived chiefly from text books. The lectures and demonstrations are intended especially to elucidate the facts and principles more or less obscure and to exhibit best methods of teaching elementary science. All laboratory work is done with simplest equipments, such as are within reach of common schools of the Maritime Provinces. The Normal School at Truro and Mount Allison University at Sackville give students credit for successful work done at this Summer School. Public spirit and friends of the school have provided for 4 scholarships of \$40 each and 10 of \$10 each, open to all Provincial Students of the first year, and four advanced scholarships of \$20 each, open for competition only to those who were candidates for scholarships the previous year.

Registration fee, which entitles the student to attend all except the advanced classes, is \$2.50; each class in the advanced course is \$2 additional.

The Nova Scotia Government grants the school \$200 when it meets in that Province and \$100 when it goes outside; New Brunswick does the same. Prince Edward Island gives half these amounts. About 200 teachers attend, the cost to each being about \$30; but as yet they do not receive any more salary or any Government recognition after taking this training. In the opinion of leaders of this movement teachers should receive at least what it costs them to attend, and in such case this and other summer schools would get all those teachers who are industrious and ambitious; all of whom return much better qualified for teaching, not only because of ideas obtained through intercourse and practical work, but by seeing examples of teaching in classes. The teacher studying special subjects at the Summer School becomes more alert mentally and is able to make school work more interesting by calling the pupils' attention to things around their homes. A four-week session would be better than three, and it might be attempted if teachers did not have to pay their own expenses.

Very few teachers return for a second year, but provision is made for those who do. The majority of teachers present at the evening session which was held while our Commission was in Liverpool, N. S., voted that they would take a second year with an enlargement of the work they were then doing, if they could get it without cost except for board.

## SECTION 5: THE NOVA SCOTIA UNIVERSITIES.

The Universities which are affiliated with the Provincial Technical College at Halifax are King's at Windsor, Dalhousie at Halifax, Acadia at Wolfville, and St. Francis Xavier at Antigonish.

## KING'S COLLEGE.

King's is under Church of England management. First year students of King's College make use of the Windsor Foundries and Machine Company's shop. In the second year they take physics with laboratory work, machine design shop work, surveying and applied mechanics. The engineering course was established in 1871, the science course about 1854. This being a residential college, parents prefer sending boys there for the first two years, rather than to Halifax. The shop work with the foundry helps the boys.

A new department of Domestic Science, including cooking (simple and advanced,) hygiene, household demonstration, home nursing, sewing, laundry work and other household duties, with lectures and other theoretical instruction

was opened in 1910 for pupils who have gone through the school course in the Church School for Girls (established in 1890 on the initiative of Alumni of King's College), or who have attained a certain age and standard of proficiency. Suitable accommodation has been provided and a competent mistress engaged for the Department.

## DALHOUSIE UNIVERSITY.

This University, which is undenominational, carries on extension work, evening and special classes for men who are not going into professions; and lectures by Dr. Lawson, Professor of Chemistry, are attended by a large number of leading men from cotton and sugar factories, breweries, etc.

The Provincial Government was asked to establish a Department of Technical Education, but as they did not see their way to do so, Dalhousie in 1902 appealed to the community and received sufficient money to put the experiment fairly under way. It added three or four men to its staff in chemistry and physics, and secured professors of engineering, of geology, and of mining and metallurgy. The success of the enterprise amazed everyone, the first year over 20 freshmen taking the new course, and additions were made in the second and third years, so that soon there were 70 men in the University looking forward to this work.

From the first the leaders of Trade Unions helped in the matter of technical education, and cordially reciprocated every effort Dalhousie made for them. Dr. Forrest said that while some of these men have high ideals of efficiency, the ordinary uneducated workman does not think much about it.

The Mining Association became interested and joined the University in an appeal to the Government, and the plan having been shewn to be practical, it undertook the work. The Government found that a large part of the money that was going out of the country to correspondence schools was wasted, as not one student in ten completed the course on account of inability to study without a teacher. The Technical College was started with Prof. Sexton at its head, and arrangements were made with the different Colleges for affiliation. The Technical College simply inherited a work Dalhousie had experimented upon and carried to that point, and took over the 3rd and 4th year University work which had formerly been done by McGill University (Montreal) and Mount Allison (Sackville, N.B.). The affiliated Universities are now expending their strength in doing the more scientific part of the work, so to speak, leaving the technical part for the Technical College.

When Dalhousie representatives went to mining and manufacturing districts, large numbers of men such as underground and overground managers who did not expect to take the University course or graduate in engineering, said that the Technical College could do nothing for them; hence a system of subsidiary schools was planned and started in Stellarton, New Glasgow, Glace Bay, Sydney, and wherever a number of men could be got together, first in the summer months and then in the winter evenings.

Nothing has done more, in Dr. Forrest's view, to stir up public interest in education than this plan of co-operation. There is a new spirit stirring among the one or two hundred young fellows who assemble in the Technical College. These hard-working fellows who used to think that education was not intended for them now spend night after night working most diligently. The Technical College has been an immense success, reaching a class of people the Universities never touched, and inculcating a new idea, that of efficiency of work and increase of production, hence doing a great deal to advance the interests not only of the working classes, but of the industries of the community.

The Chairman of the Board of Governors (Mr. Campbell) thought it important not only to train men to produce in the most economical and scientific manner, but also to handle, sell and find a market for the product, which he considered as important as production. He said that Germany had advanced rapidly as a manufacturing country because she had trained men for selling, giving them modern languages, commercial law, knowledge of their product, and teaching them how to find the best markets.

Dalhousie University, though it has given up what might be called technical science, still retains a regular science course which is pure science rather than applied and advanced, and honor courses in pure and applied mathematics. Under the 1851 exhibition scholarship, Dalhousie Science Dept. gave a large number of scientists to both the United States and the Old World, all of whom held their own. A few students come for post-graduate work; but the University has not satisfactory facilities for such work.

## ACADIA UNIVERSITY.

This institution was founded by the Baptist Educational Society in 1838 and incorporated in 1840.

The Carnegie Science Hall contains laboratories for chemistry, physics, geology and biology. Some industrial work is carried on in the University. In the Acadia Ladies' Seminary an Arts and Craft course is conducted. Physics bearing on housekeeping is taught in the Domestic Science Laboratory. A special Manual Training Hall is utilized in connection with Horton Collegiate Academy (boys), which has an iron and woodworking equipment. Manual Training is included in the collegiate course as an option, and may be taken as a separate course covering three years, or with other courses. In the junior year there are progressive woodworking exercises, freehand and mathematical drawing; in the middle year bench work and lathe work added, and in the senior year iron work, blue printing, lettering, etc. There is sufficient equipment, the machinery being driven by a 5 H.P. motor.

The movement towards establishing engineering courses at Acadia started in 1904, when affiliation was arranged with McGill with respect to work in various departments of applied science, by which students who had completed a prescribed course at Acadia were admitted without examination to the third year in the various departments of engineering in McGill.

In 1906 Acadia co-operated with the other Provincial Colleges in urging the establishment of the Provincial Technical College, and later became affiliated with it. While the course prescribed for admission to the latter differs somewhat from the McGill course, Acadia is meeting the requirements in every

particular. This partial engineering course at Acadia requires 30 or 35 hours per week of recitation and laboratory work, and although students who enter well prepared have no difficulty in completing the work in two years, many prefer to spend three years at the course. At the beginning of the second year, engineering men meet a month before the regular College opening to do their field work and surveying: this deducts five hours from the regular work of the second year, and thus makes the course a little easier. Any student of Acadia pursuing the regular Bachelor of Science course, which extends over four years, may take the special subjects of the engineering course either as electives or as extra subjects, and then qualify for the certificate of the course in addition to the regular degree. The instruction in engineering subjects has been recently grouped into a single department known as the Department of Applied Science, the faculty numbering nine, three of whom teach exclusively engineering subjects. The new Carnegie Science building has been found admirably adapted for the work in chemistry and physics, and such subjects of the engineering courses are taught there.

## ST. FRANCIS XAVIER.

This (Roman Catholic) University received its charter in 1866, having been begun in 1853. Some students take more advanced courses in mathematics and other branches of pure science than are required in the two years' engineering course for the Provincial Technical College.

This University was one of the first to take practical steps towards technical education, a deputation having waited on the Provincial Government over ten years ago, seeking assistance towards equipment and facilities. A sufficient equipment was then provided for the first two years' course, and work in that direction has been done ever since. A handsome Science Building, the gift of an anonymous friend of the College, has recently been erected, the equipment being very complete. The Rector, Rev. Dr. McPherson, pointed out that the greater cost of technical education over that of an ordinary Arts course in respect to equipment, accommodation and staff, makes it an embarrassment for a University to carry on technical work without ample resources, and most of the students here are boys who cannot afford to pay very much.

A student from this University has been in Munich studying biology, another in John Hopkins University studying physics and mathematics, and a third, who studied at Truro Agricultural College, is going to Guelph to finish in agriculture—these men having gone abroad for the express purpose of returning to teach in the University, whose purpose is to develop on a scientific line which may serve as a source of inspiration to the people, and to give courses of lectures in connection with experimental work as soon as means and staff permit. The University cannot afford a course in agriculture, but the desire is to develop in that direction.

The physics laboratory was completed in 1900, and is equipped for practical work in science and engineering. The faculty of Applied Science has a staff of ten instructors.

This University conducts a Summer School-the first to be started in the

Province, which runs from about the middle of July for about five weeks. The course includes botany, chemistry and geology, physics, mathematics, stenography and typewriting, and physical culture. Certificates are given by the Council of Public Instruction and recognized by the Education Departments of the Provinces. Graduates from the Summer School can put much of the work into their schools, and could teach from a school garden if they knew the work sufficiently to carry it out well.

Some of the students in physics and chemistry are experienced miners, a few have been in the steel works, and some worked during the vacations at their trade as miners. The practical experience of difficulties in smelting is of great assistance to such men. The training here would enable the mining officials to act as teacher in the evening class, because they learn both the principles and their right application, and such men would add to the safety of mining, because their training in physics and chemistry would make them careful in observation, which is essential to success in experimenting.

# CHAPTER III: PROVISIONS FOR TECHNICAL INSTRUCTION.

## SECTION 1: THE NOVA SCOTIA TECHNICAL COLLEGE.

In 1906 the Nova Scotia legislature passed laws providing for a system of technical education. This was two months before a system was established in Massachusetts by that legislature, hence Nova Scotia may be said to be the pioneer in America of a comprehensive system supported by taxation. The Nova Scotia system attempted to provide for all kinds of technology, applied science and industrial instruction that the Province needed, (except agriculture, which was already covered in the Agricultural College at Truro). It provided (1) for a technical college where youths could be trained for the engineering profession; (2) for continuance of the coal mining and engineering schools already in existence in the Department of Public Works and Improvements; (3) for the establishment of local technical schools in industrial communities.

The establishment of a Technical College involved an interesting educational problem, which Prof. Sexton outlined. For many years a number of colleges of high reputation were maintained for University training, four in Nova Scotia (Acadia, Dalhousie, King's and St. Francis Xavier) and one just over the border in New Brunswick, at Sackville (Mount Allison), which drew largely from Nova Scotia for its students. These colleges were all healthy rivals, and had not cooperated to hardly any extent except to maintain a high standard of graduation for degrees. One of them had established full four-year courses in Civil and Mining Engineering, and had graduated some students from those departments; some of the others carried on the first two years' work in Engineering and were affiliated with McGill University, Montreal. Through the efforts of the Nova Scotia Mining Society all representatives of the different colleges and collegiates were brought together in Halifax, and the Mining Society and Board of Trade attempted to get them to form some working agreement. It was surprising how quickly they sank local prejudices and interests and formed a working agreement. It took only one evening, and next day this agreement was presented to the Government-a high tribute to Nova Scotia for her zeal and high ideals in education.

The basis of the working agreement was that the college which had already carried the four year course in Engineering was willing to relinquish the last two years, while colleges affiliated with McGill were willing to affiliate with the Provincial Technical College if established and maintained on a high plane.

The terms of the affiliation arranged with the separate Universities called for a uniform course in engineering, covering the first two years, the Technical College giving the last two years in four branches of engineering—civil, electrical, mechanical and mining. A standardised course for the first two years' course was

worked out, adopted by the Board of Governors of the Technical College (consisting of the faculty of the college, and one representative from each of the affiliated colleges), and ratified by the Council of Public Instruction, as approaching nearest to the ideal which could be attained by all the Universities.

This standardised course is as follows:----

#### COURSES IN ENGINEERING. FIRST YEAR.

1.	MATHEMATICS (First and Second Years):	
	1. Algebra—Higher Algebra, including graphs	72 hours
	2. Trigonometry—As in Murray's Plane Trigonometry	18 hours
	3. Solid Geometry	24 hours
	4. Analytical Geometry	60 hours
	5. Calculus—Differential and Integral	90 hours
2.	CHEMISTRY (First Year):	
	1. General Chemistry—Lectures	72 hours
	2. General Chemistry—Laboratory	90 hours
3.	English	72 hours
4.	FRENCH OR GERMAN-One-third of time to be devoted to Technical Literature	72 hours
5.	DRAWING—Mechanical and Freehand	192 hours
6.	Workshop	144 hours

#### SECOND YEAR.

2.	PHYSICS-Including Mechanics, Electricity, Light and Sound:		
	1. Lectures and Recitations	96 hours	
	2. Laboratory	72 hours	
3.	CHEMISTRY—Qualitative Analysis:		
	1. Lectures	24 hours	
	2. Laboratory	96 hours	
4.	Surveying:		
	1. Lectures	24 hours	
	2. Field and Laboratory Work.	48 hours	
	3. Engineering Field-work (Camp) for three weeks of eight hours per day in		
_	First and Second Years	144 hours	
5.	SHOP WORK.	96 hours	
6.	ENGLISH—Literature and Composition	48 hours	
7.	Either $(a)$ , $(b)$ , or $(c)$ , in addition, according to the course:		
	(a) For CIVIL ENGINEERING:		
	1. Descriptive Geometry—Lectures, Recitation and Drawing	72 hours	
	2. Geology—Lectures	48 hours	
	3. Geology—Laboratory Work and Field Excursion	48 hours	
	(b) For MINING ENGINEERING:		
	1. $Geology$ —General Geology as in (a)	96 hours	
	2. Mineralogy—Recitation and Laboratory	72 hours	
	(c) For Mechanical and Electrical Engineering:		
	1. Descriptive Geometry—Lectures, Recitation and Drawing	72 hours	
	2. Machine Drawing and Design—Drawing	72 hours	

## COURSES IN THE TECHNICAL COLLEGE.

The last two years are sub-divided into the separate individual courses mentioned above. The Universities carry on the first two years' course with practically no addition to their staff or equipment, and this two years' course admits to the Technical College on certificate, not on any examination.

The students are graduated from the Technical College, which the Government supplies equipment and staff, and the affiliated colleges are thus relieved of the burden of an expensive equipment for professional work. Thus there is an avoidance of unnecessary competition and duplication of unnecessary plants and a wise economy of resources and teaching power.

1670

The different departments of instruction in the Civil, Electrical and Mining Engineering are for the most part separate, each branch receiving its own special professional teaching, though there are certain fundamental courses common to all, such as applied mechanics and thermo-dynamics. The Mechanical and Electrical courses are identical during the whole of the junior year, but are separated in the senior year. As in the two years' course, a demand is made upon the student's time and effort, due to the high standard of graduation aimed at-as high as that attained in leading American Engineering Colleges. The obstacles which have to be overcome in attaining this standard are the three college terms in Nova Scotia, and the lower requirements of matriculation. The school year of the Technical College has been made of the same length as that in the U.S.-30 weeks of actual instruction -and the requirements for admission to the first two years' engineering course in the affiliated Universities are somewhat more difficult, especially in mathematics, than the corresponding admission to an Arts or Science course. It is hoped and expected that all the colleges will unite in the near future in raising their standard of entrance.

The work of instruction consists of lectures, recitations, laboratory and drafting. The recitation method of class work is adhered to wherever the subjects admit, the attempt being made to avoid general lecture courses as far as possible.

Daily problem work to be handed in, and work of the same nature on the black-board are carried on to the utmost. The laboratory testing is of as practical a nature as possible; but experiments have in view the illustration of scientific principles rather than carrying through the commercial routine list. Excursions are made to engineering enterprises, and written reports are required of practical experience gained by students in the civil engineering summer camp and the summer course in practical mining for mining engineers, as well as in other summer engagements.

## AIM OF THE COURSE AND THE COLLEGE.

The general aim of the course is to turn out a graduate thoroughly grounded in the mathematic and scientific principles of a branch of engineering, together with a grasp of the principal application of those principles and the limitations of actual practice.

The aim of the College is distinctly not to graduate engineers, the Faculty of the College believing that an engineer cannot be made from a High School graduate in four years, but is only evolved by a number of years' civil apprenticeship in actual practice. The students must be firmly grounded in higher mathematics and general theories employed in College as a basis of civil branches of engineering, because in real life the engineer is usually too busy to acquire anything but a knowledge in the development of the best practice in his chosen branch of the engineering profession. Such men as the College does graduate may not rise to the eminence in the short time that is reached by men from other Colleges where the attempt is made to lay the main stress upon engineering practice rather than theory; but it is firmly believed that the man who is well grounded theoretically will on the

191d-Vol. IV-3

average ultimately climb higher, and be better able to follow the developments of his particular branch. Yet the College does not intend to graduate blind impractical theorists; hence a large amount of practical laboratory work and a great many practical problems are introduced into each course so as to show the student the general practical applications of theory so that he may make the theory a part of his actual working knowledge.

## DEGREE, SCHOLARSHIPS, ETC.

Students in civil and mining engineering are required to take practical work in surveying in a summer camp conducted under canvas in a selected section where the topography admits of a variety of problems in surveying, including railway location, hydrographic surveying, correct triangulation and geodesy, etc., At the camp in 1909 attention was given almost exclusively to railway work, the proposition being to find a new location for the Halifax and South Western Railway, cutting out some sharp curves and heavy grades. The students were divided into two forces and two entirely different and independent lines were run, the positions of each party being shifted every day or two so that each student might become familiar with different phases of work. At the start the terminal points were fixed, then the students made a reconnaissance, followed this with a preliminary survey, then a topographic survey with the preliminary line as a framework, then an office location at the side of the plot, followed by an actual location in the field, after which levels were run and the line cross-sectioned. Hydrographic surveys were made in the vicinity of the points of crossing of all streams and inlets. The result of this work was that the line run by the students, though costing much more per mile to construct, would have a very low maintenance and operation cost as compared with the existing line as regards actual running, besides providing greater safety, and permitting higher speeds, thus making a cheaper and better proposition in the long run for a road with fair traffic.

A degree of Bachelor of Science is given to students who satisfactorily acquire the requisite professional knowledge in the regular courses of civil, mining, or mechanical engineering. Special students are permitted to take courses in any separate class or classes, as determined by the College, at \$12 per year per course. The fee for any regular department of engineering is \$75.

Free scholarships of a value of \$75 are given, one for each of the 8 counties of Nova Scotia, except the Counties of Halifax and Cape Breton, for each of which there are two. These scholarships are awarded on the basis of need and merit after the results of the mid-year examination. Applicants must have been bona-fide residents for three years in the County. Short courses in each department for three months in the Winter are planned for men employed at railroad construction, land surveying, bridge building, mining superintendence, and firemen in charge of power plants at mines. These courses are arranged to give the individual what he needs in as concise a form as possible, and not devised to lead to any academic degree.

The staff of the College is small, but the utmost care has been taken in selecting men of practical experience combined with teaching ability, so that the quality of instruction should be of the highest.

The College can accommodate 100 students without any additional staff or expense and it is expected that this accommodation will provide for all demands in this direction for a number of years.

## THE MURRAY LABORATORY OF MINING ENGINEERING.

Since the visit of our Commission to the College in 1910, the Murray Laboratory of Mining Engineering and Metallurgy has been constructed and equipped for the use of the Mining Engineering students, with a view to testing in commercial quantities any ores or coals of N.S. in order to establish successfully commercial treatments of the same. This laboratory is in the rear of the main College, and in keeping with its simple classic design, the whole building being a good example of modern slow-burning construction. Most of the work in connection with design and equipment was carried out by the staff and students of the Mining Engineering Department, the steel roof trusses being designed by the students of the Civil Engineering Department.

Already this laboratory has been of practical use to the mining industry. A sample of copper ore from a new district was sent to the College and tested, and the owners were advised as to the possibility of recovering the value from it by means of modern concentration processes.

A coal company is planning to have a series of coal washing tests carried out in the laboratory, with a view of saving some of the fuel value in a by-product from its collieries.

A company engaged in the mining and preparation of barytes received assistance in solving the problem of the separation of the barytes from the waste rock with which it is associated. This aid was acknowledged by the company as being of much value.

It is expected that the Technical College, with the aid of this laboratory, can assist the mining industry of the Province by helping to solve some of the problems that exist at present in the economical exploitation of its mineral resources.

The College has carried on some industrial research work, having taken a recently discovered mineral ore—"Shalite of tungsten"—and evolved a process of separating it from worthless material, under the supervision of the Director with the help of some students.

## TRADE SCHOOL FOR GARMENT WORKERS.

A departure was made from the policy of opening evening classes of the general continuation-school type, when a special committee from the Halifax Merchant Tailors' and Cutters' Association requested the Department of Technical Education to establish a special class in garment making. They stated that with the improvement each year in quality of ready-made clothes, the competition with custom-made was growing constantly keener, that custom tailoring was also constantly improving, and that if they wished to maintain their position, they must, as an economic necessity, do something to improve the quality of their

191d-Vol. IV-31

product. They also wished to take steps to secure the highest development of the art and science of tailoring. The fact that any establishment had a most competent cutter did not guarantee the quality of the product, because the quality of so many other hands and minds entered into the making of the garment.

At present the foremen and others in the shop are too much concerned with production to give their time in teaching apprentices anything more than is absolutely necessary, so the less skilled workers have really no chance to learn the whole trade, and learn only one small part of it by making costly mistakes and by dint of doing the same small thing over and over again day after day, with the danger that if they become proficient in any speciality they will never be allowed to do anything else. Hence the demand for some place outside the shop where they may be taught the whole trade in the quickest and most scientific manner.

## CO-OPERATION FROM MERCHANTS AND OTHERS.

A Committee having been formed giving representation to employers, to the trades union, and to the educational authorities, a Trade School was started, an instructor being brought from New York who had had adequate and varied training in this business, and who had been accustomed to high wages. He was given employment at finishing coats for other tailors, and this, together with his fee for the evening instruction, made a very good wage. The Merchant Tailors' and Cutters' Association promised hearty co-operation, a manufacturing clothier agreed to provide material and dispose of the product, and the Department furnished a basement room in the Technical College with the manufacturing type of sewing machine, press, gas and electric irons, and tables on which to lay out and make the work.

The purpose of the course, which was to cover two years of 50 evenings each, was to teach apprentices already employed in tailoring establishments the best modern method of high-class garment making.

Instruction began with the simplest operation of basting, and led up to the most skilled operations of finishing frock coats and dress suits. Much emphasis was laid upon basting, which when properly done as the garment progresses, secures the form, style and effect desired, though it is believed this work is overlooked to a great extent in the work-shop, much time and patience being required to teach it. A great deal of pains were taken in explaining the reason for all the minutiae in the art of tailoring, so that the apprentice should note the "why" of things and not perform his task blindly.

## SECTION 2: SECONDARY TECHNICAL SCHOOLS.

Some years ago Dalhousie and King's Universities held separate and joint evening schools in Sydney of a practical nature for the instruction of mechanics. King's engineering students were to take part of the course in the University in Windsor and complete it at Sydney and Glace Bay in direct touch with the steel and coal industries. These schemes failed through lack of financial backing.

## SCOPE AND PLAN OF SCHOOLS.

When the Department of Technical Education was created, the series of evening schools for coal miners which had been established 18 years and the schools for stationary engineers which had operated about 7 years were doing a great deal of effective work. Their principal field was the training of coal miners in mathematics and theory and practice of mining, so as to pass the Government examination for certificates of competency required for official positions around coal mines, and enabling stationary engineers to get a higher grade of certificate. Many felt that those schools were not on a sound educational basis, and the Technical Education Department revised the scheme, establishing in every coal mining community preparatory classes in preparatory arithmetic and composition, so that men who had to leave school early in life or who were rusty on other subjects could prepare themselves to work decimal fractions with ease, to express themselves well in writing, and thus be enabled to enter the technical classes in coal This proved to be a great boon, as theretofore half the time of session mining. was spent in bringing a portion of the students up to grade in arithmetic and composition before they were able to take technical instruction. The teachers of those evening classes were men who had worked in mines all day, hence they were not fresh for their subject, and the teaching was not of the most efficient character.

After exhaustive preliminary investigation in manufacturing centres, it was found that both workmen and employers wished for technical education in scientific principles underlying their trades, and also to improve their general education. Employers complained of lack of competent foremen, while the men were inefficient through lack of ability to read blue-prints, etc. It was felt that the evening classes would increase the efficiency of workmen, enable mechanics to earn more and engender a feeling of responsibility, breadth of outlook and increase ambition, and thus benefit the industries of the Province.

The Provincial Legislature in 1906 established secondary technical schools of three types: (1) Evening Technical Schools; (2) Coal Mining Schools; (3) Engineering Schools.

## (1) EVENING TECHNICAL SCHOOLS.

A new problem confronted the Department,—to give secondary technical instruction for manufacturing industries. The most obvious thing was to train to greater efficiency men already working at some trade, and not to increase the number of workers. The men already had work, and got that training only in the evening. Hence in those industrial communities we have the "Industrial Continuation School" or the "Industrial Improvement School". Here are taught general subjects—drawing, mathematics, physics, chemistry, mechanics, electricity as applied to the trades of the men who attend the school.

When those schools were first opened no actual trade instruction was given which looked towards training a journeyman or a skilled mechanic in a trade. The subjects offered included English, elementary book-keeping, practical arithmetic, practical mathematics, including algebra and trigonometry and geometry of a utilitarian kind, mechanical drawing, machine drawing and designing.

The effort was made to supply the things specially needed in every locality where 10 students were willing to take instruction. For building trades, architectural drawing and design, building construction and estimating; in electrical classes, dynamo and electrical machines and electrical engineering.

Book instruction was found to be of no use in the electrical classes, hence electrical laboratories were installed, costing about \$1800 each, containing pieces of electrical machinery that can be tested in actual operation, also measuring instruments and apparatus to teach fundamental electric laws. This work must be practical, and apparatus is necessary for illustration.

For industries such as a sugar refinery, analytical chemistry is taught. In Sydney, metallurgical chemistry as applied to the smelting of iron and steel is given, also elementary surveying. For drug clerks, the subjects are elementary chemistry, pharmaceutical chemistry and pharmacy.

At Canso, a fishing community, book-keeping and arithmetic were taught five nights a week, so as to help the fishermen who sell direct to commission merchants and receive cash in return, to carry on their little business interests. Navigation was also taught, instruments being loaned by the Dominion Department of Marine and Fisheries. The students are aged from 18 to 45, and some are elderly men. As they have practically nothing to do for  $2\frac{1}{2}$  months, the school furnishes a centre of interest during the evenings. In the day time men are busy mending nets and repairing boats. It is intended to teach the management and repair of gasolene engines which are now in general use in fishing boats, and thus increase the earning capacity of the fishermen.

No special study had been made in the matter of increased mining power, and in the opinion of Director Sexton the instruction imparted would not give any greater productive capacity except in the direction above mentioned.

The demand for secondary technical schools has grown to a degree not expected when the schools were opened. The schools are all of the continuation school type. All instruction is given in the evenings except in some large colliery centres, where day classes in coal mining are held for those who work on night shift. Nearly all the instruction is of the nature of science, mathematics or drawing specially applied to the different vocations.

## Admission, Certificates, Deposits, Diplomas, Teachers, etc.

Certificates are given to men who complete the courses and earn 75% of marks in the year. Courses have been arranged in electricity, building trades and drawing that run over three years and students get a diploma when they have completed this three years' course and also passed in arithmetic, practical mathematics and English. The latter is given one night a week when no other course is held. There is no entrance examination, and no fixed entrance standard; the pupil has only to satisfy the instructor that he can benefit by the instruction.

Deposits varying from \$2 to \$4.50 are required, and these are refunded in proportion to the percentage of attendance, no return being made for less than 60%. This is a distinctive feature, and helps largely in securing attendance, the sliding scale of returns being more satisfactory though naturally more troublesome.

Though the deposit and refund had been regarded as one of the elements of success in attaining a high percentage of attendance in the evening technical classes, the coal mining and engineering classes had always been entirely free to the pupils who consequently attended less regularly than if compelled to pay something as an earnest of their ambition to learn.

When an attempt was made last year to collect a deposit of \$3 from each student who attended a preparatory, an engineering or a mining class, the students in some of the coal mining communities flatly refused to pay any deposit, and it was impossible for the teacher to collect it without losing all the pupils from the class. Such was the appreciation of the young men for educational opportunities for which he would cheerfully pay out many dollars to a correspondence school, and which cost the Government three or four times as much as it required of him as a merely temporary deposit. In other mining schools most of the pupils paid the small deposit, and the students who did not wish to pay this modest amount left the classes. In most coal mining towns, no difficulty whatever was experienced in this matter. It is needless to say that wherever the students paid the deposit, the attendance in the class was invariably higher than where there was no contribution from the pupils.

After these schools had been in operation for three years, diplomas were issued in 1910 to six students, but the effect of these diplomas as to gaining promotion will not be known for about five years, as employers are very loath to accept a piece of paper as proof of a man's efficiency.

These local Industrial Technical Schools are not supported wholly by the Government, as are the coal mining and engineering schools. The Government furnishes the apparatus and complete equipment for instruction, supplies at wholesale cost all draughting materials and instruments, and pays half the cost of instruction, the community furnishing the meeting places, usually the Public School, and supplying light and heat and paying half the instruction expense—teachers receiving from \$2 to \$4 a night according to their special knowledge. The proportion paid by the community is raised by taxation, and is part of the work of the school-board.

These schools are managed by a committee consisting of prominent manufacturers, foremen of shops and representatives from Trades Unions acting with the Provincial Director of Technical Education.

Some firms require that all their apprentices should attend these evening classes all of which have been very successful.

Teachers are appointed by the Government, and show much self-sacrifice, enthusiasm and fine spirit. A difficulty has been experienced in getting teachers. Those pedagogically trained can teach but do not know the practical part, while the practical men cannot explain; yet on the whole it is found that practical men are the best. The ideal teacher is one who has had special technical school training, combined with actual contact with an industry, so that he knows what knowledge

the men should have in order to increase their efficiency. Very few such teachers are available, and few Governments could afford to employ them because they could get such large pay in the industry itself. In nearly every case the Department has chosen men with practical experience and tried to direct them how to present the subject. This plan has been found more successful than if the other class of teacher had been taken, for the students at evening schools attend for business. It is not fun for them to study for two hours twice a week after working all day. and they do not care very much how the subject is presented if they know that the teacher has practical experience and knowledge that they can get from him. If the teacher does not give them the instruction they want, the class will dissolve right away, whereas a man with practical knowledge will find the students there almost every night. Evening students have a clear idea of what they need, and hence refuse to attend classes which don't fit their case. Being mature, they know the value of general and special education, and wish to acquire in the shortest time and by the most direct methods the knowledge they need; hence they are content with much crudity in the presentation if they obtain the desired facts. The teachers who are recruited from the Public Schools for general subjects such as English, arithmetic, geometry, trigonometry and algebra have caught the spirit of the technical schools, and do much to give the students all the short cuts and specialized instruction they wish.

## VALUE OF THESE CONTINUATION SCHOOLS.

Experience in conducting technical classes has shown that boys or men who have left the educational system at a tender age have forgotten the greater part of what they learned at school; hence there is a great waste in the educational system by letting boys become absolutely free from schools at 14, and Prof. Sexton thinks that the compulsory attendance law which would keep the boy even to this tender age is not enforced in the industrial districts of Nova Scotia nearly as stringently as it should be. It seems an injury to themselves and society that their instruction should not be carried to the point where they are mature enough intelligibly to retain the knowledge imparted.

The evening continuation school giving theoretical training, so that men in trades may become more efficient is bound, in the opinion of Director Sexton, to be one of the main types applicable to Nova Scotia where there are small communities and not a large amount of money to spend.

There has been no instruction in trade operations, that is, trying to get men to learn their trade so that they can apply themselves with greater skill and efficiency, the most obvious demand being to give wage earners such technical training that they can become more skilled in the theoretical part of their trades. Mr. Sexton thinks that if a marble palace were placed in every community and trades were taught in toto, giving a four year course, and boys knew that if they attended they would come out skilled journeymen to work for certain wages, the palace could not be filled; for humanity is the same the world over; there are few ambitious men, and even if all sorts of opportunities were supplied, advantage would not be taken of them.

Workers have secured shorter hours until they are now working an eight hour day, and such a worker would not find it a very hard strain to attend a technical class for two hours two or three evenings a week. Coal miners do not usually labor for more than 6 or 7 hours a day, and it is noticed that the men almost always wash and put on their best clothes, so that they present a very neat and attractive appearance. There is thus a moral effect in these evening classes, not only in this direction, but in preventing men from hanging around saloons or other places, exchanging gossip.

## COURSES AT EVENING TECHNICAL SCHOOLS.

During 1911-12 evening technical schools were maintained in Halifax, Amherst, New Glasgow, Sydney and Yarmouth. In Truro the classes were not reopened, the School Commissioners feeling that they were not able to guarantee their half of the expense.

The classes now offered in the e	evening technical school are as follows:
Practical Arithmetic.	Alternating Current Machinery.
Bu <b>s</b> iness English.	Elements of Chemistry.
Practical Mathematics.	Elementary Chemical Analysis.
Mechanical Drawing.	Metallurgical Chemistry.
Machine Drawing.	Garment Making.
Machine Design.	Single Entry Bookkeeping.
Architectural Drawing.	Double Entry Bookkeeping.
Building Construction Drawing.	Navigation.
Architectural Design and Esti-	Plain Sewing.
mating.	Blouse Making.
Elements of Electricity.	Skirt Making.
Dynamo-Electric Machinery.	

New classes in needlework were offered in Halifax, New Glasgow and Amherst. A three years' course of 50 evenings each winter was planned, covering plain sewing, blouse making, skirt-making. The response was greater than had been anticipated. Accommodation could not be provided in Halifax, and many had to be turned away. A large number of the applicants did not even know how to run a sewing machine. It was distinctly planned and distinctly announced that these were not trade classes to teach young women to become dressmakers, but only to assist them to make any kind of garment for themselves up to a coat or a tailored suit. A trade class in garment-making was already established and open to all who were actually engaged in the trade. The business interests of the trade were thus conserved and the proper classes established to educate those who could not afford to go to a regular dressmaker to order their clothes made especially for themselves.

## (2) COAL MINING SCHOOLS.

The Department divided the coal mining areas into districts, and in each appointed a man whose sole business was to teach these coal mining classes, instructing classes six nights weekly. In large districts assistant instructors were appointed. These instructors are men with long mining experience and practical knowledge of mathematics, a working knowledge of trigonometry for teaching the theory of ventilation and also a knowledge of surveying, coupled with ability to impart their knowledge. The Department could not utilise teachers out of the Public School, but were very fortunate in getting excellent men as instructors and only one change in the staff has been made in four years. These men are paid from \$1000 to \$1200 a year. They instruct in ventilation with theory, also practical production of air currents and their distribution through the mine, mechanics, biology, elementary geology as applied to coal mines, practical operation of mining, hoisting, hauling, tempering, etc., and surveying as applied specially to underground work.

## VALUE OF THE SCHOOLS FOR COAL MINERS.

These coal mining schools have prepared native Nova Scotians to take official positions in coal mines, and have made more intelligent miners, because a great many men attend the schools simply for the educational value who never go up for examinations. Cornelius Shields, the eminent engineer, one of the earliest Managers of the Dominion Coal Co., visited Nova Scotia to learn local conditions before assuming his duties, and declared his intention of importing a number of competent men from Pennsylvania Coal Mines, but when he investigated the conditions of labor, superintendence and mining methods in Cape Breton he brought only his Private Secretary. In a debate in the House of Commons it was stated by the Minister of Labor (Hon. W. L. Mackenzie King) that Nova Scotia had a death rate among miners which was about half that of the United States. The large part of the credit for this is due to the intelligence and sense of responsibility of the Nova Scotia miner, part of which comes through his education in the evening classes.

There is practically no mining community in Nova Scotia that has not either one regular instructor or the travelling instructor. The students receive a certificate on the completion of course. This is not a certificate of competency required in order to hold an official position, the latter being issued by the Government through a Board of examiners. The same educational qualifications apply in the engineering schools and in the mining classes. Students must have a knowledge of arithmetic from decimal fractions, and be ready to express themselves in writing logically and fairly grammatically.

In the engineering classes the students are taught the principles of mechanics and practical installation, operation and care of steam boilers, steam engines, compressors and pumps.

There is a separate examination for stationary engineers, the principal aim of students being to get first, second or third class certificates as stationary engineers.

All the above schools are entirely free, instructors being paid by the Government without expense to the locality, it also paying for light, fuel and janitor's services.

The men who take up the more technical instruction usually intend to take a Provincial Government examination for certificates of competency as colliery managers, underground managers, or overmen. It is customary to take the

examination for overman one year, then the examination for underground manager, then take one or two more years to acquire a managers' certificate.

In Glace Bay and Sydney Mines special classes are held for advanced work best suited to those who have obtained certificates as underground managers and wish to become colliery managers. In other localities the classes include both elementary and advanced work, the instruction being more or less individual. The instruction is not strictly confined to subjects and questions that might be asked in the examination, but the schools aim to cover the whole ground and give a thorough technical education of secondary character.

Instructors in coal mining are engaged permanently by the Department and spend their whole time and effort in teaching technical classes connected with this industry. These teachers, besides being actual coal miners with experience in positions of responsibility, have educational qualifications fitting them for teaching. They conduct the evening classes as well as the special optional day classes in public schools in mathematics, drawing and mining science.

## (3) ENGINEERING SCHOOLS.

These are closely associated with the coal mining schools, but distinct in organization. They are established in colliery centres, but not to the same extent as coal mining classes. The same entrance requirement in the technical courses is laid down for both, and the preparatory classes serve both schools. The instruction consists of a practical treatment of mechanical and steam engineering. The students are for the most part employed as hoist engineers or connected with power plants of collieries, their main incentive being to prepare for the Government certificate of competency, which must be possessed in order to hold a position as stationery engineer. The teachers are certificated engineers holding positions in the collieries and having teaching ability.

Classes in electricity and mechanical drawing have been in great demand in the larger centres, as the more progressive collieries are introducing electric power more and more each year, and also require men who know how to make intelligible drawings and read blue prints. Classes in electricity were established in Sydney Mines and Glace Bay, and instruction in mechanical drawing was offered in these places and also in Springhill and Port Hood. Special classes were not offered in Westville and Stellarton, because New Glasgow classes were so convenient.

Local technical schools have increased very much in attendance with each succeeding year because the courses offered are ministering to a long felt need in the communities, and have been found of so much practical value to those who have taken them that others are induced to attend.

The coal mining schools have been established much longer than any other, and have reached a nearly stationery condition because there are now a large number of men with certificates of competency who are not employed as officials.

The engineering schools have not as large number of students as four years ago, one cause being that the comparatively low wages paid to men around hoists and power plants do not invite ambitious men; another being the large number

of men in this line who have certificates of service, but have never taken an examination on the theory and practice of steam and mechanical engineering, which fact is rather discouraging to men who have sacrificed many hours and much personal effort in order to pass the requisite examination for certificates.

## ATTENDANCE AT EVENING TECHNICAL SCHOOLS.

Director Sexton reports in 1912 that the attendance at evening technical schools continues to grow apace. In fact, the secondary technical schools have become so important a part of the system of technical education that they now demand a large part of his time. Many young men and women who have conscientiously taken advantage of the opportunities offered in these evening technical schools for the past five years have acquired such practical knowledge that they have secured positions of higher responsibility. The fact that some of pupils of evening technical schools have secured material advancement has been one of the strongest incentives to others to avail themselves of the educational facilities thus offered.

The classes were opened early in October, and continued till the end of April, 1912, with attendance as follows:—

## (1) LOCAL TECHNICAL SCHOOLS.

Locality.	No. of Classes.	Total Enrolment.
Amherst	9	130
Halifax	30	658
New Glasgow	9	124
Sydney	10	171
Yarmouth	8	73
Totals	66	1,156

Increase over 1911..... 145

(2) MINING SCHOOLS.

Locality.	No. of	Total
	Classes.	Enrolment.
Joggins Mines	3	43
River Heber	1	9
Springhill.	4	49
Westville	4	60
Stellarton	2	14
Thorburn	3	28
Inverness	2	30
Sydney Mines	8	168
Glace Bay	6	133
Reserve Mine	2	29
Dominion	2	26
Dominion No. 6	2	29
New Aberdeen	1	21
New Waterford	2	34
Totals	42	673
Increase over 1911		243

## (3) COAL MINING AND ENGINEERING SCHOOLS.

Cape Breton County:	No. of Classes.	Total Enrolment.	
Glace Bay	6	132	
Reserve Mines	2	29	
Dominion	2	26	
New Aberdeen	1	21	
Dominion No. 6	2	29	
New Waterford	2	34	
Sydney Mines	6	142	
Florence	2	26	
Inverness County:			
Inverness	2	30	
	25	569	
	3 GEORGE V., A. 1913		
--------------------	----------------------	------------------------------	--
Pictou County:	No. of Classes.	Total E <b>n</b> rolment.	
	25	569	
Stellarton	2	14	
Westville	4	60	
Thorburn	3	28	
Cumberland County:			
Joggins Mines	3	43	
River Hebert	1	9	
Springhill	4	49	
Totals	42	673	

## COST OF TECHNICAL SCHOOLS.

During the year ending July 31st, 1912, the expenditure for Technical Education was as follows:---

General administration \$9,053.09, of which \$4,815.93 was for salaries. The Technical College in Halifax \$21,057.08, of which \$12,818.85 went for salaries, \$3,464.96 for apparatus, \$1,432.15 for books and stationery, \$699 for scholarships, and the balance for heat, light, water, printing, insurance, engineering camps, etc.

## EVENING TECHNICAL SCHOOLS.

	Salaries.	Apparatus.	Refunds	Total.
Halifax	\$3,157.08	\$733.29	\$1,273.70	\$5,164.07
Amherst	945.84	625.90	208.63	1,780.37
Sydney	1,233.80	707.97	292.13	2,233.90
Yarmouth	806.23	946.85	151.02	1,904.10
New Glasgow	1,375.65	424.18	236.16	2,035.99
Truro	• • • • • • • • • •	18.00	••••••	18.00

Total..... \$13,136.43

COAL MINING AND ENGINEERING SCHOOLS.

	Salaries.	Apparatus.	Refunds.	Total.
Glace Bay	\$3,298.37	\$132.41	\$200.40	\$3,631.18
Sydney Mines	3,070.65	446.55	67.80	3,586.00
Pictou County	2,382.97	348.71	202.30	2,933.98
Cumberland County	2,524.34	184.26	83.70	2,792.30
Inverness	289.81	49.80		339.61
		Tota	1	\$13,282.0 <b>7</b>
Total for administration	\$56,529.57			
Less cash paid to Pro-	9,826.73			
		Net	expenditure	\$46.692.84

# SECTION 3: FURTHER TESTIMONY AND OPINION OF PROFESSOR SEXTON.

#### CONTINUATION CLASSES.

In his report for 1912, Director Sexton says that the time is becoming ripe in Nova Scotia for the establishment of day continuation classes for the youths engaged in industry, like those which obtain in Germany, where it is now compulsory throughout nearly the whole empire that employers must allow apprentices to attend an industrial continuation school for six to twelve hours a week during the whole period of indenture. The youth receives the same pay while he is in schools as he does at his work in the shop.

This arrangement Prof. Sexton considers the most effective scheme of industrial education now known, and it is producing wonderful results in making intelligent, thorough mechanics. He adds that England sees the futility of expecting as great an efficiency from voluntary evening schools, and is striving to secure a system like that of Germany.

A number of progressive manufacturers in Nova Scotia have expressed their entire willingness to allow their apprentices to attend technical classes during working hours without any reduction in pay.

This would entail the engagement of permanent teachers in each community who would devote their entire time to the work. These men would have to be carefully selected, for proficiency in their trade as well as adaptability for teaching, from those who are already engaged in industry; and they would have to receive salaries commensurate with those paid for practical work.

In order that such a system of teaching could be practically carried out, Prof. Sexton says it would be necessary for Nova Scotia employers to revise their present methods of apprenticeship.

## PART-TIME SCHOOLS.

Director Sexton in his testimony before the Commission, stated that in Nova Scotia, where there are a large number of small and comparatively poor communities, he believed a part-time system of trade education would be most popular, and would also meet with the heartiest co-operation of the manufacturers, who would thus help the Province educationally. In these part-time schools the apprentice or mechanic is paid for his time while attending the classes, which are more or less of a theoretical nature, when he produces nothing. The best recommendation for the actual value of such instruction is for the employer to say, "I know it will make an efficient man of you, and we will pay you just the same as if you were working for us; we only ask that you shall show us increased efficiency by working harder the rest of the time."

He thought a manufacturer might look on a man going to part-time schools as a productive unit from the time he starts. It was hardly possible for a boy to be taken green into a factory and to earn say 10c an hour at the very start. He thought a manufacturer would find at the end of an apprenticeship of three years that the apprentice had cost him a little more than he had made out of him and that if he stayed with the business he would give him back manifold the amount.

Firms that established shop schools in their factory have found that while they were training apprentices who were more or less of a financial burden, other firms had bid for those apprentices before they had finished their period; while a boy might be earning from 8 to 10c an hour during apprenticeship, after he had been through about two years of it he was a productive unit, and if another manufacturer offered him 15c an hour the boy was liable to leave his benefactor and go to the other manufacturer. Hence there must be hearty co-operation between the manufacturers in any particular industry, whereby they will all assume some part of the burden, so that some will not be doing it for the benefit of the others.

## TRADE SCHOOLS.

As to purely trade schools, Prof. Sexton thinks these could be established in large communities where a number of people are seeking to enter the same trade; these persons could be examined as to fitness for a trade, or go on trial for three months to show their fitness. As to limiting the **number** who enter such schools to the number who could find successful employment in the locality, such a course would be most undemocratic, as he did not believe it right to tax the whole community to provide a limited number of journeymen for a single trade.

While a trade school properly conducted can turn out skilled journeymen of as high an order and in as short a time as evening classes, as had been done in a few places, it entailed great expense; the cost attending the trade school in Milwaukee being from \$300 to \$400 per year per man. The time of the student in the trade school has no value, while that of the apprentice has.

## EVIDENCE AND MEANS OF PROGRESS.

Employers are recognising more fully every year the good work the evening schools are doing, and are looking to the Department for men to fill special posi-

tions. A number of the students have been placed in lucrative positions, and no dissatisfaction has been expressed with any of the recommendations of the Department. The newspapers have also recognised the great value of the practical education given in the schools and have been most generous in giving space at all times to comments on the work.

The fullest publicity is needed to show working men the advantage of the school, and personal canvass has been found the best method. The average mechanic is hard to get to school, but sticks well when he gets there; but if they do not get money-earning value in the way of short courses and the most practical education they will not stay.

Continued progressive courses are necessary to keep men year after year. The lecture method is not suitable as the men cannot take notes; the recitation method can only be used sparingly, especially when pupils of different ages are in the class; hence the problem method is the best. Simple teaching from the book gives poor results where models and machines are needed; laboratory apparatus must be used with other instruction. Good text-books are difficult to find, hence special ones have been prepared for some classes.

## NEED OF TECHNICAL TEXT BOOKS.

One of the great troubles experienced was the lack of good text books, which must be intensely practical, condensed, absolutely up-to-date and fitted for the needs of small zones in which the practice of the trade is the same. Correspondence school text books, while thoroughly up-to-date and practical, do not fit community needs in a limited zone as they should in order to be most efficient. Director Sexton therefore prepared text books in mathematics for coal miners, taking examples for practice from the N. S. industry, also books in electrical laboratory work and on dynamos and electrical machinery. These were prepared in mimeograph form and sold to students at cost. Drawing supplies had been borne by the Department and furnished to students at cost, which is about half of what stationers would charge. In these ways the College text books have been of the greatest service to the Province.

CORRESPONDENCE COURSES-Weakness AND REMEDY.

On careful study Director Sexton found that the correspondence school text books and courses are not based on the soundest educational principles, but are arranged so that the student will not become dissatisfied with the course before he has paid the whole of the tuition fee. The examples in the correspondence courses are modelled so closely on the text book that almost any man with a straight head could read the text and then do the examples. The formulæ used are given without the reason for the deduction or the reason for the application. In many cases students have to remember many formulæ, when they could derive information with a simple knowledge of algebra. The difference between the courses given in the Universities of Chicago and Wisconsin and those of the correspondence schools is that the former are based on the soundest educational principles, and about 70%**191d—Vol. IV—4 •** 

of the students who enrol finish the course, while only from 5% to 10% of students in correspondence schools such as the International and American finish the course.

Believing it possible to teach by correspondence if sufficient care is given to planning the courses, it is the aim of the Technical College to establish correspondence courses such as are needed all over Nova Scotia, increasing the number as rapidly as the demand can be met. The courses in Wisconsin and Chicago Universities can be offered to the students for at least one half the charge made in regular correspondence schools.

From Nova Scotia between \$60.000 and \$70.000 a year go to the International Correspondence School at Scranton, while the total amount expended by the Department of Education in Nova Scotia for supporting the Technical College and technical schools throughout the Province is about \$40.000.

## FEDERAL AID ESSENTIAL.

Professor Sexton considers that while the Nova Scotia Department has done obvious things, and supplied a few of the insistent demands of that Province, to do the things which they know should be done would require a large amount of money, more than the Province will be able to afford for a number of years; hence, he hopes that the future development of Nova Scotia will be assisted either by private endowment or through Federal Government grants.

# SECTION 4: OPINIONS OF TECHNICAL TEACHERS AND OTHERS.

The Principal of the Evening Technical School in Sydney reports that one of the greatest difficulties in carrying on the technical classes was due to the long shifts the men are required to work in the steel plant, and the fact that many are required to work one week on day shift and the next week on night shift. The Steel Companies' officials have promised to co-operate to relieve this situation by giving special dispensation in the matter of time to those who require it; but the Principal complains that very few men have been granted this dispensation, even where they have been willing to have deducted the time spent in the evening classes. He thinks it would not be unreasonable for the Steel Company to pay for the time spent in the classes as an encouragement for the men to attend, because many large corporations carry on schools of their own or pay for tuition of their mechanics in schools such as this in Sydney, and it has been shown that men who attend such evening classes gained increased efficiency as mechanics, so much so that the company is more than repaid for the small amount of money it would cost them to encourage this kind of work. The school in Sydney has been very fortunate in securing the personal good will of superintendents in the various industries, many of whom had personally urged the men to attend the evening classes.

## VALUE OF MECHANICAL DRAWING.

Mr. George J. Mosher, Halifax, a skilful mechanic who has taught mechanical drawing in the evening technical schools, advises that the student, young or old, who is desirous of learning mechanical drawing and has perseverance enough to spend 150 evenings for lessons such as those given under the direction of the Nova Scotia Technical College, invariably makesh is mark in his chosen calling. He adds that in the aggregate the results will be of incalculable benefit to the community.

Mr. P. W. Macdonald, teacher of mechanical drawing at Sydney, states that in sparsely populated districts it is unnecessary to divide the course into elementary and advanced classes except where the enrolment reaches considerably over eight students. The instructor should be capable of specializing the work of the individual so as to conform to his desires as to which branch of the subject is best adapted to his work, the divisions broadly being: machine drawing, building construction, sheet metal and structural drawing, which may include plumbing, heating and ventilation. The advanced courses must entirely specialise upon each of these branches. In the elementary class the work should begin by drawing a few lines to each of the scales on the regular triangular, mechanical engineer's scale; next should be the proper handling of other instruments, progressing from single views of simple objects, preferably machine parts drawn to a suitable scale, to the application of established conventions by which different views of one object are expressed. After a few lessons in the projection of the various planes, elevations and cross sections of simple concrete objects, the student should be well drilled in the study of the projection of unfamiliar objects so that he may be able to promptly recognise the peculiar difference between a perspective view in its various details and the conventional view of the draughtsman. A thorough drilling in projection, in sections and triangular developments is most essential to one who would learn to interpret quickly if a drawing be at all complex. The latter portion of the course should consist of work in copying a few standard specially selected drawings of simple machines, preferably assembled views. The advanced course should proceed with detailed drawings of simple machine parts which would, put together, form a complete simple machine. From these details and with as little reference to the machine itself as possible the student should proceed to make a complete assembled drawing; next a complete detailed drawing of a machine having a pair of gears, babbitted bearings, a few bushings with cotters, keys, shaft and coupling, worm and worm wheel, and cast iron frame with ribs and webs, well designed. Next the assembled drawing of this and, finally, as an examination each student should be given a machine drawing purposely incorrect in conflicting dimensions, misplaced, incomplete and erratic projections and improper conventions, such as a sign intended to indicate a countersunk rivet on one side when that were obviously impracticable. Such a lesson selected to carefully teach various points involved in previous lessons would provide a fine exposition of the results of the work both of instructor and pupil. He adds that the technical colleges have omitted to equip students with these ready methods which crystalize and standardize theoretical design and practical expediency into ready-made expressions.

191d-Vol. IV-41

## ELECTRICAL EQUIPMENT REQUIRED.

Mr. W. W. Casey, instructor in electricity at the school at Amherst, says that an expenditure of from \$2,000 to \$3,000 is required to equip the laboratory with apparatus suitable for making complete illustrations and that the use of apparatus is very necessary, as problems learned from text books without experience soon fade from the average mind. For this reason the personal teaching system can be made far superior to any correspondence school system, though their text booksmay be of the best. The rapid increase in lighting and power plants is creating a demand for men capable of super ntending such work. Men employed in the ordinary electric light station become either machine tenders or wiremen and have no means of attaining the necessary technical knowledge to fit them for superintendents' positions. He adds that in view of the fact that many young men after obtaining the education had moved to other parts of Canada, it would appear to be a matter for the Federal Government to take up.

## VIEWS OF MINE SUPERINTENDENTS.

The Mine Superintendents after discussion on the subject of technical education for miners, sent the Commission a memorandum of their views. Owing to the distance of the Cape Breton coal fields from large centres of population and the apathy of the mining population towards the advantages of technical education, it had not been found hitherto possible to provide lasting and adequate provision for technical instruction in mining and probably the most effective and serious instruction had been given through correspondence schools. The Technical College in Halifax, they stated, is of no assistance to the rank and file of the local mining population and under existing conditions the advantages of its instruction could only be given to those who had time and money to go there. Good work had been done by the evening mining schools, but latterly these had not been attended as largely as they might have been and had failed to reach in any large numbers the lower ranks of mine workers, and there had been a decided lack of enthusiasm and emulation in the work of these classes.

They thought the linking up of these evening mining schools with the Technical College or with some Universities on the line of the University extension movement in Britain might assist in evoking interest, and means should be provided by which the youthful and oft time indigent aspirants, while earning a living, could make their way by study and perseverance from the lowest grade of the work around the mine to the diploma of a reputable technical college. Correspondence schools in connection with the Provincial Technical College might assist in the process of selection, especially if accompanied by a scheme of distinctions and bursaries. Very often the aspirant for applied technology is deficient in elementary mathematics and English which could be best given in the form of evening continuation classes, and a graduated course of instruction might be followed ending with admission to the Technical College or University. Useful instruction which might bear fruit in the reduction of the accident rate could be given to working miners by elementary lectures on the constitution and behavior of the common mine gases; the theory of blasting coal and systematic timbering; in obvious

precautions for lessening accidents from falls of roof and sides and on the haulage planes, and such matters, combined with instruction in first aid, fighting of mine fires, etc. The best results have been obtained by short courses of interesting lectures in simple language illustrated by chemical and mechanical experiments, chosen more for striking demonstration of facts than for scientific value; thus the explosion of a mixture of fire damp and air first without and then with an admixture of coal dust provided a more effective demonstration of the dangers of coal dust in a mine than would a lot of dry reading.

## USEFUL LESSONS FROM GREAT BRITAIN.

The method adopted in British coal fields through the medium of Saturday afternoon mining classes is commended; such a scheme could only be worked in Cape Breton by having a central school in Sydney which would serve the surrounding collieries, and the new academy at Sydney might be used as such a centre, the ordinary academy staff being re-inforced by special technical instructors selected from around the collieries, and thus be a branch of the Provincial Technical College. In Britain evening classes were held at most of the mining centres, the syllabus of the South Kensington Science and Art Department being used, teachers' diplomas issued, and examinations controlled and diplomas and medals granted by that department. In many cases headmasters of elementary schools have qualified themselves to conduct these classes, which include subjects such as the principles of mining, mechanics, elementary physics, etc., and this form of teaching has proved itself very efficient. There is a certain advantage in the central control of the Science and Art Department which standardizes the teaching, safeguards the secrecy of the examination questions and results and promotes a spirit of rivalry among the students.

## CHAPTER IV: AS TO STEEL, IRON AND COAL.

# SECTION 1: INFORMATION OBTAINED FROM Mr. GRAHAM FRASER AT NEW GLASGOW.

The story of the beginning of the Steal Industry in Nova Scotia is a very interesting one. It began with the experience of Mr. Graham Fraser, who in earlier days was connected with both the Nova Scotia Steel Co. and Dominion Iron and Steel Co. with the former of which he grew up and was, for some years, Managing Director.

Mr. Fraser served apprenticeship at blacksmithing, and for a time ran his own shop. He was all the time getting experience by doing things. He had not much time for reading, but learned about the qualities of metals practically. After the Nova Scotia Steel Co. was organized, a Blast Furnace Co. at Ferrona was formed, and later the property of the General Mining Association in Sydney was bought. All these Companies came together at different dates and formed the Nova Scotia Steel & Coal Co.

In the early days, when they wanted to know anything about the composition of steel they hired a chemist and took his analysis, until they became familiar enough with the ingredients to know what was right and what was wrong. The same metho**d** was followed in connection with the blast furnace, the lime and ore etc., so that although Mr. Fraser was not himself a chemist he could tell pretty well from an analysis whether an ore could be easily reduced in a furnace; but he had to put it through the furnace to find out whether it was really right or not. When they did not know, they hired a man who did, and after hiring him they picked his brains all they could.

## NEED OF PRACTICAL EXPERIENCE.

In later years the superintendents who did the work were all men who had had practical experience. Mr. Fraser always felt that he was in a position to help them out after he himself had had some experience. It made the work go very much easier when the Superintendents and foremen understood their business; and men thoroughly trained in their jobs bring an element of safety.

Mr. Fraser says that workmen need intelligence as to the job, or some sort of common sense. He approved strongly of night schools, saying that the boy who goes to them and wants to learn will come to the top and be taken notice of. He did not think anybody in his line of work would get as much help from a correspondence school as in a night school taught by a practical man.

Mr. Fraser thought there was room for extension of iron and steel working in Nova Scotia, on account of the rapid growth of Canada. When the industry was

started in 1882 a carload was a big order; the figures of production were very small compared with to-day's, and there used to be about as much imported. He thought our men ought to be and are as well trained as those in other countries. He said that one of the best assets to-day in the Nova Scotia Steel Co. were the young men who came in with him 25 years ago and grew up with the business.

#### VALUE OF NIGHT SCHOOLS.

Looking back on his business he thought it would be a good thing to provide a chance for every young man between 15 and 17 to go to night school. He was undecided whether compulsory attendance would give as good boys. The night schools provide a way for the education most boys can get while working, for they cannot all go to the higher technical schools on account of having to work. He would advocate night schools even if boys never got further than that, but the chances were that a boy who got on well at night school would soon be in technical study at Halifax or McGill, and even a boy who had no talent would get some good at night school. He thought a boy ought to make up his mind first what he was going to be, and if he chose to be a mechanic he should be at work, at 14, 15 or 16 at the furthest, for he had not time to follow the High School work of the Colleges any further, and he felt a boy had better get hold of the mechanical part first. Speaking for himself, after leaving school without technical education, and with very little of any other, if he had to go through life again and the choice was up to him between theoretical education and practical education, he would choose the latter. Give the practical, he said, and give as much technical as you can along with it. He believed in having the practical subjects and if there was not time enough for them along with the so-called literary studies, eliminate the latter. But we cannot all be mechanics, and a boy should make up his mind as to what he wants to do, and study in that line.

## PART-TIME PLAN QUESTIONED.

Mr. Fraser did not think that six months work and six months schooling, or week about, for a boy of 16 would be feasible: that plan would not compare with the Common School. From what he had seen in the technical schools, while they were alright up to a certain point, they did not get down to practical work such as could be found in the plant itself. Citing the case of a boy who had gone to the Steel Works at Sydney and had remarked to another alongside of him, "Now I can learn", he thought there was an inspiration or something that the smelter man had in him so that he could see into the furnace as if by instinct; it was the real thing as opposed to something like an experimental model.

Mr. Fraser was not sure that he would shorten apprenticeship for a boy who attended Night School, or offer a bonus for so doing, because it was to his own advantage to study at night. While the school could teach a number of things, a man must actually do the work to learn the operations; then if he understands the principles he can carry on the operations afterwards and do his work more intelligently and be training his men so that he is really ready to see further than the job he is working at.

# SECTION 2: INFORMATION OBTAINED FROM Mr. THOMAS CANTLEY AT NEW GLASGOW.

Mr. Cantley has been identified with the Nova Scotia Steel & Coal Company for 25 years, and is now General Manager.

Mr. Cantley, as General Manager of the Nova Scotia Steel & Coal Company, is in command of over 5,500 men employed at Wabana, Newfoundland, Sydney Mines, Cape Breton, and New Glasgow. As regards intelligence, efficiency sobriety and interest in their work they were unequalled by any similar body of men in Canada. They were directed by groups of superintendents, managers and foremen, all of whom had grown up with and had been trained while in the Company's employ. Individually and collectively, he considered them the very highest type which this country has yet produced. All of them worked together as a family of big boys whose constant aim was to advance in every possible way the interests of the corporation which they served, and he was proud to be their chief.

## NEED OF TECHNICAL EDUCATION.

The need of technical education and training along the special lines incidental to the Company's business was keenly felt by the superintendents and all the executive officers of the Company and also by a considerable proportion of the men. For instance, there were neither schools nor any other facilities for acquiring the best and most up-to-date knowledge in connection with the many problems that enter into the Company's daily work. Beyond the various text books published by writers on technical subjects, there was nothing to guide them in the various problems daily presented to them in connection with the designing and turning of rolls, the flow of metals during the rolling of iron and steel, heavy forgings, drop forging work, or in connection with machine designing, screw and bolt cutting, the production of bolts and nuts, hydraulic engineering, or the construction, working, or upkeep of electric apparatus. The same might be said as to aircompressor power and the economical production of steam power from coal-fired boilers. Nor is there any opportunity for acquiring really practical up-to-date information regarding the most economical methods of re-heating ingots and steel billets, or estimating the amount of power necessary for driving rolling mills, knowledge in regard to all of which was of the utmost importance from day to day if their work was to be made commercially successful.

The apprentice system in this country is practically obsolete so far as the manufacturing operations are concerned, except in the cases of machine shop and foundry employees, and some method of instruction must be found to take its place. Continuation classes and night schools have gone a long way in other countries toward supplying the technical knowledge required, and it is imperative that similar classes be inaugurated in this country if our manufacturers and workmen are to keep pace with the foreigners whose competition is every day becoming more formidable, and whose efforts to capture the Canadian markets are yearly becoming more and more aggressive. The reading of technical trade papers is a great help and is taken advantage of by all the brightest of the superintendents

and foremen; but this only touches the fringe of the matter, and must be supplemented by competent, practical instructors in charge of the evening classes. If these facilities were available they would be taken advantage of by all the foremen and the younger and more energetic and ambitious of the workmen.

## EXTENT OF COMPANY'S OPERATIONS.

As to the extent of the operations of the Company Mr. Cantley said that the wages distributed in the present year would be approximately \$3,000,000; that over 1,000 men are employed at Wabana, about 2,800 in connection with the collieries and shipping piers at Sydney Mines and North Sydney, about 800 more in connection with the iron and steel department at Sydney Mines, over 950 at the New Glasgow mills, about 100 in connection with lumber operations of the Company in Pictou County and Newfoundland, and the same number quarrying limestone and dolomite at Point Edward, C.B. The Company employs regularly 15 large steamers, two being owned, and the others time-chartered by the Company, these having a total deadweight carrying capacity of 75,000 tons. These vessels would handle this year over 1,000,000 tons of water-borne freight, made up of ore and coal freighted from Wabana and North Sydney, while the freight carried by the Sydney Mines Railway of the Company would exceed 1,800,000 tons. The freight charges paid the Intercolonial Railway for material carried by that road exceed \$300,000 per year. The ore-loading piers at Wabana are capable of loading in three hours steamers of 7,000 to 8,000 tons, while the ore-discharging piers in North Sydney were actually discharging ore cargoes at the rate of 4,000 tons per day. The coal-discharging piers at the same point are capable of loading 6,000 tons of coal into steamers engaged in the St. Lawrence trade at the rate of 1,000 tons per hour. These same steamers are discharged at the Company's coal-receiving docks at Quebec and Montreal at the rate of about 5,000 tons per day.

#### THE COMPANY'S WELFARE WORK.

Employees' Relief Funds were maintained both at Sydney Mines and New Glasgow, the amounts annually collected and distributed being about \$14,000 in the case of the Sydney Mines Fund and about \$4,000 at New Glasgow. Both Funds had substantial balances at the end of last year—at Sydney Mines over \$3,000, at New Glasgow over \$6,000. This latter Fund has now been in existence for over 22 years and is managed by a board of trustees, one of whom is the nominee of the Company, the remainder being from the men. The Company contributes to both Funds, and the executive committee of the Board of Directors now has under consideration a scheme for extending and enlarging the scope of these societies.

Regarding the housing question, Mr. Cantley stated that the Company own no houses in New Glasgow, where a large proportion of the employees own their houses. At Sydney Mines the Company own about 500 houses, but latterly its policy had been to encourage its men to own their dwellings and to this end had offered lots to bona-fide workmen at nominal prices, and had also advanced money for house building at low rates of interest which was repaid by such monthly instalments as the men can meet. This policy has resulted in the construction of of over 200 houses by employees of the Company, and has been of great aid to thrifty men. It tends to improve the morale, and is an incentive to thrift, sobriety and ambition.

## TECHNICAL EDUCATION DISCUSSED.

Mr. Cantley deals with this question under four divisions: (1) What is it? (2) Have others adopted it? (3) Do we need it? (4) How can it be got?

He defines technical education to be such special training as will qualify a person to make the greatest success in the particular branch of productive industry in which he is engaged. The education of all who are in later life to be engaged in productive industry should be measured, and to a large extent guided, by the general requirements of that branch of industry to which they intend to devote their working years.

Before the need of technical instruction can possibly be met, our present school system must be reconstructed. More time must be given to, and more thorough work done along lines of primary education; in short, our mining, manufacturing, agricultural, and fishing population—these comprising practically all the working population of Nova Scotia—must be given a much more thorough ground-work in reading, writing, arithmetic and mathematics. All high education of every kind must be relegated to the High School and University, the former being made compulsory and absolutely free both as to tuition and text-books. We are not concerned as to whether the Universities should be free or not, for the men who are thoroughly in earnest in their desire to acquire a higher classical or college education can usually find means of acquiring it, and they will be no less better men if the getting of it entails some sacrifices.

## WHAT GERMANY HAS DONE.

To the second question, "Have others adopted it?" the answer is, Yes. Germany is probably the most conspicuous example. The great change which came over the national life of the Empire after the war of 1870-71 resulted in the universal discussion of the best means of education for the German work-people, and took practical shape some years later in the adoption of an entirely new system of education for the wage-earning classes, many of whom at that time could not write, and were entirely ignorant of foreign inventions, scientific discoveries, or technical knowledge of any kind. To realize the advancement made by the industrial population of that country and their condition to-day, it is only necessary to compare the present extent and the growing importance of every class of industry in Germany. The best thought, the keenest intelligence, and the greatest energy of the nation have been concentrated on the advancement of its prosperity. The life and the energy of the people has for the past 35 years been devoted to the task of raising their industrial population to a higher plane of efficiency. The industrial growth of Germany may be measured by the amount of fuel consumed. In round figures this increased from 100,000,000 tons in 1895 to over 200,000,000 tons in 1907; and the exports of the country, which in 1889 stood slightly under \$900,000,000, had increased in 1908, to \$1,750,000,000. During the same period the population

.

increased from 49,000,000 to 63,000,000; or, in percentages, while the population increased less than 30 per cent., the export trade—almost entirely manufactured goods—had practically doubled.

#### CAUSES OF GERMANY'S SUCCESS.

Close examination of the causes which brought about this German success will show that it is owing to the fact that nothing is done in a haphazard way; system, method, and inflexible law are the factors which have brought about these results. Some of their methods may not appeal to us, who will regard them as tending to sink individuality and personal initiative. The German, however, looks at the nation itself as the individual, and all are trained to act together so that the best results can be obtained. Their primary schooling is compulsory up to the age of 14, and is followed by compulsory continuation and night schools. Employers are compelled by law to send their apprentices to the continuation schools and to evening classes for artisans, these classes being organized by the local authorities. Some of the Technical High Schools give pupils who look forward to executive positions a thorough technical and theoretical knowledge in such trades as they desire to follow, and further teach them how to conduct the business of a firm, the handling of men, and the preparation of estimates.

## WHAT GREAT BRITAIN DID.

Twenty years earlier than Germany, Great Britain had learned that her workmen lacked artistic taste and knowledge, and to meet this need the Government contributed large sums towards Science and Art departments. These, however, dealt only with one branch of their industrial problem. In about 1880 the industrial leaders of the nation realized that the principles of science and art as applied to manufactures, as then taught in the technical schools of the Continent, were revolutionizing the industrial life of the Continental nations. A Government Commission of Enquiry reported in 1884 recommending that the technical, manual training and elementary sciences be undertaken by secondary schools. This report gave great impetus to technical education, and resulted in the organization of technical classes in Birmingham, Manchester, Huddersfield and other great manufacturing cities. The Technical Instruction Act of 1889 a little later formed the basis on which the local authorities and municipal councils dealt with this matter, for which purpose they might levy rates to the amount of a penny in the pound. Still later this was supplemented by grants from the surplus customs and excise revenues.

In 1894, the British Government appointed a Commission on Secondary Education, the outcome of which was a bill passed a couple of years later by which technical or secondary education was left largely to the local authorities, but controlled by an Education Department under a responsible Minister. There are now in that country a great number of special colleges devoted entirely to higher technical education. The Guilds of London a number of years ago took up the same class of work, and maintain several colleges in that city.

In Scotland, much earlier than anywhere else in Britain, the State took up the matter of organizing public instruction. Their system of primary education has made that country the most striking example of the beneficial effects derived from diffusion of knowledge. Since 1893 elementary education in Scotland has been absolutely free, local school-boards being placed under obligation to enforce attendance, the compulsory age-limit being 14. The attendance record in Scotland is the best in Britain, though still far behind that of Germany. During the past fifteen years great progress has been made in secondary education, continuation schools and evening classes being a great factor in the industrial education of the people.

## PROGRESS ON THE CONTINENT.

In France, Belgium, Holland, and Sweden, handicraft instruction is included in the elementary work.

Switzerland, perhaps earlier than any other country in Europe, successfully solved the question of primary and technical education, and her engineering products to-day show the grand results gained by it. That country now has an excellent system of evening continuation schools, in which the children who leave school at 14 can attend night classes devoted to technical training.

In short, in practically every town throughout Europe (omitting Spain, Portugal and Russia) evening classes are established for the teaching of drawing, painting, designing, and the elements of science, or so far as they apply to their special industries. These schools are in the main either supported by the Government or by the municipalities.

In Vienna, for example, are found practical evening schools for carpenters, joiners, metal-workers, and others; while the best special schools, known as Technical High Schools, for the training of masters, managers, engineers, and industrial chemists are found in Germany. For instance, the Munich Technical High School cost nearly \$1,000,000, and the annual cost of maintenance is about \$100,000, while a similar institution in Berlin cost nearly \$2,500,000. Some of these Technical High Schools deal with a list of 150 different courses of instruction.

From the foregoing it will be seen that the leading nations of Europe, without a single exception, have for years devoted large sums to the question of technical education, and that the best results have been obtained from the Continuation or Night Schools, attendance at which in some of the countries is compulsory. Very large sums of money have been devoted to this subject, and the results are apparent in the great industrial advance made, particularly by Germany, France, and Switzerland during the past ten or fifteen years.

#### WHAT NOVA SCOTIA IS DOING.

In Canada, as a whole, little or nothing has yet been done to provide technical education for our working people. In this Province, the Government of Nova Scotia has devoted a good deal of attention to the higher education of our mining population, and with most excellent results, for I believe that we have among the coal-mining population of this province a higher proportion of

skilled coal-miners than any other section of the British Empire---men who through the evening schools and otherwise have studied the technical side of their work, gone up for examination, and obtained certificates. The Government of this Province is entitled to very great credit for the facilities which it has placed at the disposal of our mining population; the men are entitled to no less credit for having taken advantage of it; and both the coal-mine operators and men are to be congratulated on the results obtained.

Up to a few years ago, beyond the establishment by the Government of Nova Scotia of evening classes and other facilities for the training of our coal-mining population, practically nothing was done towards technical education of any other class of our people, although the population engaged in agriculture, manufacturing, and in the fisheries stood in no less need of education along the lines incidental and necessary to their several vocations. A few years ago, however, the Dominion Government, by a system of travelling dairies, did an enormous amount of good, and probably added millions to the value of the dairy products of this country. A little has also been done in connection with the curing of fish though there is considerable diversity of opinion as to the success of that venture.

VOCATIONAL WORK IN PUBLIC AND SPECIAL SCHOOLS.

The Public School authorities of this Province—with whose grossly overburdened curriculum we have small sympathy, attempting as it does almost universal instruction so superficial that it does not abide, but is largely forgotten deserve honorable mention for one really meritorious action, namely, the introduction of Manual Training and Domestic Science classes in the public schools of the cities and larger towns. These classes have been well conducted by capable and enthusiastic instructors, are most popular with the scholars, and are doing much to train both boys and girls along really practical lines.

The Government of Nova Scotia, realizing the needs of our industrial population, established at Truro an Agricultural College and experimental farm, which, under the management of Professor Cumming, is doing excellent work. Later, Premier Murray's Government took up the question of technical education for artisans, the system comprising a Technical College at Halifax, and a system of night schools throughout the leading industrial centres of the Province. The former has not been in operation long enough to enable an opinion to be formed as to its value, but it is undoubtedly a step in the right direction, and cannot fail to be of material benefit to such of our men as can afford to take a thorough scientific educational course.

The system of Night Schools throughout the Province has been of undoubted advantage, and this is the system to which we must look for the really effective, efficient, and practical technical training and uplifting of our working population. The school must be brought to the man, and its work must be done after working hours, though when night-work is carried on regularly as at iron and steel plants, both day and night sessions must be held.

#### WHAT CANADA MUST HAVE.

This is a country abounding in undeveloped possibilities, and if it is to make that progress in the industrial world which its extent and resources fully warrant, the advantages to be derived from technical education as enjoyed by their fellow workmen in Great Britain and on the Continent must be put at the disposal of our craftsmen of all classes. Our people are years behind in the race, and the subject demands the closest attention of our ablest men, both in public and private life.

The fundamental requirements of our agricultural, industrial, mining, and fishing population are: Thorough grounding in the primary schools, which should be absolutely free of all cost to the pupil, the attendance at which up to 14 years of age should be compulsory; and night schools for technical education, which should be established in all the towns and villages throughout the land, and must also be free of all cost to the student.

The latter branch of education is one of such magnitude that it can only be effectively dealt with by the Federal Government, both as to its organization and support. Adequate facilities such as are given the workmen of almost every European country must be given to all our people absolutely without money and without cost.

The agricultural and industrial life of this new country must be developed. Our men must be trained so that they shall be farmers, miners, engineers, shipbuilders, iron and steel makers, smiths, woodworkers, and house builders; in short, trained men able to lead and maintain the supremacy of Canada in all the various phases of industrial life necessary to a great and growing civilized country. Such training they must have and Canada can no longer afford to neglect it.

## CANADA BETTER PREPARED THAN GERMANY WAS.

In answer to other questions by the Commissioners, Mr. Cantley stated that our people are much better educated than the Germans were shortly after the Franco-German war, and therefore we are not so far back to start with, for practically all our people can read and write and are proficient to at least some extent in arithmetic, while a large number of Germans of the artisan class 40 years ago were unable either to read or write. Mr. Cantley added: I think Canadians might in 15 years, if they had the opportunity, do as much as Germans took 35 years to do. The German is a slow thinker, but he is a better plodder than the Canadian; I think he is a born plodder. I think the common schools have about the right proportion of manual training subjects and literary subjects, but I think there are too many subjects in our schools, and that our curriculum is designed for school teachers, the leaving examination being directed to their ability for school teaching. I think the schools should ground pupils thoroughly in reading, writing and arithmetic; but they are not so grounded, for not 30% of boys of 16 and 17 can correctly add up a column of 40 or 50 figures, while their writing is horrid. I do not care whether they can spell or not, it does not make a bit of difference if a boy spells a word four different ways in one letter, so long as he

spells it so that I know what he means. If any nation has been kept poor because of money spent on education, it has not been found yet. I cannot see how Canada can afford not to educate her children,.

## COMPULSORY ATTENDANCE FOR 90 DAYS.

I think compulsory attendance at school should be exacted for at least 30 days in the year for all our artisan population until they reach 18 or 19. Take the military service in Germany and France; there they have to serve three years. I would make all our young men put in 30 days a year for 3 years in continuation classes. They would not all be dunces, though some would be such all the days of their life, for you cannot make more out of them than the Lord made out of them when he made them, yet it wou'd help a great many, and give them facilities. Very likely a man who is relatively a dunce would get more out of life by such training; it would not hurt him anyhow.

## GERMANS AND CANADIANS IN COMPETITION.

In spite of the tariff and bounties on steel products, the Germans sell a large quantity of goods in this market. Practically the whole of the iron and steel trade is concentrated there. The principal factor with them is the lower cost of labor. In some branches perhaps the German artisan is more efficient by reason of his Industrial Training and Technical Education, than is the Canadian artisan, but on the whole I do not think he is. I think the Canadian is a much brighter man. One thing that keeps Germany down is the enormous consumption of beer. One of our Highlandmen is better than three Germans in the matter of physique. and if our men had the training Germans get, it would help our people, and we would more likely be able to retain this market for ourselves in iron and steel. I think we could control the market; though it would take a long time to get the educational facilities that they have. The trouble I see is the difficulty of getting men capable of taking charge. In the meantime, no matter how gifted we may be in resources, this must naturally be slow of development.

## WOULD CANADIANS STAND COMPULSION?

I do not know whether our Canadian people, with their views about liberty, would submit to compulsory schooling for three years after 14; I think they ought to. Our liberties are being curtailed year by year, in all sorts of directions, some of which are good and somemore or less indifferent. Technical Education having been in operation in Germany for 35 years there are undoubtedly a larger number of skilled workmen on the market than before, which I suppose would have a tendency to reduce wages, just as an increase in the number of workmen would; but one thing that keeps down the cost of labor in Germany is the enormous immigration from Norway, Sweden and the Scandinavian countries. As soon as these men come in, they get the advantage of skilled education. Two years after they go into that country, they have displaced and supplanted some of the native labor. I suppose the influx of immigrants to Germany accelerates the increase of skilled men on the market to compete for jobs. On the other hand, there is a large emigration of skilled men from Germany to the United States and elsewhere. I never knew of a man being worth less money in consequence of being more educated.

## SKILLED WORK AND ITS REWARD.

The question whether the tendency would be to regard the skilled workman with less appreciation is a problem that does not worry me a particle, and I do not think it will worry the workmen. It is the style or standard of living in Canada, not the cost of living, that keeps up wages here. The standard in Germany is becoming higher every year; they are increasing more slowly than in this country, but there has been a very marked increase in each decade. The increase must be in about the same ratio as the increased cost, otherwise you would have a revolution in a short time. The invention of the necessary machinery to facilitate the production of our finished product demands greater skill than the scientific processes that enter into the conversion of the raw material into the finished product. Increased intelligence and increased ability must always bring a reward. If men have more money to spend, they will live better, dress better, and use more of everything they can buy, and thus make a better demand for all other products and industries. We are getting on pretty fast in that direction.

# SECTION 3: INFORMATION OBTAINED FROM Mr. MATTHEW J. BUTLER, C. E., AT SYDNEY.

When the Commission visited Nova Scotia in 1910 Mr. Butler was Manager of the Dominion Iron & Steel Co. employing about 2800 men at Sydney, with a good many departments under superintendents. He said that unquestionably the whole enterprise hinges upon the skill and ability of the superintendents of different departments, and even with the very best financial organization and administrative ability it would go to pot as a manufacturing concern if those men were not capable. The operations are highly technical, requiring the highest possible degree of skill and experience, and a class of men of industry, integrity and ability to make a success of the whole thing. Everything does not go on without a hitch; we have our troubles, but the men are highly competent to remedy them, and do so all the time. If anything went wrong in the first instance the superintendent of the department would be called on, and he of course would look to his own department and seek to remedy it. If, however, it passed by this department it would be before the Manager next morning in the "defective output for the day," and it would be brought to the attention of the superintendent by the Manager that this department had fallen off from some defect or other. After the superintendent come skilled workmen like the foremen, and undoubtedly much depends on their industry and ability for the smooth working of the establishment.

## How to Get Trained Men.

A college training is a very excellent way to begin to prepare for a position as superintendent, but no college could ever educate a man for a superintendency or a foremanship; he must have the practical training, and go through the industry itself in order to develop the requisite ability. Education of course is only gaining correct knowledge and gaining power to apply it; it is simply the developing of man's powers so that he can make the best of the abilities which the Lord gave him to use, and if it fails in that it is a failure, however much instruction a man may have assimilated in some sort of fashion. Quite possibly a college would bring within his reach much more knowledge than he could gain by personal observation, though that is a debatable point. It depends on the industry of the man and what kind of a man he is. Technical Education is desirable, and technical knowledge with that is really necessary.

The automatic machinery employed enables us to dispense to some extent with skilled men. The tendency of all machinery is of course to dispense with common labor, heavy manual labor. Under modern conditions it would be impossible to produce steel in Canada without the aid of machinery, and whenever any particular portion of the work becomes of such a disagreeable nature because of difficulties of one kind or another that men cannot do it, the inventor must devise means to relieve the men of that disagreeable, onerous and nasty job, if it may be so described. Wherever it is possible to cheapen the production of an article, whether by means of the hands or machine, the natural law operates, opening larger markets, bringing a greater consumption, and other opportunities for labor in another direction. That is the history applied to the arts all the way through these works and Mr. Butler was sure the wage-workers were getting their share of the progress.

## CONDITIONS OF PRODUCTION AND SALE.

Situated at the very eastern end of the Continent, with a very long haul upon its goods and a heavy burden of transportation to bear, this Company must study economy to make the ultimate success all hope for. We have here large quantities of coal, and we follow the natural law of bringing the ore to the coal in the steelmaking business, but we have the handicap of long transportation, and with a sparsely settled country between here and our market, the development of which is slow, we get scarcely any local consumption at all for several of our products. Practically our nearest point is Montreal; a small quantity goes to St. John, but the bulk of our products go to Montreal and points west of that. That is somewhat of a handicap upon Sydney as an industrial centre. Its advantages are that it is close to the iron ore, has cheap water transportation from the ore mines in Newfoundland, and the coal is plentiful. On the other hand, owing to the small size of the City of Sydney as yet, the labor question is such that it will always be a matter of difficulty to get emergency crews, whereas in a large centre such crews are always handled without any difficulty.

This plant is growing. Before this time next year it will be increased by one-third: the year following it will be still bigger, so that in the course of four 191d—Vol. IV—5

or five years the number of employees about Sydney will be doubled. It is bound to be so; we must keep up our growth commensurate with the growth of the machine.

## HIGH CHARACTER OF WORKMEN.

Mr. Butler said the efficiency of labor would be improved if it were being trained meanwhile by supplementary means; and he added, "I would like to say something about the character of labor that the Island of Cape Breton produces. I have not been here very long, but I do think that for fine-looking and brawny men it would be difficult to find anything to compare with them anywhere else in Canada. The type of men working in the mines, in what you might call the lower scales of labor at present, will be found here in the higher walks of life altogether when the happy day of proper industrial conditions arrives. At present the men have to take what they can get. There are fishermen, and there are miners and lumbermen; unfortunately no farmers. We need and must have a better farming population and a larger country population in order to make good our industrial efficiency in that respect here."

The Chairman said he had scanned with uncommon care the faces of more than 100 men that day as he walked around, and they looked not merely intelligent, but like men who had themselves in hand in every way.

Mr. Butler replied:—"Well, as I say, so far as the native population are concerned they are a better-looking race of people than you will find anywhere else. Why they are so is beyond me. A great number of men are Nova Scotians, and I think they are a superior class of men all the way through." As an employer of labor here Mr. Butler would favor any opportunity for young men getting further training at nights. He thought the facilities here in that direction had been appreciated.

#### HOW APPRENTICES ARE DEALT WITH.

Ordinarily we don't exact that apprentices put themselves under indentures. Although there is a form prepared for the purpose, unless a father brings his son and says he would like to have him indentured, the indenture is not entered upon; it seems somewhat contrary to the genius of our people to indenture. As a general thing, however, I think most young fellows stay the full time and become journeymen.

#### TRAINING OF ENGINEERS.

Mr. Butler:—"I would like to say something about what I think of the teaching for the Engineer courses in the Universities of Canada. The whole of the courses have been produced within the past 30 years, and in consequence probably a great deal of experimental work had to be done in order to find out just what a technical course meant. I am sure that nearly every engineer who has had occasion to deal with the graduates of the Technical Colleges has been somewhat disappointed in the product turned out by the colleges not only of Canada but of the United States, as well as the Technical Colleges which give the degree in Applied Science and of

Engineering. About 10 or 15 years ago there was a strong effort made to specialize courses, and they began turning out men in what they called Civil, Mechanical, Mining and Electrical Engineering.

## SPECIALIZATION SHOULD BE DROPPED.

"In studying the results of those courses I reached the conclusion that all such specialization should be dropped from college courses altogether, as being practically an absurd thing for a college to attempt to do-to turn out engineers at all; that all they could hope to do was to teach a student right habits of thought and work; how to use his books; where to look for information; accurate familiarity with the elementary principles of science and mathematics. I do not think a student ought to go out with that sort of bewildered expression on his face that says, 'It seems to me I have heard of that before, and I ought to be able to do it.' He ought to go out with a certainty that he does know the fundamental natural sciences that govern all engineering. He should not go out with the idea a young graduate brought to me-that he was suitably equipped to be put on the staff of the Quebec Bridge, which is the most difficult problem now in our field requiring solution. It seems to me that a young man should be sent out knowing the rudimentary things thoroughly and well. He should not go out with halffledged ideas-a smattering of this and a smattering of that, and no certain knowledge of anything.

"Now, I am afraid that that is the difficulty under which our graduates labor. There is a notable deficiency in the ability to write a letter; in the ability to express themselves in ordinary, simple, plain English; to 'tell the story,' if it is only an application for a position—to tell it properly and directly. I think you will find more errors of grammar, punctuation, spelling and bad penmanship in letters from technical college graduates that you ought to find. These are some of the conclusions that seem to me are justified by my last ten years' experience with college graduates from technical schools of Canada.

## CAUSE OF POOR CONDITIONS.

"These conditions arise partly from bad preparation before they start in engineering courses, and partly from the fact that they are trying to do too much, to cram too many things into their heads in the four years. I don't want to convey any false impression. They have done an immense amount of valuable work. Some of the best engineers in the land today owe their training to the colleges; but these men have supplemented their deficiences by hard work after they got out. Some of the best men I know of have taken two years in the college and covered the educational features of it; then they have gone to work for a year or two, and then completed the course in college. These are well trained, capable men, and learned very rapidly to make themselves most useful. I do not think the manipulation of machines and things in laboratories is at all equivalent to that sort of work in factories. A young man goes into the mechanical engineering in a college and plays with a piece of steel on a lathe to turn out a bolt. After a certain amount of work he learns to make the bolt, but the thing he has not learned is that he must

191d-Vol. IV-51

make that bolt accurately, properly, drilling and turning it out at a price that will enable his employer to live and make a profit. That is where the college falls down—in not giving him a proper sense of appreciation of what he is learning, as distinguished from what he thinks he is learning. The time at the college would be better spent in studying the principles and getting a control of these things, and the handicraft should be learned in the shop. At the end of his course or during his holidays the student could no doubt materially improve his appreciation of what college has done for him."

# SECTION 4: INFORMATION OBTAINED FROM Mr. DANIEL McDCUGALL AT GLACE BAY.

Mr. McDougall is president of the Canadian Mine Workers, District No. 96, composed of men who work in and around the mines. The attitude of these men and himself, as well as the day laborers, is very favorable to evening classes, which they feel would do them and their children good. A large proportion of the men work underground; attendance at evening classes in a well lighted and well ventilated room would not do them any damage.

The miner qualifies to be a foreman by attending a night school taught by a man appointed by the Government. After being there a certain time he goes up for examination for the different positions, called Overman, Underground Mine Manager, and Manager. Some of those classes are in charge of professional teachers, who have actually been in charge of mining work, and know the practical part as well as the theoretical, and who have raised themselves to these higher positions. Personally witness would not like to take his knowledge from a man who had not the practical part of it, for he did not think such a man could teach, and he would not exemplify it as well as the man who had that practical experience. Mining would be made safer through the training of foremen by men who know the practical conditions, careful men who have gone through training both practical and theoretical.

#### LAW REGARDING APPRENTICES.

According to our mining laws there is a system of apprenticeship for young fellows learning mining, the length of time a fellow spends depending sometimes on the chance he gets. Of course some fellows pass for underground managers who have never worked at the coal-pits. There is no general rule or law laid down for them to follow. Boys generally go to work in the mine as drivers or doorkeepers, and after a while get with somebody as helper, and then after working a certain time at the face of coal, they go before the examiners appointed from the working miners, and after examination get first a loader's pass, then a miner's pass, then after a certain time they can get a pass for what is called examiner or deputy in a mine. That is all the passes the boy gets. Then he goes to school, and after examination by the board gets a pass for the purpose of taking charge of a mine.

ł

If a boy gets a good show he would be a miner in two or three years. Witness did not know of any case where drivers are younger than 14, but the law now is that a boy must be in the 6th grade at school before he is allowed to work in a mine.

## EVENING CLASSES HELPFUL, BUT NOT ADVERTISED.

Evening classes would be very good for those boys to help them along and give them more information. They are like all young fellows in the way they pass their evenings, and that would make the greatest difficulty in getting them to attend school. I have eight children, some aged 16, 17, and 18, and I certainly think it would be a great thing to have evening classes so attractive as to induce those young fellows to form the habit of going into them three or four nights a week. It is a very serious thing for young fellows growing up to get in the habit of spending their time unprofitably. I cannot say whether young fellows would enjoy their games better if they had only two or three nights for them and spent the other nights in serious work; it just depends on the make-up of the boy himself; it would suit some fellows all right, and more fellows it would not. I believe some of them would rather loaf all the time than go to school at night. I think I would enjoy plum-pudding better if I got it only once a week, and naturally I would think there would be more enjoyment to the boys to have their sports two or three nights a week rather than all the time; they would go into them with more zest, and also enjoy their night-classes. A man might learn the theoretical part of mining in school, but he would not be able to go down and handle the work. A miner would get a lot of benefit in a night school.

I don't know that I can suggest how the classes could be improved. What we want to do is show the men and boys and miners the advantage of going to those schools, thereby drawing them and making the schools more valuable, and governing them so that they would be a well established thing. The attendance at the classes has not been good at all. I think the reason is that their claims are not brought enough before the men; they ought to be more widely advertised. I don't think the deposit of the fee affects the matter, and I think the text-books are very reasonable. Probably if the books, etc., were free more would go. Some people who would go to these schools cannot afford to give that much money towards it.

## MANUAL TRAINING, DRAWING, DOMESTIC SCIENCE.

What is required is to give more practical training and a higher standard of education. Just now the standard is not too bad, but it must be improved upon somewhat. In connection with our Central School here we have Domestic Science for the girls and Manual Training for the boys, and it is very good. I think that would be to the advantage more especially of boys who intend to go into industrial work. We have another very good thing, that is, drawing lessons for the boys; these give them a technical idea of how to go through plans, and all that business; it is very good education. We have no Nature Study or School Garden around here; I know nothing about them. It might be all right for those who would take up that line of work, but I don't know that it would be very advantageous around here. I think the general practice here as to spending the miners' wages is that the man himself does the buying or ordering from the stores, unless it is something that he has not time to look after, and then it is done by the women. I think it is better for the man to do it by an order from the housekeeper. He is the one that governs the internal workings of the business; the woman is the one that does the ordering for household necessities. I understand economic buying is taught by the lady in charge of Domestic Science. Practical cooking would be a very valuable part of education. I think there should be more education to teach girls how to buy well.

## WORK HOURS AND SCHOOL HOURS.

There are no fixed hours for people working at the coal faces. There are certain hours for the boys working during the day. They might have to work at night if the place is on double shift. A driver is only governed by the amount of coal he has to haul. When he has done hauling his coal he goes home—sometimes at 2 o'clock, sometimes 3, sometimes 4 and as late as 5 o'clock. I think it would be very hard to arrange to let boys off to attend afternoon school, because every boy has his own work, and when he leaves off it puts the work behind. A night school would interfere with some boys, but of course boys don't generally have to work all nights; they go week about—one week night and one week day. There is not a great deal of that night shift work done here, not as much as it has been. I don't think it would be any great improvement if there was compulsory education to make children go to day-school until they were 16, but there is great neglect sometimes on the part of parents in sending their children to school. I don't think any boy should be sent to work until he is 16, more particularly to the pit.

## HOW EDUCATION WOULD HAVE HELPED.

I have lived here about 35 years. I know the miners fairly well; some men who came in later I don't know. The mining schools have helped the men to higher positions because they cannot get them unless they study for them, and pass the examinations, although there are a lot of practical men to-day working in the mines that could teach some of those fellows that went to those schools some things they never knew. Those practical men that have worked in the pit all their life know it right, the whole business; they are men who have made a close study of their work all along, and know everything about it. I would not say they would be superior miners, above the average. The only thing that kept them from getting ahead is perhaps that they did not have the privilege of schooling in early days, and the stiffness of the Mining Laws prevents them from getting ahead, on account of the lack of education, like the fellows who had it. I don't know that such men would take advantage of evening classes.

There are some of them too old to bother with education, but there are some more fellows I know that just took advantage of this, and as they could not afford to close work they went to night classes and passed their exams. and got those higher positions in the mine just because they took advantage of the night schools. Some of those older men could teach some of those new things better than ordinary

teachers, because they have been around ventilation and mining all their lives, and have done nothing else but that kind of business, and know the whole thing. By a practical knowledge of the mine they know exactly the condition of the roof, the nature of the coal, and everything like that, whereas probably a man that went to school might have learned it and yet would not apply the practical knowledge of it as men would that have been around it all the time. Sometimes a man could help fellows by having them go down the mine with him, because they could then see it for themselves. The knowledge of those old men will be passed on eventually, because every man acquires that knowledge according to the length of time he works. The man who passes the examination and takes charge in a mine, will after a while, along with his training and all that, get to know the whole thing just as well or better than anybody else. When it takes a man 30 long years by close observation to get more sense, he could help another fellow to save a great deal of that 30 years if he was taken in and used for that purpose. Probably that old man could be used to explain to the people; but then a man that is teaching the class would be able to explain as well as the other fellow.

## EDUCATION SAFEGUARDS MINING.

I don't believe it is unjust to require a man to be educated before he gets a certificate. I believe that is the only way you can safeguard the business, for by means of the examination the men in the mines are protected. I don't think a man's practical knowledge would avail him to make him competent. I think the men who go from the Mining School know more about ventilation and the fundamentals of mining, so that accidents will not occur. This school by its training and education does a great deal towards avoiding accidents and the like. The people in charge of the mine have all had to stand their exams., as the law of this Province requires that a man cannot take charge of a mine unless he has a certain grade of exam.; thus the evening classes make mining safer for the workers. Sometimes there is carelessness, and I believe most accidents are caused by carelessness, not lack of knowledge; they risk too much. I don't think any system of technical education or any kind of knowledge, would prevent those accidents if men are careless. The man has to protect himself. After all, when you simmer it all down, the main purpose in all education is to make a man careful. As far as I know, the law in regard to inspection is carried out. I have nothing to go on but the reports, which are made regularly.

# SECTION 5: INFORMATION OBTAINED FROM Mr. ALEXANDER McEACHREN AT GLACE BAY.

Mr. McEachren is Superintendent of No. 1 District, and has charge of between 2200 and 2400 men. He has occupied that post three years; has done everything in the mine; began as a trapper—a door-boy, the lowest thing in the mine, when about 8 years old; went to day school as a little fellow, and studied

by night after he began to work. In those years they did not work and study, but when the mine was idle he went to day school. He was married at 18, and went to mining night school after that when about 20 for two winters. He took a full mining Correspondence Course, and is now taking an English course to improve himself, because he felt he required it, for a person who went to work as a boy would not have much chance of getting a very extensive education, and what he got was by reading afterwards. He considers that a course in English makes a man better for anything else and also increases his area of enjoyment.

Mr. McEachren said:—"I agree with what the other Superintendents have said about the advantages of night schools; they are very good; I don't think they go far enough; they are a great improvement over 20 years ago, and if everything progresses in the future 20 years as it has for the last 20 years, I expect we will see a great big college, which to my mind is what the people need to give them the opportunity such as they have in big cities like London and in large mining centres. I can see the day coming when this will be a large place. The people of 20 years ago are not the people of to-day in this part of the country.

## SOCIAL BETTERMENT BY EDUCATION.

I think there is a better appreciation of the real value of education than before. The night school for miners has been a factor in the improvements. I believe it is largely because of them that there is so little dissipation here compared with other mining camps, for as a rule a man is a better man if he is educated. Then a man situated as we are has to work by day, and as he has only the evenings to educate himself, the night class takes up his time, and if ambitious he takes an interest in his study; in that way he does not form dissipated habits, but keeps his mind occupied, which would not be the case if he was running around free, as they did in former years. Hence the night schools are a protection to the community as well as to the industry; I have always felt that.

I don't think attending night school hurts a man. Even if I felt tired when I went out I would meet one or two chaps in the class who see the ridiculous side of everything, and that would make me laugh. Then you pass opinions, and you get a comical fellow who will tell a little story, and you will get a lot of things that will help you, and it refreshes you when you go home. To my experience a man who does not tidy himself up in the evening, who makes no effort and does not go out at all, is not as fresh the next morning as if he had tidied himself up and changed his clothes and gone out and met people.

I suppose England has the oldest mining school, but I am not sure that they have any in the United States; there are none that I know of, at least there were none when I was there about eight years ago; they simply got their text-books and studied, and got along as best they could themselves.

# CHAPTER V: SUMMARY OF OTHER TESTIMONY AS TO INDUSTRIAL WORKERS.

As has been already stated there was inevitably a good deal of similarity, approaching repetition, of much of the testimony of workers in the same class of industries at the different places visited. An attempt is here made to assemble out of the mass a representative summary of such testimony and to arrange it, in the main, under a subheading for the industry or occupation to which it relates.

## SECTION 1: AS TO CONDITIONS GENERALLY

The great industrial development of Nova Scotia in coal-mining and steel making, besides a variety of other manufactures, is tending to discount agriculture, and a strong effort is needed on the part of the school to make instruction in agriculture and allied subjects interesting, intelligible and helpful to young people.

The steadiness and perseverance of the Nova Scotia people are such that the industries of the province, which are greatly increasing in number, are well manned, and there is really no lack of skilled workers, but as insistent calls from the West continue for artisans as well as laborers, the shortage of workers will be felt in the Maritime provinces. As industrial developments constantly call for finer manipulations, the schools should be diligently preparing young people, or these constant demands will leave the Province short of skilled workers. Textile works, hat making, furniture and other industries are doing a profitable business in the Province, some of them in most unlooked for places, which, geographically, have no attractions in the way of shipping facilities, etc., while the conditions of life are so comparatively easy and pleasant in the Province that these industries attract workers. The fact that these artisans possess skill under present conditions is the best argument for further development of technical education, beginning with the kindergarten and running all through the school system.

Labor conditions in Nova Scotia are exceptionally good as regards quality of workers. The steadiness, carefulness and sobriety of mine workers has had a marked effect on the safety in mines, which in Nova Scotia stand highest in the world's record in this regard, having a smaller number of accidents per thousand tons mined than anywhere.

The safety of mining operations is improved by increasing the intelligence of the workers. "The Nova Scotia miner is 20 or 30 years ahead of any other class in opportunities of education along his particular line." He has had the benefit of systematic instruction as well as experience.

#### EDUCATION AND SCHOOLS.

Education has been a large factor in keeping up this high standard, but it is still needed, and more so as local conditions require longer hours. Night schools are not strong enough to cope with counter attractions, such as moving pictures. Poor attendance at evening school is due to irregular attendance in school days, which results in boys getting left behind. If the boys felt that the public school fitted them for life, they would stay longer, and teachers must be competent to attract young men, who feel they ought to be earning. Evening schools are what these boys need, and day school buildings might just as well be used for them.

The people of Glace Bay would like to see further provision for Technical Education and would approve of evening classes carried further than at present in courses and numbers. Practically the only industries are coal and steel, so that anything that helps these would help the whole community.

The general feeling is in favour of cultural plus technical education for young people; people want to see their children compete with other countries. "We have the facilities for making a great country, and want our country to make it so. People are willing to pay for better technical education if they are shown how to get it."

## Typical Local Industries.

Mr. W. Fred Donkin, Clerk and Treasurer of Amherst, gave an interesting sketch of the origin and growth of the industries in that town. He said the chief cause of confidence in those industries was that the men at their head had not only technical, but also the practical knowledge; they had all started in a small way and grown up steadily, winning the confidence of people who had money to invest. He cited the Amherst Boot & Shoe Co., which had not more than \$3,000 or \$4,000 capital to begin with, the men at its head having started from the bench and worked up. The same was true of Christie Bros. & Co., Rhodes, Curry & Co., the Robb Engineering Co. He could remember when Mr. Robb's father had a little tin shop, then he built a small foundry, and worked his way up to a successful business. Those men all gained industrial efficiency by practical work right from the cellar to the attic of their business. Witness believed that in the present state of the business life of the country technical education in any line was of great benefit, for if a young fellow gets a thorough grounding on a certain line of business in college it does not take him as long to arrive at perfection as it would if he had to learn it all from practical experience.

## BUILDING CONSTRUCTION.

A simple course in house construction would be a benefit. Men at present cannot finish a job without supervision; they take no pains to educate themselves, and explanations have to be made over and over again. A course of manual training while they were boys would be of assistance. Nine years is considered the time it takes to become a competent builder, and two years could be taken off this by Technical Education along with practical work, and enable men to take better

positions. Night classes would improve the efficiency of the men; the present classes do not meet their needs, and should be improved.

Evening classes would be beneficial for bricklayers' apprentices to teach them drawing, English, mathematics, architectural drawing, use of steel square and reading plans. If a man wants to be a foreman he must be able to read plans; supplementary education would be desirable, but is not absolutely essential. Workmen of the present day need education, and a good mechanic requires it as much as a professional man. They need to learn to lay out plans, and should learn this while young. The most successful foremen are those who attend drawing school in the evening. One witness thought that Technical Education might tend to boys giving up bricklaying, which is hard work.

Plumbers' apprentices need Technical Education because plumbing has now become a profession. They should go to evening class to get arithmetic, and the practical part of the work that they get in the shop.

It takes a boy three or four years to become a shipwright. It would help them very much if they could read blueprints and drawings. Two nights a week of night school would not hurt them or interfere with their work.

#### CARRIAGES, WAGONS, ETC.

Apprentices would benefit by attending evening classes if they would go; it would help their efficiency during the day, train them in good habits and give them more interest in their work. Manual Training and Drawing are useful for this trade, and men would attend free evening classes to improve in designing, etc. Special classes would be a good thing.

Night schools are needed for Railway Carriage Building. Many take correspondence course and benefit greatly, but it does not reach far enough. A witness favored more advanced work in a Central School in the Louisburg district. 25% of men in carriage building have learnt their trade outside Canada, and boys leave after 3 years or less. The Silliker Co. insists on apprentices taking Manual Training or Technical School, and gives them \$2 a week **m**ore if they do. Boys should be taught here instead of importing men; a trade or technical school is needed for these occupations. Boys sustain no physical injury, but rather benefit from attending night school, as it gives them a change of thought and environment. Industrial training should begin before 14. Technical schools do not appeal to young men in car works, as they are not elementary enough; they want the three Rs and not electricity and drawing. Boys in car shops need no special training for ordinary work. It is hard to get the men to attend night school, but they would greatly benefit, and earn higher wages sooner. Lessons on frictions and breaking strain, etc., are too advanced; mechanical drawing would be good. A man can learn to drive nails in 5 days, but it takes years to become a master builder. One witness thinks the reason young fellows don't go to night school is that it is not sufficiently advertised.

#### CHEMICAL INDUSTRIES.

Necessity for chemical training in Nova Scotia is emphasized. Our educational system falls short in the chemical department. There is no chemical train-

ing for chemists in Canada, as the few classes that exist have no laboratories or lecture room, and very few appliances. It is essential for every technical man to know chemistry.

In the works of the Coke & Coal Co., or in the chemical laboratory of a large school, a man comes out as a mechanical or chemical engineer, with some knowledge of noxious gases, but without the necessary knowledge of chemical formulae and ability to solve mechanic equations. Apprentices in the Coke Oven Department need some theoretical as well as practical instruction. The best way is for them to be at school one week and at work the other. The superintendent of a department or a technically trained foreman would be the best instructor. College training, however thorough, is not sufficient to enable men to take a responsible position without practical experience; the college workshops do not give the same training; they teach general principles, but not practical operations.

Correspondence courses are of value for those men who do not care to go to school, but personal contact is better.

## CLOTHING AND TEXTILES.

Evening classes would be no good to woollen mills employees, as the work is done in sections with two-thirds female labor; overseers are trained by actual work in the mills. The School in Bradford, England furnishes training for some of our young men who wish to make woollen business their life-work. The woollen business is a complicated one; it is a question whether Canadian goods are as nicely finished as English goods; Englishmen can put better finish than Canadians can on shoddy or inferior fabric, but in the high grades they have no advantage. Canadian colors are equal to any in the world; it is a mistake to think our colors cannot hold; dyes are bought from German makers and if Canadian water is not quite right, the witness knew what to put in to make it so. Canadians are making real progress in finish and quality of color. Workmen in Canadian factories get better wages than in England, and the standard of living here is higher; hence an English manufacturer can turn out a quality of goods for 30% less money that in competition is practically as good as Canadian. Not only is the cost of manufacturing lower in Britain, but they can specialize more; e.g., in the west of England witness found one mill running on riding breeches cloth alone, whereas in Canada we could make enough of this in a week to last Canadians a year.

Provision is needed for training tailors. At present it takes about seven years to learn, but on the half-time system a boy could be proficient in two years. Practical knowledge of the trade and allied subjects is needed. There is no regular apprentice system, but boys usually spend about 5 years learning. The proper system to help apprentices is the Technical School Garment Class, in which students make marvellous progress. There should be a school in Halifax or elsewhere for the idle winter months from January to March—a sort of post-graduate course for journeymen tailors to exchange ideas. If there were facilities at Varmouth for **n**ight schools many more would go into tailoring.

Boys in the cotton duck factory work around machines, which leads to no trade, therefore a night school to teach them a trade would be a good thing, though

it would not help them particularly in the mill, except in a general way. Evening classes for weavers and spinners would help them to be promoted. It takes a year to learn, and some girls become so proficient that they earn a great deal, but training outside would not help them. An overseer says he would go to night school himself after 15 years' experience.

Many men in Stanfield's Underwear Factory at Truro take Correspondence Courses, but a school there would be better; men who rise to be foremen have had such training.

Manual Training at school would help boys to learn to use their hands and to become more efficient.

Some journeymen tailors attended the Technical College at Halifax and got much benefit. A class for power machines under a competent teacher would be a great help. Girls cannot sew either by hand or machine; this should be taught at school.

Clayton's Cotton Factory in Halifax pays the fees of boys and girls going to Commercial College. The firm could not arrange to spare machinery for day classes.

## ELECTRICAL INDUSTRIES.

What is most needed in this industry is a reliable man, and an educated man is generally more efficient. The habit of observing closely is all-important, and makes a man more reliable, therefore anything to give him that training would be valuable. Manual Training makes boys more reliable.

## METAL TRADES.

Most employers in the iron trade favor evening classes, opinion being divided as to whether these should be made compulsory, and also on the question of shortening apprenticeship for attendance. The subjects suggested are drawing, reading plans, arithmetic, writing, knowledge of tools and chemistry.

Men in blast furnaces should learn about combustion of fuels, and those in rolling mills need to know the qualities of metals and fuels, and the care of machinery—in fact, anything which enables them to make suggestions. Mechanics and metallurgy should also be taught.

Men would profit by the advice of experienced men on what books to read, and employers favor reading courses for men too old or otherwise unsuited for night school.

The co-operation of employers is favored, many already making attendance at evening classes a condition of promotion.

All are agreed that actual work can only be learnt in the shop, and the practical work given at college is not the same thing, though it helps young men to rise more quickly.

Some employers favor the half-time system, which could be managed by duplicating the numbers of apprentices. One employer considers that 6 months alternate school and shop would answer better. Manufacturers would put money in their own pockets by co-operation with Technical Schools and Universities; and they should co-operate to see that their apprentices get promotion according to attendance.

The present evening classes are good, but need to be made more attractive, with more equipment. Courses should be arranged by practical, experienced men.

A public laboratory is needed at Sydney Mines, and would be appreciated by those who used it, though many would not avail themselves of it. Analytical ability is not much use to workmen, but a general knowledge of principles would be useful to them. They get this in the Technical School to a certain extent, but only practical experience from the bottom up can teach it.

A boy should start in the steel business at 14, certainly not later than 16. This does not give him time for a High School course, and Technical Schools are not always practical. A boy kept at school till 20 or 25 is not fit to work. Attendance at night school would not injure a boy's health, and those who get on well will probably go to Halifax or McGill, while those who stay will get promoted sooner.

Night school would help machinists to get into the finer parts of their business, and show them how to do the work quicker.

Manual Training at school does not help a boy to become a pattern maker, as he forgets it before he starts work; a night school would help. Manual Training helps a boy with drawing and practical mathematics, provided he goes right on with such work on leaving school, otherwise he forgets it all.

One man with 33 years' experience said he would go to night school. Men need explanation of fineness and hardness of metals, and a knowledge of mechanical drawing. These help to raise salary, increase production, and thus benefit employers as well as men.

The Secretary of a Machine Company says that good training for apprentices would help the business; foremen need Technical Education.

Industrial Training would help to develop the New Glasgow locality, and the best means is an apprentice system combined with night school. Technical Education makes occupations safer, more economical and more productive.

One witness favors supplementary school, but not evening class. Boys should go to day school till 14, then to day Technical School till 16. He would be glad to see boys get pattern making at school with Manual Training. Tuition and books should be free.

Iron work helpers in ship-building take 3 or 4 years to learn, and could learn quicker with night school. Compulsory night school would be the best thing for boys of 14 to 16 who have gone to work. One employer in this business says he would make it a condition for his boys to go to evening school.

Tinsmiths have an apprentice system. One witness advocates evening school for apprentices, who would be able to earn 50% more if they attended for lessons in cornice work and tinsmithing. Some boys who do not become good cornice boys in four years under a foreman would do well if they had some Technical Education in addition to the mechanical knowledge they pick up. Workers would go to evening classes if they could thereby get help in their business.

For engine fitters the reading of technical papers not too technical is valuable. Only time will teach a man to do properly the things he has to learn by

experience, but he can learn in school how to do things more quickly. Evening classes should be made interesting and down to the men's level. It is better to make them interesting than compulsory, and hours of labor should be shortened to admit of attendance.

It is not really necessary to have technical education to be a good moulder. No technical skill is required in enamelling, but any foundryman would do well to know drafting and chemistry, the latter being indispensable in the enamelling business. Careful workmen are needed, and anything that tends to make a boy careful, thoughtful and observant is an advantage.

#### PRINTING.

Evening classes would help printers if they were as good as the Correspondence Course of the Typographical Union, which is the best that can be had. Workmen do not understand the underlying principles of their work, and they need this to give them confidence and independence.

## WOOD-WORKING.

The education of artisans, more particularly carpenters, is not sufficiently provided for; they lack knowledge of plans and estimates, and much might be done in regard to mechanical drawing. A man can do practical carpenter work without a night or correspondence school, but these would help him to learn quicker.

Night school is a good thing for boys who have no other means of getting an education; a night class in reading plans, etc., would be useful, and preferable to the half-time system, but best of all is regular apprenticeship with evening classes.

Machinery has affected apprentices and it is now more difficult to become a good journeyman. Men who attend technical school make better carpenters than those who do not.

Manual Training in school with a turning lathe would be a splendid training for carpenters. One witness who is turning out barrel stock said he wished he had had Manual Training at school, and would see that his son gets it now. Evening school is a good thing, and a man who has learned drawing gets a better chance of promotion.

## OTHER TRADES AND INDUSTRIES.

A hardware merchant says boys cannot spell, write or figure, and are not taught sterling and other foreign weights and measures which are required in office work. Courses in commerce and salemanship would be useful, including writing, book-keeping and correspondence.

Manual Training is useful as imparting a knowledge of tools.

Lads who attend evening classes would be more capable workers. Manual Training is a great advantage in all branches of industry.

Night schools would help locomotive firemen, if the teacher were a successful locomotive engineer; failing that, a man who understood about burning of coal.

A class meeting once a month at headquarters to talk things over would be helpful.

One locomotive engineer took a Correspondence Course and found it of use in helping him in breakdowns, saving fuel and repairs, etc., but it was Corresponddence Course plus experience that taught him.

A night school on air-brakes with a demonstration car has proved a great success. Experience coupled with Technical Education is considered **th**e best training.

A mechanical draftsman says that college training is not much use in drawing, because they learn to make an outline of one complicated machine, and much elementary drawing; whereas in practical evening classes special attention is given to practical features of drawing; a man makes drawings of a machine part by part and puts it together as a drawing. The main value is in disintegrating the machine and putting it together from a drawing, instead of sketching parts.

Technical lectures in connection with road-making would be very bene-ficial.

A civil engineer says that one of the chief difficulties in introducing new kinds of cement is the ultra-conservative attitude of those men who go by literature and refuse to be convinced by facts—i.e. who lack proper training in observation and investigation—powers which should be cultivated by every engineer. Men in charge of public works need training.

There is great need for a research laboratory and testing laboratories, especially for the utilization of waste products.

#### BANKING.

A bank manager says that business college training is not very good; it trains boys in business forms, but not in concrete banking, though young men might learn quicker if they had that training.

## RETAILING (DRY GOODS).

Clerks are deficient in writing, spelling and mental arithmetic. A business course for clerks after Grade 8 might be a good thing. Those who take Correspondence Courses become more efficient, and a night school in the same subjects—sign writing, window dressing, etc.—would be valuable. A Dry Goods Clerks' Association where they could discuss matters would be of mutual benefit. Correspondence Courses do not teach them to distinguish different kinds of goods, but give them general principles. The technical college should have a Dry Goods course.

## TRANSPORTATION.

If telegraphy were taught at commercial schools, it would be easier for operators to learn, and save time. The great trouble is want of education in all lines, and night school would be good to remedy defects due to leaving school too early.

## TRADES AND LABOR GENERALLY.

The testimony submitted shows that where labor is skilled and effective there is a great tendency to do it by machinery, but in a sense it takes a more skilful man to operate an automatic machine. Ordinarily a skilled workman would think he should get much more wages on account of his skill, but just in their circumstances it was the other way; the automatic machine would turn out a good deal more than the hand turner could.

Whenever it is possible to cheapen the production of the article, whether by hand or machinery, it is the natural law that larger markets are opened with greater consumption and other opportunities for labor in another direction.

Amherst woollen goods hold the market against English and others, while our men live better and earn more than the English. Fifteen years ago engine men earned 15c to 20c; now 30c and 35c per hour, and they are worth it; the product closely corresponds. There are more applicants for work than positions, but it is difficult to secure skilled men; ordinary labor is more plentiful.

Objection is made to women entering unskilled trades, owing to physical and moral effects; wages are very poor, not more than \$3 a week. In Halifax there are between 2,000 and 2,500 women workers in industries between the ages of 16 and 25; about 1,000 begin in the needlework industry, 9% in professions. These latter get opportunity for training.

The results of the trade school for garment makers were very satisfactory. The need is apparent and will be met. Trade schools could be established in large communities where many wish to enter the same trade, and could turn out skilled journeymen in less time than evening classes.

Women who can afford to go to High School and college need home-making training, also to learn industrial and scientific principles governing production. There should be elective courses parallel with others. Twenty-five per cent of all women in industries entering manufacturing life, such as dressmaking, millinery, etc., are practically wholly unskilled. It is possible to try the same experiment for women as for industry; viz., by the Government paying half the cost of teachers, and the municipality paying other half and providing building. Unskilled labor is greatly increased by machinery. It is a question whether factory girls can ever be trained to advantage; night schools are deprecated on account of tiredness; girls should not work all day in a factory. Legislation in cotton factories is not enforced; women are working 12 hours daily. Machine operators are scarce in the Province because they earn more outside.

There is a great scarcity of labor in New Glasgow; skilled labor is wanted; there is no overplus in the Province. There is a special scarcity in journeymen tailors, and that trade depends largely on foreign labor. The Chairman of the Nova Scotia Public Utilities Commission says as far as he knows the factories can get enough skilled reliable help for the different places.

Of small tools 40% are of domestic manufacture and 60% imported. The sparse population would not admit of small tools being made here; the Germans are capturing the market.

191d-Vol. IV-6
#### 3 GEORGE V., A. 1913

In Sydney it was stated that the whole enterprise hinges upon the skill and ability of the Superintendents of the different departments, as operations are highly technical. The automatic machinery employed dispenses to some extent with skilled labor; the tendency of all machinery is to dispense with common heavy manual labor. Owing to the small size of Sydney it will always be a matter of difficulty to get emergency crews; in large centres such crews are always handled without any difficulty. Employees here are a superior class of men all through.

Experience shows that a ten-hour day is not conducive to higher technical knowledge on the part of the workers. The loss of vitality tells, and the man becomes duller with a ten-hour day.

Suggestions were made that Canadians should study the methods of other countries by sending men away to observe; also to get men interested in their own industry by profit-sharing schemes. "No protection is equal to this method; protection of intelligent ability is better than anything else."

Trades Unions are at all times willing to assist technical education. The Trades Unions of Halifax have helped from the first. Labor leaders might not approve, but the technical school suggested inculcating the idea of efficient work and increased product.

# SECTION 2: TESTIMONY AS TO PERSONAL TRAINING.

The following are very brief summaries of evidence given to the Commission: Mr. Hale, coal miner, started in a pit in Forest of Dean, attended Night School in 1890, chiefly for mining subjects; got considerable help. Gained overman's certificate in 1891, later got an underground manager's certificate.

Mr. Hickson, Mine Superintendent, with 400 men under him, took course from science master in Dundee; after that went to States and passed examination there. Could not have been ready for present job without the Night School study.

*Mr. Fraser*, for three years General Foreman of the Nova Scotia Steel & Coal Company, had done pattern making before that for 15 years. Did not serve apprentice. Just picked up what he learned. Never went to Night School.

*Mr. McMillan*, Superintendent Steel Department, Dominion Iron and Steel Company, attended Public School, got private instruction from his father, entered Princeton University at 16 and took the ordinary course. From there went direct to Steel Mill, commenced at lowest position at 90 cents per day and worked up.

Mr. Rice, Manager Rolling Mills, Dominion Iron & Steel Company, graduated from Technical School in Worcester, Mass., then started in Rolling Mill there and worked up. In the High School there is a course that leads to Technical School.

Mr. Cameron Mackie, Chief Chemist, Dominion Iron & Steel Company, went through Public School and Night School in Mass.; took course in Dalhousie University; taught school for one year; came here in 1905 and started at lowest Chemist's position.

Mr. Nairn, Locomotive Engineer, learned as fireman and came up that way. Had about a year's training as shop engineer; during learning time only got instructions from foreman and journeymen; never attended Night School.

Mr. Johnson, Locomotive Engineer, was promoted from fireman. Acquired knowledge of blue prints from experience and through books. Had taken Correspondence Course at cost of \$75 or \$80. Got knowledge of use of steam and care of machinery.

*Mr. Hastings*, trained machinist, learned his trade in Edinburgh, where he served 5 years under apprentice system, then graduated from George Watson Engineering College after two years, having attended Night School during apprenticeship, four nights weekly.

Mr. William, Patternmaker, served five years at his trade in Scotland, beginning at 18. Was taught to read drawings, which is quite important. Would not have learned his business without a definite apprenticeship.

Mr. Whittaker, Ring Spinner, Overseer, learned by going to school one-half day and mill one-half day in Oldham, England, from age 9 to 13; after 13 he went to mill all day. Went to Night School after that for two or three years, 3 nights weekly. Studied reading, writing and arithmetic in half-time school.

Mr. Burton Johnson, who has been full locomotive engineer ten or twelve years, did some study and took two Correspondence Courses; did not learn to read blue prints until just before he was promoted from fireman. Found Correspondence Courses a benefit; picked up a good deal of knowledge in the use of steam and care of machinery, so that, as a result of course and experience together, his engine costs less for repairs and fuel than if he had had no training. He conducted a Night School at the round house, with a little air-brake plant, teaching mathematics of airbrakes and steamboilers, etc. Course lasted about 3 months and was popular, being attended by shopmen in mechanical department, and mechanics, also foremen. The teaching helped himself to understand these things better. The men who took that course are more likely to be promoted. Good-will is promoted by such classes so that it is a good element in shop life and work. He thinks there is nothing like experience coupled with good Technical Education to help a man to do well.

# SECTION 3; SUMMARY OF TESTIMONY AS TO TRAINING OF APPRENTICES.

Apprentices should get good common school education until 14, then attend trade school until 16, to be taught in day time by paid teachers. Apprentices must have more than mere hand work if they expect to rise. Apprentices now get training in haphazard way; they are promoted according to efficiency.

It would be best if apprentices could attend school one week and shop another, apprentices being gathered on the job and getting some little theory of their work from the superintendent of the department or from the foreman if proficient. Manufacturers should aid apprentices to secure technical training; then they would be of benefit to employers.

One witness says he taught himself what he was not allowed to learn as apprentice; several say they taught themselves by books and experience. Ap-

191d-Vol. IV-61

prentices need practical men to teach them, and actual shop work is necessary. Apprentices need trade magazines to read up. One witness thinks it is easier than formerly to learn business in a shop. Boys are very unsettled; do not care for education or regular employment; easier for boys to earn money than formerly.

The part-time system would be favored in Nova Scotia for many small and poor communities, if it had the hearty co-operation of manufacturers.

One firm sent their boys and girls to the Commercial College and paid fees, gave them afternoons off and paid them just the same; but the plan failed because they left the firm's employ and got better positions; therefore they now train their own employees.

Young people in factories should be allowed to go to school half days, and by having relays of workers this way would entail no loss to manufactures.

The half-time system would shorten apprenticeship and complicate matters with journeymen, but if made compulsory would be a good thing all round.

One master prefers the half-time system and says a boy of 14 would be as competent in 2 years as now in 5 years. Another employer thinks this system not feasible. One witness prefers more than week or day about and suggests probably six months at one and the same at the other. He thinks shops should be run on the half-time plan, and believes this might be done by duplicating the number of apprentices.

Apprentices in bricklaying serve 4 years; carriage building 4 years; harness making 3 years; machinists' trade 4 years; in turning shop in woodworking, 2 or 3 years; in car shops a boy can learn in two years, and when worth a man's pay, gets it.

Journeymen help the boys, who may stay three or four years under one or more managers. Twenty years ago apprentices in machine shops had to do certain blacksmith work, taking some seven years; this is now cut down to five years and confined to lathe or vice work, and the boy does not get a chance for all round training. Young men should serve four or five years.

In ready-made clothing boys and girls will not serve apprenticeship.

The whole system of apprenticeship has changed during the last 10 or 20 years, to the detriment of the mechanic. Apprentices are not required to put themselves under indenture; it seems contrary to the genius of Canadian people to indenture. Apprentices learn only a small part of trade as a rule, owing to machinery, hence fail to become mechanics. Under old apprenticeship system men were more skilled.

There is really no apprenticeship now, but more and more specialization every year, so that a man does not master the details of an industry to-day as he used to, and the boy does not get a chance. The apprentice system is practically obsolete as far as manufacturing operations are concerned, and no factory or concern can keep a boy at apprentice wages after he becomes useful.

The Dominion Iron and Steel Company does not exact that apprentices put themselves under indenture, and although there is a form prepared for that purpose, indenture is not made unless a father brings his boy and says he would like to have him indentured. Most young fellows stay the full time and become journeymen.

Canadian boys leave after three years; most do not stay as long as that. Apprentices often after 2nd year go driving delivery wagons. 80% of boys leave before finishing apprentice period. The chief difficulty is in boys changing, not being bound to stay with one firm; boys are very unsettled, do not care for education or regular employment; some leave for United States.

The apprenticeship system with a night school in connection is favored. Two firms in New Glasgow and one at Amherst require their apprentices to attend night school; and master plumbers say apprentices should go.

Some witnesses thought the proper system to help apprentices was a Technical School for three nights weekly, adding that the education a young man gets there is phenomenal; that it would be a good thing when engaging apprentices to make it a condition that they attend night school; that it would be a great help if superintendents from shops took classes in night school for apprentices; that attendance at night school would help apprentices in cornice working and tinsmithing departments.

One witness would not shorten the apprenticeship of a boy who attended night school; another thought apprentices attending night schools should get more pay, or that the term of service should be reduced. It does not raise wages in any way to attend night school.

One witness said that evening class attendance hurt a boy's health, but it was better than spending his evenings on street corners. Another said that working hours of apprentices should be shortened in order to allow them to attend night school.

Most witnesses favor boys attending night schools, one stating that in winter when business is slack, boys could go to a regular day continuation class. Only one witness was opposed to night classes for apprentices.

In some shops the foremen instruct apprentices; but compulsory night school is thought desirable in addition. If apprentices could go to night school they could be taken on at 14; otherwise not till 18.

One witness offered \$100 for an apprentice to moulder but could not get one. One witness advocates revival of the apprentice system, and says he does not think boys would object. The old system of indenture was favored because in an apprentice system there must be a mutual bond between master and boy.

There is a system of apprenticeship in all departments of the Robb Engine Co., Amherst, and 90% of their men have grown up with them from apprentices. In all departments the boys at Robb's get 50% of their help from foremen and others. Skilled workmen are willing to help young fellows. Continuation class should be compulsory for 90 days a year, for entire artisan populalation until 18 years of age.

In the Canada Car and Foundry Co.'s works there is no system for teaching apprentices. Technical education would help apprentices to earn 50% more. The discipline of knowing what cost means is not applied in college; apprentices and workmen get that discipline because they are called to account if things are incorrectly done. Twenty-five per cent. of men in the car works have learned outside Canada. Men in the cutting room in Ramsay Shoe Co. serve time as apprentices. Apprenticeship is favored for a certain number of years, with training right from the bottom. A better trained man or woman is the cheapest employee even at higher wages, doing more and better work. One witness believes in regular apprenticeship of four years, and the boy being compelled to remain with one employer.

The Printers' Union looks after its own apprentices and has laws as to age, etc., for protection of employers and apprentices.

In the ready-made clothing trade boys and girls will not serve apprenticeship. After being under a competent man in a technical school, such as at Halifax, a pupil could be placed as custom cutter with earning capacity from \$600 to \$1,000 a year.

# SECTION 4: AS TO TRAINING OF LOCOMOTIVE ENGINEERS.

Mr. Burton Johnson, of Truro, submitted the following statement: I consulted the most intelligent Engineers and Firemen, also Conductors and Brakemen, as to suggestions for betterment of the conditions of locomotive engineers, and find that they favor the text-book system of education as conducted by the International Correspondence Schools with the addition of a short course in Arithmetic. The only objection to this system is the cost, which is undoubtedly excessive, especially when the other fellow who invests his money otherwise and does not care to be educated gets the same encouragement from our officials as those who study.

Our time card mileage is in decimal fractions. Train orders under certain conditions require an addition to time recorded in time schedule. This requires a fair knowledge of Arithmetic. Stationary engineers are required to pass a successful examination on steam boilers, etc. Our senior men do not realize the value of a technical education and should not be consulted as to its necessity.

Half a century was required by expert mechanics to attain the present perfection of the locomotive and its attachments; it is therefore unreasonable to suppose that any man during the average railroad life, could make himself familiar with the construction and working of these appliances, by experience alone.

The text-books referred to contain complete explanations and cuts of the various up-to-date appliances, and are used to advantage on several roads in the United States—the Michigan Central being one if I am not mistaken. Arrangements are made with the Correspondence Schools for education and also examination of the men.

This form of education, if handled by local men, could be self-sustaining. Text-books could be printed in Canada and sold to cover cost of production and distribution.

Travelling Engineers who would act as instructors, could hold meetings at different terminals at regular intervals. This would be the only sure method of reaching all classes in the service. We have an air-brake car accompanied by an excellent instructor on this system. This car has far too much mileage to cover.

At our school at Truro we have the latest air appliances, in working order; also a valve model and cuts of various articles. We meet two evenings a week

and study the locomotive and mathematics on alternate evenings. The attendance is very uncertain on account of the junior class of men, who realize the importance of this movement, being engaged in extra work.

Conductors and Brakemen should be familiar with subjects of train-haulage, air-brake, car-heat, car light, train orders and rules, mathematics, etc. Engineers and firemen should be instructed on locomotive boilers, break-downs, care and management of the locomotive, and the use and workings of the various up-to-date appliances, in addition to the studies mentioned for Conductor and Brakemen. Shopmen in line for promotion should be given instructions on combustion, train rules, signals, etc. Suitable instructions should be given to Fitters, Helpers, • Boilermakers, Blacksmiths, Trackmen, etc. The knowledge of cost of various articles in constant use on railroads would also be a help to the railroad companies, and prevent waste of material to a certain extent.

A system of education as above outlined would benefit the railway companies as well as the men. A Fireman who makes a study of combustion and puts his knowledge into practice can save his day's pay in coal. An Engineer who studies properties of steam and kinetic energy can also make a great saving. Shopmen, Conductors, Brakemen, etc., by keeping up-to-date would also add to the economical working of a railway.

Mr. Johnson encloses a letter from Mr. R. Wilson, Mechanical Foreman, I.R.C., Halifax, in which he says:---

"That technical education is a paying investment to any young man in whatever calling he may choose, there should be no question.

"To the individual who aspires to become a Locomotive Engineer and become master of his calling, training along this line is an absolute necessity. Its benefits are evidenced since the inauguration of our school at Truro, and its results are plain to be seen. There have been fewer engine failures and the men have learned to place proper value on the machine in their charge and on the appliances with which it is equipped."

Mr. Hallisey, District Railway Superintendent, has a demonstration car fitted up just like an engine, and tries to see that each man can get lessons from it when it goes to his section. They are all supposed to take lessons from it; that is made a condition of promotion. A notice is posted that if a certain class of men do not get instructions from that car they will not be allowed to be brakesmen on a train where an air-brake or steam heat is used. The men take advantage of that car very well.

# SECTION 5: OUTLINE OF TWO APPRENTICESHIP SYSTEMS.

# APPRENTICE SYSTEM OF THE ROBB ENGINEERING COMPANY, AMHERST, N. S.

Mr. Daniel W. Robb, managing director, gave an interesting account of the evolution of their apprenticeship system, which is in vogue in all departments and has developed to a greater extent than in almost any shop, even in the United States or England, with which Mr. Robb is familiar.

The business began in 1865 with a dozen employees, manufacturing stoves and repairing machinery for mines and mills. There are now from 250 to 375 employees, almost 90% of whom have grown up with the firm as apprentices.

In 1891, the manufacture of high-grade stationary engines especially for electric work was begun, and considerable special machinery was introduced.

## AN EXPERT ORGANIZER EMPLOYED.

In order to get that department on the best system, said Mr. Robb, we employed the best man we could find in the State of New York, Mr. Armstrong, who himself had been an apprentice and worked up under Prof. Sweet, formerly instructor at Cornell, and who was then president of our Engine Co. at Syracuse. He was not only a practical man but a good designer and draftsman and mathematician, and to some extent also a good instructor. When he came we had a foundry and machine shop and we could have gone on and made those engines at once without any change, but he advised us to make a special department of it, even though we only had a very small space, and to make our system entirely different from the ordinary system of jobbing machine work. He said: "There are two ways you can do this: either by getting expert mechanics from the States who are accustomed to make these alone, or you can get boys here; you have some already as apprentices, and I will undertake to teach a certain number of them and train each boy to do some one thing at first." So we decided to adopt that method, and we commenced with about a dozen boys and each was taught some particular thing, for instance scraping surface plates. This requires great patience, and the boy had to be very perfect at it, but when he once learned it he could do that as well as a man in Brown & Sharp's works in Providence, R. I., where they make a specialty of it. Another boy would learn to do a line of lathe work. After awhile we had a dozen special mechanics, and from that we developed general mechanics; that is, boys who were adapted to certain lines would be changed about from one thing to another.

#### Evolution of System.

In connection with that we developed our apprentice system by a process of evolution. We found what would suit boys, and made different kinds of agreements with the boys. One time we held a premium to the end of the apprenticeship, but as a result of long experience we abandoned that; we simply have a few rules which the boys understand. Their conduct and all that are regulated entirely by the foreman, and the wages are regulated by the experience and skill. We do not bind the boys down in any way; if he gets tired of us or we get tired of him he goes.

We found that while we educated a certain number of boys who go to the States or elsewhere, still we hold a certain proportion of them, and altogether it is a good commercial proposition for us.

I should say 10% of our men have been with us 12 or 15 years, some of them more than that; then perhaps 25 have been with us from five to seven years. Our apprentices stay with us five or seven years, which is longer than those on regular

apprenticeship. Sometimes they go away and come back; sometimes they go on a harvest excursion to the West. All the time we must be losing an average of 10% of them right along.

While at the end of four years a boy is called a journeyman, our apprenticeship really lasts as long as the boy or man stays with us, and as a matter of fact the rates of wages increase right up to eight years.

This system is very similar to the premium systems used in the States, but we have developed it a little farther. The Halsey system states the time required for each operation, and records are kept on a card. We used that system for some time, but found it was not entirely right for our business, because it was so very difficult to set all the rates exactly even; some men or boys were liable to have very soft jobs and others very hard jobs, and they were not as well satisfied with the hard jobs as with the soft ones. Besides that, we thought it was not as fair as it might be to those who were not getting the best jobs.

#### QUARTERLY SYSTEM ADOPTED.

As a result of that, we adopted this quarterly system, by which we keep a record of what each one does for the three months, the time it takes, and the time that we allow. If a man saves 100 hours in the three months we multiply that 100 by his regular rate of wages and divide it by the number of hours the shop has worked. That would show that he is entitled to one or two cents per hour, or whatever it may be, for premium to be given to him for the next three months. According to the rule, if he did not show that the following three months, he would drop back to his standard rate of wages; but as a matter of fact we simply use this as a guide. We advance them as they deserve, and if a man keeps up his average fairly well we very seldom bring it back again. As a matter of fact, this is a good method of rating a man. Instead of calling in a foreman and asking what a man is worth, these cards show what his production is and what he has been doing, and the even labor of the man. We don't set any rate, for the foreman is supposed to put on the time which should be taken, but it gives us the average man's time for three months.

#### GIVING MEN INCENTIVE TO IMPROVEMENT.

We build the rate on our labor that way, and the whole system is founded on the fact that it is a sort of co-operative system. We feel that human nature is the same all over; a man must have some object in view. If he sees he can gain something by using his brains and improving his work and methods, both the shop and himself will get the benefit of it.

The most valuable feature in connection with the whole system is that we are compelled to work out those operations very carefully. We cannot depend entirely on one man doing a job one way and another man doing it another, but we have an expert in that line, who has gone through the shop himself, write out all those things in detail. It is not easy getting the exact operations of each particular piece, and for the same kind of piece on each kind of engine, but this man goes over these. Writing it all out just for one portion would take a sheet half the size of a letter, showing that the workman has to use certain chucks and templets, and describing how it has to be put in the lathe, and so on.

#### SHOP METHODS CONSTANTLY IMPROVING.

The greatest benefit in the shop is that we are compelled to do that, and we are constantly improving on our methods of doing the work; and as workmen themselves find out better methods we get the benefit of them, because they suggest them to the foreman, who then changes his operation sheet; and altogether we are getting better production out of the high-priced men than we were out of the lowpriced men. Of course it is a great advantage to the shop, because plant and equipment cost so much, interest on investment is so much, and the higher production you can get out of the same outfit and the same plant, the better it is for your works. One of the most important features of our system is that it enables us to get the exact cost of every piece of work, and hence the complete cost of every engine or lot of engines and all other contract work; so it fills a two-fold purpose.

Our proportion of apprentices is about 25% up to the fourth year, and what we call helpers. Our foremen play quite an important part in teaching apprentices. Our foremen have their regular hours, but we do not require them to use a clock to check their time.

#### BOYS INSTRUCTED BY FOREMEN AND JOURNEYMEN.

Apprentices get special instructions during those four years from the assistant foremen. The foremen themselves, of course, are pretty expert in their lines, and if they put a new boy on to a certain line of work they give him a certain amount of instruction, and follow him along until he can do it to the best advantage. We tried special men, called instructors, for that sort of thing, but found we got the results in most cases by putting a boy as helper with an experienced hand on The man requires a helper, anyway, and the boy gets some certain machines. experience in that way as well as by his own observation, and in a little while we are able to put him on that same machine or a similar one. The man doesn't make any special effort to train the boy; he is not specially instructed to do that, still the boy of course is helping him. The only positive instruction is when we put a boy on a new job; then the foreman or assistant superintendent will make a business of showing him all he can on that particular job. I do not think a mechanic on the check-time system would take his time to teach an apprentice, because he is there to make as much money as he can, and has no special interest in the boy except as they become friendly. With our class of men they are always on good terms, and of course our object is to get these boys on as fast as we can, for we regard it as a way of saving or making money, and we study out ways to do so, and we are trying to improve methods all the time. In some cases it is an advantage for the workmen to help the apprentice along, because he gets through his job quicker as he becomes more skilled, and he doesn't have to stop to

tell him what to do. The boys keep in view the possibility of their going to the States, etc., and that means getting qualified as quickly as they can, and they go there and get very high wages.

#### TRAINING OF FOREMEN.

Our head men are trained for the important positions exactly the same as the other apprentices. If they show special aptitude for handling labor, and special intelligence in that way, they become foremen by practical experience in the work. We have always this kind of capable men in view. Undoubtedly our men who have reached the foremen's places would be helped by study in the evenings, but I do not think anything could take the place of practical shop experience for a foreman's ability.

Quite frequently have young men who have taken a course in colleges, such as McGill, come to us for a few summer months and we generally try to take them, although it is not of very much advantage to us. Of course for commercial reasons we prefer to take boys as regular apprentices, without any break, but as a matter of fact the boys who are wise enough to mix in practical work with college study are, as a rule, very practical boys, and by doing that, show that they have ambition. We do not care to take boys until they are 17 or 18, and they are generally through school. We have more applications for apprentices than we know what to do with; they come from all over the Maritime Provinces, and a few from other parts. We encourage them to get all the schooling they can before coming. A good many of our apprentices go to the Technical School; in fact I think at present it gets the largest number from our place.

#### COMBINATION OF THEORY AND PRACTICE BEST.

We find that boys learn more practically after they are in work-of course with the combination of the theoretical. A boy may supply to a certain extent the deficiency that he would suffer for want of technical or college education if he has the other end of it; or he may have the technical education and not the practical, and the other end can be supplied. Our experience is that the boys who take a college course, even in the best school, such as Cornell University or the Massachusetts Institute of Technology, are handicapped to some extent compared with our practical boys until they get right down to their level. At the same time a practical education is of great advantage to them when they get the other. The work in the technical school while very satisfactory, could with advantage be advanced still further. In Amherst a large proportion of the young people between 15 and 18 would find great advantage in attending evening school. I do not think compulsory evening classes would be wise or practicable. My idea is that both local and Dominion Governments ought to provide these schools but they will only be taken advantage of by a certain proportion of the industrial population, and they should not be made compulsory because there will be no use in compelling people to go there who would not do any good. I think more opportunity is needed for young fellows in evening classes than now exist.

#### 3 GEORGE V., A. 1913

#### FINE QUALITY OF WORKERS.

The fault of our people here is that they either have not sufficient courage or imagination for the things that they can do. Mr. Armstrong, our expert adviser, told me time and again that the Nova Scotia boys he had here were the best boys for this class of business he ever saw anywhere, and we found that to be the case. They are of English and Scotch parentage; they are usually well brought up; and a great many of them are natural mechanics.

For mechanical or engineering work there is no place that I know of in Canada or anywhere else that is better than here for labor that is well adapted, and we can get it at a reasonable rate of wages, and we can train in this way. We have the raw material and a great many things in our favor.

#### SYSTEM DEVELOPS INVENTION.

Our premium system has been the means of developing invention in our mechanics to some extent, but not yet to anything like the extent it should; but the men are seeing improvements in methods of doing work, which they discuss with the foreman.

The principal duty rests on the man who is setting these operations; he has to study it out and revise, etc., and he does not do much of anything else. When new methods for operation present themselves he writes down exactly how it is done, not depending on merely telling the mechanic, and then these operations are filled out on cards, giving the sequence of them, just how they come about; then if a workman requires any instruction this man will give it to him, and generally in a certain way, which is found to be the best way.

The increase in wages from 20c to 30c and 35c an hour was brought about by increased cost of living and other conditions, but we have had to meet that by our system so as to keep the cost of production as near as possible what it was originally, and we have pretty well succeeded in that.

## APPRENTICESHIP SYSTEM OF THE DOMINION IRON AND STEEL COMPANY, SYDNEY, N.S.

Apprentices are employed in the Company's shops, which include the usual machine, pattern, blacksmith and boiler shops, foundry and electrical repair shop. They are bound for four years, and 3,000 hours are reckoned to constitute a year's service. The apprentices are employed as assistants to the journeymen and are given every opportunity to become proficient in the various trades. As soon as they are able to work by themselves they are given independent jobs. The rates of wages are as follows:—

First year	6	.7c.	per	hour
Second "	9	С.	"	"
Third "	11	.2 <b>c</b> .	"	"
Fourth "	13	5c.	"	"

In the roll turning shop in connection with the mills, apprentices serve for three years of 3000 hours each, the rates are:—

First :	year	 	 		•				•					•		. 14c.	per	hou	u
Second	"	• •			• •			•					• •	• •		.17c.	u	"	
Third	"	• •		•	•	 •	•	•	•	 •	•	•	•	• •	•	.20c.	"	"	

Bricklayers' apprentices serve three years of 3000 hours, the rates of wages paid are:—

First	yea	r		• •	•		•	• •	•	•		•	•	 			.7 <u></u> 2c.	per	hour
Second	1 "		•		•									 		•	.15c.	"	и
Third	"		• •		• •	 •			•		•.	•		 			.30c.	u	"

As soon as an apprentice has worked out his time he is employed as a journeyman, if he desires to remain in the Company's employment; and this usually happens, although occasionally a young man leaves to take employment elsewhere. A very satisfactory percentage of the number of boys who become apprentices complete the term of indenture, but there is always a certain percentage who do not. No attempt is made to enforce the engagement; if a boy becomes dissatisfied, and he cannot be persuaded by his foreman or superintendent to continue, he is allowed to go.

# SECTION 6: WELFARE ORGANIZATIONS.

## DOMINION COAL COMPANY EMPLOYEES' BENEFIT SOCIETY.

The objects of this Society are:

To protect the interests of its members, and to promote the principles of good will and humanity amongst them, both in their relations as fellow-employees and as servants of the Company;

To provide benefits to sick and injured members and to provide for the dependants of deceased members;

To provide old age and disability pensions.

Management. The chief executive officer of the Company shall be ex-officio President, and there shall be a Board of Directors appointed to represent each branch.

Benefits. In addition to benefits mentioned in the statement, there is a grant of \$150 to any man losing one foot or hand, this grant being paid on the expiration of the sick benefit. In case of loss of both feet or both hands or total loss of eyesight, the grant to be increased to \$450.

Old Age Pensions. A fund is being accumulated for this purpose, and a scheme will be formulated in due course. In the meantime the Directors are empowered to grant old age pensions to employees who are unable to earn their own living owing to age or disability. DOMINION COAL COMPANY EMPLOYEES' RELIEF FUND.

Under the Constitution the Company and the workmen contribute equally, and the Government contributes 3–10ths of a cent per ton on all coal sold.

Based on an average of 8,000 employees, the workmen, paying 50 cents per man, will contribute \$48,000. Allowing for an output of 4,000,000 tons, the Government's contribution will amount to \$12,000. This, with the Company's contribution of \$48,000, will make \$108,000 for the year.

In regard to benefits, no distinction is made between sickness and accident, believing that a workman incapacitated by sickness is as much in need of relief as a person injured in the mine. Records of previous years show that 65% of the amount paid for weekly indemnity was for sickness. It is generally admitted that miners, as a class, are above the average in regard to number of weeks' sickness per 1,000 employed. Any scheme which provides for accidents will only take care of 1-3rd of all cases in need of weekly indemnity. The indemnity is \$6 per week for the first 26 weeks; half-weekly indemnity, or \$3 for the next 26 weeks, and \$2 per week for the two years following. After that the Society has the power to make special grants in deserving cases.

It being almost impossible for a miner to get accident or life insurance, except at a rate almost prohibitory, a Society such as this provides the best means of support for his wife and family in case of disablement or death.

If a workman dies either from sickness or accident, his dependants receive a death claim of \$100, the widow receives \$8 per month for five years, and each child receives \$3 per month till the age of 14.

Examples of what families would receive in case of death:---

Wife with no children will receive	\$ 580
Wife and one child, age 1	1,048
Wife and two children, aged 1 and 3	1,444
Wife and four children aged 1, 3, 5, & 7	2,020
Wife and six children aged 1, 3, 5, 7, 9 & 11	2,308
Wife and eight children aged $\frac{1}{2}$ , 2, $3\frac{1}{2}$ , 5, $6\frac{1}{2}$ , 8, $9\frac{1}{2}$ , 11	2,95 <b>6</b>

Besides this, the Government makes a special grant of \$50 in the case of the death of any workman.

These benefits came into effect July 1, 1910, when all the then existing Branches were amalgamated into one general Society with a central Board of Directors, which consists of one representative from each Branch—the Company being entitled to an equal number—and these have charge of all moneys and property of the Society. There are branches at all the Collieries and Under Committees of Managers at each branch, who must approve of all claims before being paid. These committees consist of nine persons—four elected by the workmen, four appointed by the Company, and one appointed by the Government.

The assets of the Society amounted to \$47,000 on July 1, 1910, making together with a cash contribution of \$21,000 from the Company, a total of \$68,000. The liabilities of the Society, which are payments that will be made to widows

and orphans, amounted to about \$24,000, leaving an actual surplus of \$44,000. This surplus makes a good sound foundation for the Society starting out under its new Constitution and By-laws.

There is no question raised as to the cause or blame; the workmen gets his indemnity as a right under the Constitution of the Society. If it were otherwise, the Company would ask themselves, "Are we legally liable?" or the employee's first thought would be, "Can I get anything?" This is a state of affairs which does not help to bring the employees and the employers together, but rather has a tendency to drive them farther apart, and so prevent the good will and confidence which should exist between workmen and Company.

#### DOMINION STEELWORKERS' MUTUAL BENEFIT SOCIETY.

The objects of he Society are:

1. To protect the interests of its members, who shall be employees of the Dominion Iron and Steel Company, of Sydney, N.S., and to promote the principles of good will and humanity amongst them, both in their relations as fellow employees and as servants of the Company.

2. To provide relief as provided under the constitution and by-laws of the Society:---

(a) By providing allowances of money to members when by reason of illness or bodily injury they are unable to follow their regular employment and are deprived of their usual wage or salary.

(b) By providing definite grants of money to the representatives of deceased members.

(c) By providing old age and disability pensions.

All persons under 60 years of age and regularly employed in the service of the Company are eligible for membership in the Society, excepting such as are afflicted with any disease, disorder or habit or bodily defect tending to shorten life or incapacitate them for the performance of the duties required in their regular employment in the Company's service.

The affairs of the Society are managed by a Board of Directors composed of eight members elected by ballot at the first General Meeting, and an additional number to be nominated by the Company in proportion to its contributions. For example: If the annual contributions of 300 ordinary members should amount in the aggregate to \$1,800, and the Company's annual contributions should be \$600, the Company's delegates would be entitled to 100 votes at a meeting of the Society.

FUNDS.—The ordinary funds of the Society are derived:

1. From an entrance fee equal to one month's contribution, to be paid by each member on joining, and from fees to be paid monthly according to the following scale: Class A, 50c.; Class B, 75c.; Class C. \$1.00.

2. From the Company, which shall pay not less than 25% of the aggregate contribution of the employee members.

Sick benefits are paid for 13 weeks as follows:—Class A, \$5; Class B, \$7.50; Class C, \$10.00.

In addition to these rates, in cases of extreme necessity, the Board of Directors may make special grants not to exceed in any case the sum of \$150; such special grants to be limited in the aggregate to \$500 in any year.

For loss of one foot, or one hand, while engaged in the service of the Company, a grant is made in addition to the weekly benefits, and when payment of the same shall have ceased, according to the following scale:—Class A, \$100; Class B, \$150; Class C, \$200.

For loss of both feet, or both hands, or of hand and foot, or of both eyes, while engaged in the service of the Company, a grant shall be made in addition to the weekly benefits and when payment of same shall have ceased, according to the following scale:—Class A, \$300; Class B, \$450; Class C, \$600.

No grant shall be made nor benefit accrue in any case where disablement shall have been caused by drunkenness or other improper conduct.

In addition to the above Grants and Benefits, the Society shall pay the charges for services of surgeons who may be appointed to attend to members of the Society who may be injured while engaged in regular employment, and all charges for lodging, board and attendance in hospital for such members as may be admitted to the General Ward by authority of the Society or under its rules.

In case of death through illness or as a result of accidental injury while in the service of the Company, the legal representatives of deceased members shall be entitled to receive Mortuary Benefits increasing by lengths of membership, from one to ten and succeeding years, as follows:—Class A, \$40 to \$400; Class B, \$53 to \$533; Class C, \$66 to \$666.

In 1910 the total payments were \$29,082; the surplus, \$4,969; and reserves, \$28,000.

# CHAPTER VI: AS TO AGRICULTURE AND AGRICULTURAL EDUCATION.

# SECTION I: NOVA SCOTIA AGRICULTURAL COLLEGE.

Information obtained from PROFESSOR MELVILLE CUMMING, Principal of the College and Secretary for Agriculture for the Province.

Agriculture has been one of the last branches of industry to receive careful attention by means of education. Its importance was not realized in early years when lands possessed virgin fertility and produced crops almost under any system of tillage and rotation, but depleted fields and reduced crops coming at the same time with increased prices have aroused the people of Nova Scotia, as elsewhere, to the need of study and investigation along agricultural lines, and also need of popularizing such knowledge as already exists.

In 1885 a School of Agriculture was conducted as a Department of the Provincial Normal School at Truro; in 1893 a School of Horticulture was established in Wolfville under the direction of the Nova Scotia Fruit Growers' Association. These schools attracted very excellent students and aroused an interest in matters agricultural, thus paving the way for the present Provincial College of Agriculture, opened in 1905 at Truro, the geographical centre of the province.

### PROGRESS OF THE PROVINCIAL COLLEGE.

This College has firmly established itself, and is increasing in importance. It draws students from the three Maritime Provinces, as New Brunswick and Prince Edward Island have no such college of their own. Five years ago the students in regular courses numbered 17, and at short courses 40. In 1910 there are in the regular course 48 and in the short courses, 367, of whom 67 were ladies taking domestic science, poultry raising, dairying, etc. It must be remembered that the constituency is relatively small and that horticulture has not heretofore occupied the prominent position in Nova Scotia that it holds in other Provinces. The result of the college work has been a growth of sentiment in regard to agriculture, and there is a marked desire for information.

This college has been patterned in a large measure after the Ontario Agricultural College, at Guelph, Ont., and has received the benefit of the latter's success, while the work of the Federal Department of Agriculture, the growth of the agricultural press, and the general demand for technical education in all lines, as well as the results from the good work of students graduated and the impressions they created, have been features working towards success at Truro.

A distinctive feature of the College at Truro is its affiliation with the Provincia Normal College and the students of both institutions take instruction from members of the Faculty of both Colleges.

191d-Vol. IV-7

#### 3 GEORGE V., A. 1913

When the Agricultural College was first organized, there was a great deal of distrust, one sceptic being a neighboring farmer, who laughed at the college dairying tests as useless, but this man had recanted, and had addressed many farmers and also given testimony by heavy investment in stock-raising, and by making a profit of \$800 on a 20-acre farm. Another illustration of the value of the College was given by a graduate who before attending college would gladly have accepted \$400 a year for his services, but refused an offer as farm manager at \$800 because he was making his own farm, though a poor one, worth \$1,500 a year. A farmer came to the College bringing \$600 and asked Principal Cumming to buy live stock for him, saying "You have kept two of my boys on the farm."

#### WHAT THE COLLEGE PROVIDES.

The College provides four courses:---

(1) The regular two years' course, graduates in which receive an Associate Diploma of Agriculture. It is anticipated that this two years' course will prove much more fruitful under present conditions than a four years' course in educating boys for lives on a farm instead of professional careers. Students who wish to receive the Bachelor degree in Agriculture complete their course at Guelph, St. Anne's and other colleges. St. Francis Xavier College sent several students, and priests are paying expenses of young fellows to go from their particular parishes to the college especially for the short courses.

. (2) A two weeks' short course held in January, especially for the busy farmer and his son who cannot afford to be long absent from home. The attendance in this course in 1909 was over 300, of whom 70 came from Prince Edward Island, and 26 from New Brunswick. This short course has proved most popular, and has produced most marked results; it is also directly or indirectly furnishing the great majority of the long course students and in fact may be said to be the advertising medium of the college, by bringing into personal contact with the institution and its work farmers who might be still prejudiced or uninfluenced by newspaper articles, etc. The short courses consist of lectures and demonstrations in all lines included in the long course, members of the staff being assisted by experts from the Federal Department at Ottawa, from Guelph and St. Anne's, and also by Nova Scotians who have made a practical success of farming in various lines, the latter feature being highly appreciated.

(3) A two weeks' short course for women, held at the same time as the last mentioned, comprising domestic science, dairying, poultry raising, horticulture, with some women students in agriculture, animal husbandry, etc. The total attendance at this course in 1910 was 67, all being from towns except 12 from rural sections. This course has never been advertised as extensively as the other courses, and in addition these courses for ladies are looked upon as an innovation, hence the comparatively small attendance

(4) The Rural Science School for teachers, conducted during July and August in affiliation with the Provincial Normal School, attended by over 100. The numbers are too large for satisfactory work. The object is to bring the pupil teachers

directly in contact with the various phases of nature, and to encourage first-hand study of soils, plants, insects, birds, weather phenomena and everything of that sort which constitute the environment of their rural scholars.

#### THE COLLEGE AND THE RURAL SCHOOL.

The College management recognizes that the College reaches directly a very small percentage of those in need of agricultural instruction; hence they wish to carry at least the spirit of college work into the common schools and arouse interest among scholars in things pertaining to everyday life. Much remains to be done to make this Rural Science School as effective as it should be. Teachers are still under the influence of former systems, and look upon rural science as something tacked on to the course, and hence of not such importance as history, geography, grammar, etc. Further, teachers brought up under the old system of education have not yet acquired that intimacy with science which is necessary to teach it effectively.

Principal Cumming is of opinion that if agriculture is to flourish in Nova Scotia the school curriculum and the method of teaching in schools, especially in rural districts, must be gone into more thoroughly than it has yet been, for rural science should be as well taught and should occupy as important a place in the school curriculum as any other subject.

A curriculum has been arranged for students of the Rural Science School on the completion of which a diploma is awarded which entitles the holder to an extra Government grant when rural science work is taught in a public school. This curriculum covers nature study, general biology, botany, school gardening, and horticulture, insects, birds, agriculture, geology, physics, soil physics, chemistry, bacteriology, mechanic science—the latter including brush drawing, paper and cardboard modelling—woodwork in making plant press, insect box and spreading board or equivalent models.

The Provincial Government pays transportation charges of all teachers who complete the course to the satisfaction of the instructors, and under the regulations of the school law, an additional week or two of vacation may be obtained by teachers taking the summer course. The work is so arranged that it would be possible for almost any teacher to complete the requirements for the diploma in three summers, and one already proficient in the subjects could do so in one term.

During the term of the Rural Science School the forenoons of six days in the week are devoted to class work, and the afternoons of five days to field excursions and individual work in the laboratories. A due allowance is made for reading and study along the lines of the course which a student may prove he has done between the terms.

#### DESCRIPTION OF THE COLLEGE AND ITS WORK.

The Agricultural College consists of a main building in which are laboratories and class rooms for biology, bacteriology, agriculture, horticulture and mechanic science. (The Mechanics and Physics laboratories are at the Normal School, with which the Agricultural College is affiliated.)

#### 191d-Vol. IV-71

ł

There is a separate dairying building fully equipped, live stock judging pavilion and a farm of 205 acres with appropriate stock and poultry building.

The farm stock is of high quality and utility so as to provide not only demonstration of profitable production of live stock products, but also to stimulate an interest in improved live stock, which it is generally remarked is the most needed improvement in the general farming of Nova Scotia. The great demand by the the people for stock of this kind is sufficient evidence of its appreciation. The farm could sell ten times as much of this improved stock at good prices as was disposed of during the past year. This shows that the people are receiving and appreciating the work of the College in regard to improved live stock; and the value of this feature will be manifested not only in the preservation of the natural fertility of farm lands, but in the interest it arouses in the country boys for all forms of agriculture.

The work of this College has been in teaching and demonstration rather than in experimental and investigation lines, chiefly because the amount of funds placed at their disposal is limited, and also because the Federal Department of Agriculture conducts at Nappan (within 70 miles of Truro) and under almost identical conditions, an experimental station where soil cultivation, field crops, horticulture and live stock are dealt with, while a similar station for experimentation and fruit growing is about to be established in the Annapolis Valley. Principal Cumming is not altogether satisfied with present conditions, but hopes before long to be able to command some means of effecting better work along the lines of experiment and investigation.

College extension work has been begun, though it is not yet as comprehensive as the College Principal would like.

# SECTION 2: OTHER AGRICULTURAL ORGANIZATION AND WORK.

In almost every County there is a regularly organized County Farmers' Association, and scattered all over the Province are 179 Agricultural Societies. Under these organizations members of the College staff, assisted by experts from the Federal Department and men actually engaged in farming in Nova Scotia, have delivered lectures in all branches of agriculture and given demonstrations in live stock judging, treatment of diseases of animals, spraying, drainage, etc.

The College has also sent travelling dairies for a number of years, which have visited almost every county in the Province. These travelling dairies have been attended with splendid success. Principal Cumming says that the improvement in the butter is testified to by every man dealing in it, and by every hotelkeeper in the Province.

Specially qualified judges have been supplied for fall fairs, in order to make these exhibitions more educative.

A series of co-operative experiments with crops, fertilisers, etc., have been instituted, similar to those of Experimental Unions in Ontario, a series of Field Crops competitions in cereals and turnips, together with local encouragement of

the work of the Canadian Seed Growers' Association. These are having a marked influence in arousing greater interest in the growing of improved crops. A number of private citizens are contributing prizes for the encouragement of these competitions, the postmaster at Amherst having given \$50 for four prizes for boys under 18 who grew the best half acre of turnips—a crop particularly suited to Nova Scotia and which should be grown in much greater quantities. Another man in Antigonish has given a similar prize.

#### DEMONSTRATION ORCHARDS, DRAINAGE, ETC.

Under the direction of the College of Horticulture some 33 model or demonstration orchards extending from Yarmouth in the West to Cape Breton in the East, located in counties which have not yet developed fruit growing, are being cultivated and cared for. These orchards are placed on the farms of representative men in those communities, and after ten years are to become the exclusive property of the farmer who owns the land. The educative value of these orchards has already been considerable by demonstrating that many varieties of apples, etc., are not suited for sections outside of the regular fruit-belt. In a general way the establishment of those orchards has been a very considerable stimulus to the development of interest in fruit growing. Some fruit-growers are demonstrating that orcharding is a profitable business; others are demonstrating the opposite. Horticulture in a large way is confined to the Counties of Annapolis and Hants.

Bulletins and educative articles are issued, and members of the College staff, assisted by various experts, have been issuing a series of articles, a distinctive subject being taken up each year in connection with the annual report of the Secretary for Agriculture. These articles have dealt with sheep raising, dairying, soils and soil cultivation, fruit raising, etc., and have increased several fold the demand for the stereotyped reports, which are also more carefully read than heretofore. In this way the farmers will be furnished in the course of a few years with a series of reports containing articles upon every phase of agriculture which will constitute a good working library.

Following the publication in the annual report of several articles dealing with drainage in various aspects, arrangements were made for farm surveys to be conducted at minimum expense by College representatives, and a traction drainage machine was purchased for operation, the object being to get as much drainage as possible done so as to serve as an extensive demonstration of the value of underdrainage. The college authorities are draining lands at about 20 cents per rod, which is about one-half the cost of doing it by manual labor. This is being done because of the educational effects that follow, and the machine is booked for two years ahead.

#### PROVINCIAL AGRICULTURAL ASSOCIATIONS.

The following organizations, whose work is largely educative, exist in Nova Scotia:—

(1) Nova Scotia Farmers' Association, which derives its membership from County Associations, Agricultural Societies and Exhibition Boards; holding annual

\$

meetings for discussions and recommendations on general agricultural interests of the Province. Following a discussion of the curriculum of rural schools a resolution was unanimously carried in favor of the more extensive teaching of Nature Study in schools.

(2) County Farmers' Associations exist in almost every county, having been organized by the Provincial Association which it represents. These hold agricultural meetings, and in some instances exhibitions and seed fairs, and conduct college extension lectures.

(3) The Nova Scotia Fruit Growers' Association, related to fruit growing as the Farmers' Association is to general agriculture. This Association, established and conducted by the School of Horticulture which was afterwards merged in the College, has been the prime mover in arranging for the fruit growing experimental station shortly to be organized at Kentville.

(4) The Nova Scotia Co-operative Fruit Growers' Association, a commercial Association composed of 11 local co-operative Associations, organized in the last last few years.

(5) Agricultural Societies, of which there are 179 scattered throughout the Province, existing principally for encouraging the improvement of live stock and farms. The Government gives each Society a grant of from 80c to a dollar for each dollar privately subscribed, and with this money the Societies for the most part purchase pure bred stock. They also serve for the co-operative purchase of seed, feeds and fertilizers.

(6) Exhibitions, Fall Fairs and Seed Fair Boards. Nova Scotia supports one Provincial Exhibition held annually at Halifax; upwards of a score of fall fairs and seed fairs; and also co-operates with the other Maritime Provinces in supporting the Winter Fair at Amherst. An effort is being made to make these institutions more distinctly educational than formerly.

#### SCHOOL GARDEN WORK.

Mr. Percy Shaw, teacher of Horticulture at the Agricultural College, who has supervision of the Government Model Orchards, and who was Director of the five Macdonald Rural School Gardens around Truro from 1903 to 1906—each of these schools being provided with a garden—stated that the garden work was used as a basis for nature study, science, language, drawing, number work, etc., and added to the interest and educational value of this work in each case. No attempt was made to teach technical agriculture or gardening.

In Mr. Shaw's opinion the essence of successful garden work for the education of children was to have them interested in and fond of growing plants either at the school or at home. A small area may be better than a large one, but the garden work should be felt as a pleasure, and the work done voluntarily, never under compulsion. There should be definite financial support. He considers that nature study is a method quite as much as a subject, and if properly taught it need not be a subject "tacked on." The Normal College work of nature study, arithmetic and drawing can be taught by using the same models and the same

methods. Though nature study is added as a separate course, the work with young children might be done incidentally.

Many attempts have been made to utilize a scheme for country schools that would be a graded curriculum leading on to general practical education, but a perfectly satisfactory course has not yet been devised. The villages and small towns and cities take the lead in this as in many other things. He thought Nova Scotia ready for such a movement if means were available to employ some person who can give his whole time, and with the co-operation of teachers work up such a course. In his experience nature study did not upset anything else taught in the schools; on the contrary it evidently benefited the other school work, and also looked towards the industrial training of children in the country schools.

#### CUT OUT THE DEAD WOOD.

Mr. Shaw would not drop any subject in the common schools for nature study, but would reduce the number of useless topics in some subjects, because there is a lot of dead wood carried in a number of subjects in the Common and High Schools that ought to be cut out to allow far more valuable subjects to be taught.

As an example of successful language teaching in connection with nature study, Mr. Shaw told of a teacher of a rural school near Truro to whom the children brought a noxious insect known as the "cut worm" which they had found in the garden. They were interested because it had destroyed some of their own plants. It was put in the terrarium and kept until it had developed to the pupa stage, and finally came out as an adult moth. The scholars were greatly surprised and interested to see the change that had taken place, and the incident was used as a basis for a language lesson. The teacher placed on the blackboard drawings of this insect; then the children gave her an account of what the insect had done at different stages. It was thus used as a drawing lesson, a language lesson both oral and written, and an exercise in penmanship for the children. In that way nature study might be used in second year school work without displacing any subject, but in higher grades it should be separated.

# SECTION 3: THE BRANCH DOMINION EXPERIMENTAL FARM AT NAPPAN.

Experiments were made during 1910 with the following: Spring Wheat; Durum or Macaroni Wheat; Emmer & Spelt; Oats; mixed grain; barley; peas; buckwheat; Indian corn; turnips; mangolds; carrots; sugar beet; potatoes; clover; alfalfa. Expériments were also made to determine the practicability of restoring run-out land: a series of tests with fertilizers, and with lime and commercial fertilizers on marsh or dyke lands, were carried out. The hay crop was the heaviest cut for many years; apples and strawberries were poorer than usual; vegetable crops of all kinds were sown. The horses on the farm are kept exclusively as work animals; some experiments were made with dairy cattle. Sheep, poultry and bees are kept. Grain and potatoes were distributed to farmers, the total

1741

#### 3 GEORGE V., A. 1913

number of samples sent out being 814. Produce was exhibited at various shows in the Province.

Dr. MacKay, Superintendent of Education, says that money is needed to develop a much stronger experimental department at Truro. The farm at Nappan has 250 acres, but is 70 miles away from the Agricultural College, and the work could be carried on as well at Truro if the money were available. If it could be done it would justify a much larger expenditure, and the work would be better done. It would be an immense advantage to have the equipment and facilities at Truro for the students.

# SECTION 4: SUMMARY OF OTHER TESTIMONY IN RELATION TO DEVELOPMENT OF RESOURCES.

### AGRICULTURE.

More education in the 8th grade would make a better farmer as well as a better citizen. Travelling instructors would reach boys of 15 to 18, and furnish a supplementary system for boys from 14 to 17 who do not go to High School. Elementary Agriculture at this age would tend to keep children on the farm. Evening classes in summer would attract young people and be beneficial, especially if related to daily work in the orchard; the travelling instructor could give valuable hints if he spent a day in the orchard. One witness says, "I cannot emphasize too strongly the desirability of early training along the lines of nature study and agriculture."

More publicity is needed for agricultural work and colleges. The Agricultural College at Truro needs a boarding residence before farmers will send their boys there. Public addresses, supplemented by visits to farmers, would be good. Boys should go to Truro at 14 or 15 and take a course on weeds and insects. School gardens would help the children and money is well spent on keeping up good schools. What is needed more than **anything else** is the proper education of the farmer to develop the land and produce the material necessary for the large market available.

An Illustration Farm would help, and bring about a revival. Any improvement in agriculture would benefit the whole of eastern Nova Scotia, and this could be done without interfering with other industries, such as coal; in fact, it would benefit coal and iron people by cheapening living. Provisions are dear, owing to the long haulage, and consequently wages are not so high as they appear to be. There should be smaller farms, better cultivated. Farmers are becoming more desirous of information, due to the excellent market for their products if only they can supply it.

#### FISHERIES.

Any system of Technical Education for Lunenburg district must include a navigation school; Government should subsidize such schools. Marine schools teach what should be known at sea. Navigation schools throughout the Dominion

would help the trade and make more competent men by increasing their ability and the safety of shipping and would keep men in the Canadian service, whereas now they go elsewhere. A travelling school might be of some help and a correspondence school is better than nothing, but not so good as local school. There is lack of opportunity for the education of those who are to be captains; classes for young men who will be captains in the future would be an advantage and a step in the right direction. Boys have to go to sea so young that they cannot get much education, and night classes for these boys would be very beneficial and should be compulsory to a certain standard. There is also need for classes for boatbuilders and designers to improve fishing boats.

There is need for improvement in the curing and packing of fish. Carelessness and ignorance of curers is the cause of irregular quality; instruction would prevent this, but would be difficult to impart. Instruction in curing on the Norwegian plan would be good; also sending men around to different ports to instruct the fishermen during the winter when they are not busy. Fishermen could be given instruction on methods similar to agricultural instruction, by a practical man. The fisheries could be vastly improved, but only by demonstrating improved methods. Fishing people are intelligent, but conservative and slow to take up new ideas. Fishermen's Libraries should be established at different points to bring to their notice in a systematic way the results of experiments and the advantage of carrying them out. Reports of the Fishery Commission should be summarized and made available for fishermen. The Fishery Intelligence Bureau does good work. Weather reports should be telephoned to fishing stations.

Several witnesses state that buyers need to be reached before the fishermen; people should be educated in the food value of fish as compared with other things, and Domestic Science Schools can help in this by showing how to cook fish in the best way.

A campaign of education is needed to ensure better transportation, on which the fish industry largely depends.

Industrial training would be good for the fishing industry, and leading men in the locality would assist in maintaining a demand for it. It would benefit all local industries, including fishing. The efficiency of fishermen could be largely improved; they could produce more fish if they had technical and scientific knowledge. Men who handle nets and boats need technical education. The net fishing industry in Scotland was developed through technical education. Curing requires more training than catching, though the labor is unskilled except the foreman. Drying is mechanical and artificial, and does not require technical education, but packing does, and also pickling. Evening classes would help in teaching the curing process.

Fishermen need education as much as farmers, and should be taught to catch and treat fish. An aquarium, as in British Columbia, would be a good thing; also a Fishery Board to regulate packing, size of barrels, etc., as packing affects the value. Fishery Boards in the Old Country have improved fishing, and produced the merchant, curer, government standards and inspection.

The shell-fish industry is becoming depleted for lack of technical knowledge, and the public needs instruction to save oyster beds. Efforts to improve fisher-

men have failed owing to their conservatism; e.g. in refusing cold storage bait. There is no hope for industrial training in the fishing industry except through adapting it to the existing needs and conditions of the industry.

#### MINING.

A coal miner states that if he had made things with his hands and measured and laid them out on paper, he would have remembered his arithmetic better. Mining schools and night schools help a man to work with more advantage to himself and his employer; they help to prevent accidents and teach men what to do if accidents occur. Miners would be more intelligent if they went to night schools twice weekly; it should be made compulsory. Lectures on ventilation, illustrated with apparatus, would be useful and interesting. Schools should be organized and advertised. Men require knowledge of the principles of mining.

The education of miners is well taken care of in Nova Scotia, and in addition to practical training all superintendents in the Acadia Coal Company have taken night school or correspondence courses. The Steel & Coal Company compels apprentices to go to night school and pays fees for average of 80% marks. Boys should take the practical side before going to college. Miners in general would like to have evening classes for their sons; lectures on usefulness of this knowledge would help. More illustration work, chemical experiments and apparatus are needed. Technical education has been a good thing. Mining schools are more helpful than a technical college. Mining schools have reduced accidents and made men more careful and efficient. Thorough training for foremen by men knowing practical conditions would make mining safer. Evening classes for boys leaving at 6th grade would be good and should be made attractive; a more practical training and higher standard of education are needed. Drawing and manual training are good for boys going into industry. Practical experience is absolutely necessary in any case, but technical education helps men to higher positions. The industry could be carried on better if more men took evening classes; the trouble at present is that men stop as soon as they have their certificates.

A travelling instructor demonstrating exuding and making of gases, etc., would be an improvement to the mining school, and a feeder to the technical school. A demonstrator with a big screen would secure recruits for evening classes, and a series of public lectures would be most beneficial. Evening classes should be canvassed for as much as the Scranton Correspondence School is.

There is a general desire for education in the community, and the mining schools enable men to work more skilfully; wider knowledge makes them more ready to accept new inventions. It is an advantage to any business to have well educated workmen. Many workmen have had a poor public school education, and would need day schools for mathematics and after that night technical schools in various centres, leading to either Sydney Higher Night School or Halifax. Many men would take classes for general education, and need it before attending evening classes. Classes could be made more practical and interesting by demonstrations.

In some districts men cannot get to mining school, and for these the correspondence course is an almost ideal system. Men who are to have responsible positions

must be trained. Night schools supplemented by correspondence course are good for a scattered population. One witness expressed the opinion that "a man gets most when he is reading and working." Another considered that a big mining college is needed, as night schools do not go far enough. Many ore train operators take correspondence courses, and would like a technical college, as also men who run machines, but meanwhile they would go to night school. The fact of bringing men together in classes is beneficial, as they discuss difficulties.

#### GENERAL.

Boys should be able to get training for their trade as soon as they have decided what they will be. At 15 they ought to be at practical work. Manual training on a small scale is wonderful; it gives a boy an incentive and makes him useful. Nowadays boys do not get as much practical work at home as formerly, so they need manual training more. The present system leaves a boy of 14 very unfit to face the world; formerly they **h**ad less book education, but were more fit. The State should look after boys who have to leave school early.

Most employers in Nova Scotia would be willing to agree to any means for improving their employees, for the more intelligent and efficient the boy, the better it is for his employer. The main thing is to inspire men with ambition, and then they will attend classes.

# CHAPTER VII: AS TO WOMEN'S WORK IN INDUSTRIES.

## Statement by Mrs. F. W. Sexton.

The National Council of Women appointed Mrs. F. W. Sexton, of Halifax, to collect and present information relating to the employment of women throughout Canada and she gave the Commission a full statement, accompanied by correspondence.

The question of technical education for girls is more complicated than for boys, as women ultimately become homemakers under new and involved industrial and economic conditions. This is particularly true in large cities. It is necessary for many women to be wage-earners not only before marriage, but during marriage when their husbands are unable to support the family, and as widows. The problem therefore is very involved. Changes in economic conditions have swept away the home as a place where the girl obtained her vocational or technical training. Women have followed industries from the home into the factories, and are now obliged to earn money to buy commodities they formerly made bread, butter, clothing, etc. With the departure of industries from the home has gone also the development of habits of industry, of definite aims and purposes, and of efficiency which makes for the best type of character and is essential to home-makers, who form the most important of all economic factors.

Those women who can afford to attend High Schools and Colleges must ultimately become home-makers, and should therefore have instruction in domestic economy, sanitation, heating and lighting, also, as consumers, they should know something of the scientific principles governing production. In Halifax the High School is deficient in respect of training along scientific or technical lines. There should be some sort of elective courses or scientific courses running parallel with the other.

### WOMEN WORKERS IN CANADA.

The fact that women are in industry may be deprecated, but the fact remains. On the basis of the conditions in United States, where 6,000,000 women between the ages of 16 and 25 (1 in every 15 of the population) are engaged in gainful occupations, there would be 500,000 in Canada. It is perhaps not fair to take the same basis of calculation, however, as our population is not congested in large cities, and our industrial conditions are different.

In Halifax there are between 2,000 and 2,500 women in industries, which would bring the number in all Canada to 300,000, while there are many women working for money beyond those ages who are not household workers, and others who do not now but who have worked in industries.

The figures worked out for the United States—which would probably apply to any community of the same sort—show that 9% of all women in industry are

in professions—teaching, nursing, medicine, law, etc. Pretty nearly adequate training is provided for all these. About 10% of women enter commercial pursuits as salespeople or in clerical work, and adequate training is provided for them in High and Commercial Schools, though nothing has been done in Canada in teaching women the art of selling and handling goods. About 16% of industrial women enter agricultural pursuits, for which Canada provides adequate opportunity by colleges, women's institutes, etc., though agitation is needed to encourage and stimulate women to take up poultry raising, dairying, floriculture, etc., which offer fine chances for development, and are specially fitted for women.

#### THE DOMESTIC SERVANT PROBLEM.

25% of all working women enter manufactories. The remaining 40% are employed in domestic service, etc., who must be trained through their mistresses in household economy, and also in a taste for domestic service which will dignify that training. So far it has been found impossible in the United States to train domestic servants to any extent, though some Young Women's Christian Associations have been fairly successful.

From investigations made in Halifax it would seem to be not impossible to train domestic servants, and make their mistresses agree on a minimum scale of wages and definite hours of work. Several girls volunteered to take such training if they could get it. Living conditions in Halifax are very pleasant, however, and there are no very large industries and department stores calling girls away.

#### WHAT IS THE SCHOOL DOING?

What is the public school system doing for these 65% of the women? In the very best places less than a third, and in the very worst places less than a sixth, of the girls have entered High School grade but begin to drop out of school at grade five at the rate of 20% per year.

In Halifax there are 500 girls at home between the ages of 14 and 17. Of these, 350 have never been beyond grade 8 and very many not beyond grade 5.

Perhaps one half of such girls in Halifax and throughout Canada stay at home to take care of the other children; but from 50% to 75% of girls out of school are obliged to earn their living in some way or help at home. What are they being trained to do? They have domestic science and sewing in the public school, but no boy or girl has been able to earn his or her living on the strength of training received in mechanic or domestic science. It could not be expected that a woman could be trained in 100 hours, (about two weeks' working time). The Public School must give them an equipment which will enable them to develop themselves as individuals and members of the community, or in industrial life if they have to enter an industry—to step right out and take a gainful occupation where that is necessary.

#### LEADING TO UNSKILLED INDUSTRIES.

Training in Halifax schools in sewing, which is necessary for any girl if she is to enter any of the trades, is not systematic or graded, but is more or less perfunctory and dilatory. The girls not at school drift about and go into unskilled trades, such as candy dipping, packing, paper and cardboard industries—all sorts of occupations that bring on tuberculosis and curvature of the spine, doing the same thing over and over again under conditions absolutely stunting and deadening. After three or four years these girls marry; and what kind of homes can we expect them to make when they have not been taught to do one single thing properly with their hands, and have been driven about amongst harmful moral and physical influences? Perhaps some of them pick up a trade, but this is increasingly difficult. Dressmakers do not want to be bothered teaching girls; they would rather import those already trained. Just when girls are at the most critical age and susceptible to influences of all kinds they are dropped into the midst of these low industrial conditions.

There are many industries which are called skilled, among them so-called "needle" industries, ready-made clothing manufacturing, dressmaking and millinery, but for lack of training women enter the unskilled occupations, or the unskilled portions of the skilled industries.

#### Two Classes of Women's Industries.

Most industries for female work unfortunately fall into two classes—domestic service and what are called the "needle industries." Training for the latter would include possibly ten different industries. Mrs. Sexton would never pick out one firm's definite industry and say, "We will train girls for that one store;" but all industries demand plain sewing of white garments, the designing and making of undergarments, the making of children's plain wrappers and clothing, plain costumes, making of woollens, prints, etc. No girl between the ages of 14 and 17 would be allowed to cut and fit in an industrial establishment, but training in these lines, accompanied with domestic science, business English and arithmetic, would train many if not most of the girls for the skilled industries to which women have to go.

The training of young girls engaged in unskilled occupations would not be successful unless in cases of unusual girls who could climb. Mrs. Sexton did not think there were many girls working in candy or cotton factories who could be got to attend school. Though bootmaking is one of the skilled industries, women are largely employed in the unskilled parts of the work; but, if that industry were large enough in any place it might be one of the best in which to train women. We have to take the skilled industries which exist, and enable girls to earn their living at them as well as possible. If all skilled hand industry is abolished and machinery is introduced, we shall have to train women for that. It is a fact that unskilled labor is greatly increasing with the introduction of machinery. It is a question whether we can ever train girls who work under factory conditions in unskilled industries; but Mrs. Sexton thought that girls the age of those in candy and cotton factories should not be allowed to work the whole time, and that possibly some arrangement might be made with the factories whereby they would not. Amusements for such girls are very limited in Halifax. While there are parks and open spaces where they can walk at night, there are no legitimate amusements like the "People's Palace" or anything of that sort; nothing but nickel shows, which are more or less iniquitous.

TESTS AS TO SUITABILITY OF INDUSTRIES FOR WOMEN.

The tests for industries in which a woman can engage are that they must be clean and sanitary; must have no injurious physical or moral influences or lead her away from her ultimate work of home-making; and they must offer living wages and afford hope for her advancement and development.

Investigations show that the needle industries, millinery, dressmaking, men's tailoring, etc., are the only ones for which there is definite training in Halifax, where over 1000 women are engaged in industries that are practically wholly unskilled. It would not pay to train girls to enter boot and shoe work, in fact they usually enter as stitchers, which is untrained work.

The objection to women engaging in unskilled work, such as candy-making, is that these unskilled trades are run under unsanitary conditions; that in mechanical operations the women have to use no thought, hence mental growth is absolutely stunted and ambition stifled, and the women will never reach a higher plane. As there will always be enough riff-raff to carry on unskilled occupations, why should we want to train men and women to go into these, asks Mrs. Sexton. When employers cannot get women to carry on such occupations, she argued, necessity will probably cause the invention of suitable machinery. In any case, you will never be able to train all the women out of unskilled industries. She was speaking on behalf of ambitious women who must get a living wage, and who are now forced into either skilled or unskilled industries, for whom work in the former would be possible if they had the necessary training. Unskilled industries do not promise the money which is essential to an unmarried woman—firms in Halifax offering only from \$2 to \$4 per week, with an average of between \$3 and \$4 per week.

#### GIRLS' TRADE SCHOOL AFTER 7TH GRADE.

Just as there is a High School at the end of grade 8, ready to take the few pupils who have time, ability and inclination to advance, so there should be trade schools at the end of grade 7 to meet the wants of the many who must immediately earn their living with their hands. Such trade schools, while giving definite trade teaching under actual shop conditions and trade hours, should continue the work of business English and business arithmetic, penmanship, etc., and should help all girls in household science and sewing, etc., even if they had no chance of becoming skilled workers, for no trade school would be able to do without continued training in household science. If a girl can go on into the collegiate, let her do so.

The trade school is suggested simply for girls who must earn their living by their hands, and for the large percentage of girls who leave school early. An investigation has shown that probably 70% of these girls would remain in school another year if they could. Their reasons for leaving are because they need money, and because they are not getting anything in school that holds their interest. It has been found that parents would try very hard to keep pupils in school for another year if they could thus gain an adequate and honorable living by starting in an industry at a point far in advance of any they might

#### 3 GEORGE V., A. 1913

1

have reached after years of aimless drifting about in such industry. Girls in Boston are placed immediately in good paying positions after such training. Such a trade school would make a girl more efficient as a factor in the home as well as in an occupation. The plan of allowing girls to give one half-day at ordinary classes and one half-day at something like a trade school would meet the need.

#### TRADE CLASSES DAY AND EVENING.

Besides the ordinary trade school, there would have to be provided for a long time trade classes, both day and evening. Mrs. Sexton had talked to 60 or 70 girls who wanted evening classes to help them rise higher in their particular industry, for they said if they knew more they could get on. Such classes would help them morally, socially and industrially, and out of them would perhaps come schools which might be called trade schools, which would help the girls to appreciate themselves, give them an opportunity to develop as individuals, and make themselves of the most use as women and home-makers.

#### SUGGESTED CHANGES IN PUBLIC SCHOOLS.

It would be a move in the right direction to extend the present domestic science work downward and upward to take girls below and above grade 8; that would fill a very definite want in those girls who go to domestic service, and the more advanced want of mechanical training for domestic capacities.

Mrs. Sexton did not think the public school could meet the case without giving part of its time to trade training and including in its teaching staff actual workers in trades end industries, for industrial work must be made actual and practical in a trade school, or it would be useless to girls, and the industry would not be established. If it were possible to bring trade training into the public school and have all under one organization she thought it would be better in the end, but she would like to see the experiment tried first by itself.

The tendency in other places has been to incorporate the whole thing in the public school system and she thought that in Boston it had suffered in so doing. In Halifax it is impracticable to try the experiment for women on exactly the same basis as industrial processes for men are carried on—the Government paying half the cost of teachers, and the municipality paying the other half and providing the buildings. Some extra-provincial financial assistance is needed.

5

SESSIONAL PAPER No. 1914

# PRINCE EDWARD ISLAND.

# CHAPTER VIII: AS TO EDUCATION.

# SECTION 1: INTRODUCTORY.

Educational affairs in this Province are managed by a Board of Education, consisting of the Premier as President, 8 members of the Government, the Principal of Prince of Wales College, and the Chief Superintendent of Education. The Local Government pays the teachers' salaries, some school districts voluntarily adding what is called the "Supplement," which on the average amounts to about 10% of the salary.

The total expenditure for Education during 1911 was \$181,177, of which the Government contributed \$126,439, the balance coming from school districts for school houses, contingent expenses, and as supplements to teachers' salaries, the latter amount being \$24,568, an increase of \$776 over 1910, and more than three times what it was in 1900. Out of 479 school districts, only 26 voted no supplement to teachers.

School attendance suffers from the movement of families to the western Canadian Provinces. The total number of pupils attending the Public Schools in 1909 was 19,073, about 10 attending rural schools to 1 attending town schools. In 1910 there was a falling off from this total of 141, and in 1911 a further decrease of 535.

The percentage of average attendance in 1911 dropped to 60.4 from 64.8 the previous year, the highest ever reached. This decrease is observable in every county. The Chief Superintendent attributes it mainly to the depletion of the ranks of the best teachers during the few years preceding, their places having been filled with young and inexperienced teachers (one inspector gives their ages at from 16 to 18) whose aspirations are not concentrated on their work and their pupils, and who are not able to attract their scholars and inspire them with a love for their school or enthusiasm in its work. Examiners at the matriculation examination in 1911 reported a decided falling off in neatness, accuracy, spelling, writing and arithmetic.

#### SCHOOL GRADES AND ACCOMMODATION.

It is the duty of school trustees of districts to provide free school privileges for all children from 5 to 16 years of age who reside in the district; those above 16 have the right to attend without charge if the school accommodation is sufficient. The latter must be as follows:—

191d-Vol. IV-8

#### 3 GEORGE V., A. 1913

For a district having 40 pupils or under, a house with comfortable sittings with one teacher; for a district with 70 to 100 pupils, two class rooms with one teacher and two assistants, or two departments (primary and advanced) and a good class room accessible to both with two teachers, and if necessary an assistant; for a district with 150 to 200 pupils, three departments (primary, advanced and high school), at least one class-room common to the two latter, with three teachers, and if necessary an assistant; for a district with 200 pupils and upwards, sufficient accommodation for different grades of primary and advanced schools so that the ratio of pupils in primary, advanced and high school departments may be 8, 3 and 1.

The schools of the city of Charlottetown and the town of Summerside are managed under special regulations.

#### INDUSTRIAL EDUCATION NOT PROVIDED.

There is no organized Industrial Education on the Island; no Manual Training except in Charlottetown and Summerside and at Hillsborough Consolidated School; no Domestic Science except in the Prince of Wales College and the school at Hillsborough. There are no evening schools in the towns and no short winter courses in the schools for grown-up farm lads, except at Hillsborough Consolidated School for three months in the winter, which was very successful as far as it went.

There are Manual Training Centres in Charlottetown and Summerside, and at Hillsborough Consolidated School. At the first named nearly 200 public school boys took this training in 1911. Hillsborough gives also Nature Study with School Gardening.

Prince of Wales College, Charlottetown, provides Manual Training for boys and girls aged 16-20. The work consists of Drawing and Woodwork. Girls receive Manual Training during only one year. Domestic Science is provided for all the girls. Teachers-in-Training at Prince of Wales College are given a course of Manual Training or of Domestic Science.

The girls of Charlottetown had Domestic Science for a year under the Macdonald fund, but the School Board, though professing to be favorable, had no funds to continue it, and the City Council said they could not afford it. It was not a question with the School Board as to its utility or advantage. One witness said the parents favored it much; that the pupils were intensely interested in it, originated the petition to have it continued, and were very much disappointed; that the committee metaphorically went down on their knees to the School Board to have it continued, but the City would not advance the money.

There is a small School Garden in connection with one school in Charlottetown. The teacher said it was too small to give the pupils all they like. It was divided into class lots, and every individual pupil works. It is carried on almost exclusively on the basis of Nature Study work, an hour weekly being given during the planting and growing season. The children are very much interested. It is found that the child most interested in Domestic Science and the School Garden is better in the other studies, and the year they had Domestic Science that was no detriment to the usual academic work of the school.

# SECTION 2: A PROVINCIAL COMMISSION ON EDUCATION.

A Commission appointed by the Provincial Government in October 1908 spent a year investigating educational matters on the Island and schools in other parts of Canada, also in England, Scotland, and part of the United States. The Commission was due to expressions of public opinion that the schools were not as good as they had been years before, that the number attending them was too small, that text books were unsuitable, that consolidation of schools would secure better teachers and make better schools, and that agriculture as a subject should have more attention in the schools.

The Chairman of the Commission (Mr. D. C. McLeod K.C.) had been disappointed with many of the Island Schools visited; he had expected something better in numbers and in the manner of teaching. He noted listlessness in the scholars, and his Commission had found that school life and home life were two distinct things. He thought if the School Garden could be introduced with success it would tend to unite home and school and make pupils familiar with the common things about the home besides helping in teaching the ordinary subjects. He suggested reducing the summer holidays, appointing further vacations at a season when roads and weather were bad. As the Island weather is not hot, he thought school work might go on without interruption through the summer except for perhaps a fortnight, by keeping the windows open and shortening the hours of the school day.

#### REFORMS CALLED FOR.

The Provincial Commission found the people generally evincing great pride in the general intelligence of the population, but feeling strongly that education must make progress and that the schools should go on from good to better; that schools should be well equipped, with teachers well trained and mature in judgment; that careful administration of school money as well as of the time and energy of children demands larger and better schools, and as far as possible the elimination of ungraded one-department schools; that compulsory school attendance up to a certain age or measure of attainment should be enforced. The tragedy of the schools, as the Commission remarks, is the disappearance of pupils aged 12 or 13. Children who have long wearied of the idle hours spent on the back seats of the school room while the teacher was engaged with other classes, and to whom the book and unsolved problem suggest work unaccomplished, leave school at this early age with little more than a habit of listless idleness and dislike for books and everything associated with school. Many parents complained of shipwreck and failure of their children, and the charge of inefficiency is often brought against the educational system without any precise knowledge of where the fault lies. All that strengthens the argument for improvement through consolidation.

### NATURE STUDY RECOMMENDED.

The Provincial Commissioners urged that Nature Study should have considerable place in the school course, as affording pupils the means of acquiring

191d-Vol. IV-81

1753

#### 3 GEORGE V., A. 1913

much information of value and interest, and as of great practical use in its direcbearing on agriculture. They suggest that in the two highest grades Nature Study might merge into elementary agriculture, including not only school garden work, but home work, feeding and caring for animals, pruning and spraying trees, etc., the pupils to observe results and report to the teacher from time to time.

They argued that the prosecution of Nature Study would tend to cultivate strong attachment to country life, and thus help to check the drift to towns and cities. They showed how Nature Study comes in close touch with other school subjects, geography being, in one aspect, really a branch of it; experimental and natural sciences both in method and manner, being simply the development of it; graphic representation by drawing being well nigh indispensable to Nature Study, and Nature Drawing being one of its most obvious and useful forms. English composition receives a wealth of material from Nature Study; arithmetic and mathematics, dealing with quantitative expressions and results, obtain appropriate problems and examples; while the construction of various sorts of apparatus, required in Nature Study work, affords a ready medium for Manual Training.

But however important Nature Study may be, the Provincial Commissioners do not recommend it in schools which lack qualified teachers; and School Gardens should be introduced only where they can be well kept. Otherwise they would be only an eyesore and an object of derision. Where gardens cannot be properly maintained, strips along the sunniest walls of the school-house should be planted with flowers, or at all events there should be window boxes or flower beds.

The Provincial Commission recommended that Prince of Wales College should have a qualified Professor of Nature Study who should be a graduate of some Agricultural College of high rank; that the course should include Natural Sciences as well as elementary Agriculture and Nature Study, and that there should be a well-equipped garden in connection with the College.

#### MANUAL TRAINING BUT NOT DOMESTIC SCIENCE.

As Manual Training is now being taught in Prince of Wales College and in the Normal School, the Commission recommended that this subject be introduced into schools where suitable work rooms can be had, the training being utilized in making implements of practical use on the farm.

The Provincial Commission regrets that under existing conditions it cannot recommend that Domestic Science be taken up in the rural schools, as the only way in which practical instruction could be given would be by the itinerary method. Needlework, however, should be taught in every primary school irrespective of sex, and continued by girls through all the grades.

The Provincial Commission carefully studied the principles of consolidated schools, and strongly urged their adoption. They gave a long list of reasons in favor of consolidation, and after thoroughly going over each school district, its road system and physical conditions, suggested a rearrangement of districts appropriate for consolidated schools.

# SECTION 3: INFORMATION FROM THE CHIEF SUPERINTENDENT.

The Superintendent of Education, Dr. Alexander Anderson (since retired) gave our Commission information from his many years of intimate knowledge of the schools and their work. He said that sewing is not taught generally in the Common Schools—only here and there. He thought this a great mistake, as sewing would lead towards Industrial Education. From time immemorial sewing had been taught in every parish school in Scotland as part of the original curriculum. In two convent schools in Prince Edward Island, at Miscouche and Souris, he had seen some exceedingly creditable needlework; pupils were taught to plan and cut different work and to sew. It was not fancy work, but such as would be required in the regular conduct of the household.

A good deal of Nature Study is given in the Rural Schools, but not nearly so much as the Superintendent would like to see. He did not think the curriculum too heavy, and other features would not have to be dropped in case of introducing Domestic Science, Manual Training and Nature Study, because a great deal of time now is frittered away, and these additional subjects would tend to concentrate the teacher's work.

While there is no compulsory law, a certain proportion is deducted from the teacher's salary, if the average attendance falls below 50% of the total enrolment, and this sum must be made up by the district or the defaulters—primarily by those parents who did not send their children to school. There is a good deal of friction when a man is assessed for such default, because many of the delinquents are very poor people, but the plan works well. In case the delinquent cannot be called upon the second time for assessment, the burden falls on the whole school district.

In the opinion of the Superintendent, writing has improved amazingly of recent years, but he was afraid poorly made figures were still common, though much better than they used to be. The cause of the bad writing is that pupils are set to write without supervision from the teacher when the latter is engaged with another class.

Evening classes in centres like Charlottetown and Summerside would, the Superintendent thought, be capital in helping boys who leave school at 15 to keep their education fresh, and they would appreciate it all the more when they begin to feel the need of its aid in their regular vocations. He knew of lads who did not enjoy school work and had to be taken away and sent to a trade, yet who of their own accord went back to evening school and did well in studies relating to their trade.

He believed that School Gardens well maintained would aid rural education. Where adopted they had done exceedingly well. He knew of a number of cases where boys who had taken part in School Garden work maintained nice gardens at home with great pride and in a good many cases he had noticed tree planting in the neighborhood of these homes.
# SECTION 4: SUMMARY OF OTHER TESTIMONY ON EDUCATION.

Consolidated schools are much opposed by farmers on the ground of their expense, but they have done good and witnesses think the rural schools should be made larger and more modern.

The opinion is expressed that the schools train away from the farm; that agricultural education is needed; that teachers should attend short agricultural courses at the Experimental Farm.

Nature Study should be taught in all schools. Trained teachers of Agriculture are needed.

School Gardens at present are not much good, and are difficult to maintain, though generally approved of if the vacation difficulty can be solved; a winter vacation is suggested instead of the summer one.

Girls should get Domestic Science training. Some witnesses think they get it best at home, and that success of farm work largely depends on women's work at home. Domestic Science and sewing should be more generally taught, as the girls at the present get their dresses made in the city instead of making them themselves.

Complaint is made that not sufficient attention is paid to writing. There is a cry for better attendance at schools; better schools, for which it is believed people are willing to pay; also a better class of trustees. Some believe that the only remedy is taxation by the Province and large school sections, not small districts. The Government is willing to help, but public spirit is lacking, and the people need working up.

Prince Edward Island has not established night schools in industrial or agricultural districts. Night schools are needed in Charlottetown, and would be attended if rates were reasonable. Attendance should not be compulsory. Mechanical drawing should be included; shop foremen could teach. Most working men would be glad to go.

A business man of Charlottetown said he found young fellows pretty well trained for office work, but handwriting is not as good as it ought to be or as it used to be years ago, because of too many changes in the style of writing in the schools.

#### VIEWS OF INSPECTORS ON SCHOOL GARDENS.

Inspector McCormick thought the people would favor the children's time being taken up with the School Gardens—an excellent feature, in fact a necessity, in rural schools. Some work would have to be done at first by the teachers in the gardens at the homes of the pupils, and a little monetary consideration given to the teachers. Such work would be a good way to educate them. He recommended maintaining trial demonstrations, then conventions where teachers could discuss the School Garden idea during the winter.

Inspector Boulter described to our Commission the School Garden work at Tryon. Plots were managed singly by advanced pupils, by two intermediate

pupils, or by two or three primary pupils joining; the boys generally dug the plot. About half an hour a day was spent, the result being improvement in regular school work, in entrance examinations for Prince of Wales College, and in fact more pupils matriculated. The School Garden was an addition to the Nature Study Class required by the Department. The scholars in Tryon, in competition with all the farmers, carried off 4 out of every 5 prizes given for judging seed grain. Some teachers who are remaining in the profession are taking up the matter of School Gardens. If teachers remained more than a year he thought something could be done on these lines; but out of 165 departments in his charge last year, 100 teachers either left or were engaged in other schools, and very young teachers took their places; hence it would be difficult to get teachers coming from the College to take up this work in summer unless compelled to do so. Of course, teachers could teach Nature Study if it were taught in College, and if they were required to do so. They could get a good deal of information by attending to a good School Garden for six weeks. The failure now is because the majority of teachers are not competent to lay out or carry on School Gardens, and there is a lack of interest in ratepayers to make the School Gardens a success.

In his report at the end of 1911, Inspector Boulter sadly writes:---

School gardening is almost a thing of the past; and with it Nature Study is also going, and all attempts at teaching the beginning of Agriculture, apart from the text-book. This is due to lack of interest on the part of the ratepayers. Without some aid, gardening cannot be carried on. Yet without a garden, a teacher may kindle by well prepared talks on some plant, animal, or operation on the farm, a spirit of interest in the pupils. The teacher in doing this, has a greater force to work against than the lack of a garden; that force is the home influence which, in the majority of cases, forms the impression in the boys' minds that the farm is a place of drudgery. A greater number will stay by the farm if they were enthused by their parents with the honorableness and importance of Agriculture.

### SECTION 5: PRINCE OF WALES COLLEGE, CHARLOTTETOWN.

This College was founded in 1860, and amalgamated with the Provincial Normal School in 1879. As at present constituted it is intended to provide for young people of both sexes a liberal education in literature and sciences, and also to educate and train teachers for the Public Schools of the Province.

In 1911–12 there were 278 students attending the College,—the largest number ever enrolled.

The percentage going into teaching is dwindling. A good many prepare for teaching who do not go into the schools. Teaching is a sort of stepping-stone, possibly more so in this Province than others, on account of the comparatively low salaries.

About 30% of the students take First Class lessons, requiring practically two years' attendance with very little professional work. Observation work is carried along in the classes, and a Debating Society discusses professional subjects in the course, so that the total time given to strictly professional work is perhaps a fifth. Academically these First Class lessons are about equal to the entrance work for the University, and are accepted as ordinary matriculation.

While the College has no connection with the Public Schools of Charlottetown for practice work, there are 5 departments in the Model School patterned practically after the Public School, in which work is done in observation and practice.

This College is practically the High School of the Province, for though the Island has what are known as "High Schools" they have not the standard of those in Ontario, but fall probably two years below the matriculation and their students have to finish at this College.

#### THE TRAINING OF TEACHERS.

The Provincial Commission on Education was convinced that the Normal Training of teachers was insufficient, and in their report insisted on a minimum of  $1\frac{1}{2}$  years for the two parts of a teacher's preparation—at least nine months being given to academic work, and four months being the smallest unit of time to be considered for professional training. Students who wished to terminate their course at the end of the first session would be granted permits to teach, valid for two years; those who wished to qualify for second-class licenses would attend another session divided into two parts for academic and professional work; students holding second-class licenses who wished to qualify for first-class licenses would be required to attend for academic work for a third session; those holding first-class licenses who wished to qualify for High School licenses would be required to pass an examination falling at the end of the Second Session in the prescribed course of reading, representing general literature and school management.

At present teachers are required by law to stay only five months in the third class or lowest form, which is taken by from 5% to 10% of the students. In the second class, which includes from 55% to 60% of the students, they are required to stay 5 months, but as the academic work required for the license demands a full nine months' session they stay for that length of time.

Secondary education is carried in the highest class to the first year of Arts, and is accepted by McGill and Dalhousie Universities.

#### VOCATIONAL SUBJECTS TAUGHT.

All girls in the College get Dmeostic Science, and all students get Manual Training and Nature Study. These branches have about 8 periods per week out of 30 periods. They do not affect the other studies at all except possibly in the amount of class time. Students come in very poorly prepared from some of the Island schools, hence the work is quite heavy, but these vocational studies are really a relief to the student's brain work in other subjects.

Some correlating is done, the teachers of Nature Study and English arranging that the composition shall be on a Nature Study subject, one exercise thus serving both departments.

Physical training is compulsory.

## SECTION 6: MACDONALD CONSOLIDATED SCHOOL, HILLSBOROUGH.*

This School at Hillsborough was visited by our Commission, a luncheon being served by the Domestic Science class, and an exhibition of drill given by the cadets. The School Garden, containing both flowers and vegetables, was examined with interest, and the Manual Training work was seen to good advantage.

In view of the fact that the Commission on Education in Prince Edward Island, after long and careful inquiry, reported in favor of consolidation of rural schools, it is fitting that a somewhat full report, supplied by Mr. S. LeLacheur, ex-Principal, of the Macdonald Consolidated School should be given, as it contains many points suggestive to all concerned in the improvement of education.

#### CONDITIONS BEFORE CONSOLIDATION.

Prior to 1905 each of the six districts—Cross Roads, Bunbury, Mr. Herbert, Mermaid, Bethel and Hazelbrook—had a one-roomed rural school, the buildings being in most cases uninviting and the surroundings bare and cheerless. The teachers had no special training, and were supposed to teach classes in all the subjects from A.B.C. to Latin. Pupils attended irregularly, as shown by an average attendance of 60%. Boys over 12 usually attended for only a few months in winter. Lack of interest was evident both on the part of pupils and parents. Individual taxes ranged from 20 cents to \$5.20 per annum. The average contribution by the ratepayers was but 11 cents on the \$100 property valuation, and the total salaries received by the six teachers amounted to \$1,190. During the five years previous to consolidation these six districts matriculated but one pupil to the Prince of Wales College.

#### HOW IT WORKED OUT.

For the first three years after consolidation the six districts contributed merely their previous assessment on property valuation, but since that time three of them remained in consolidation and agreed to pay 40c. on the \$100 valuation. Individual taxes now range from 80c. to \$20.80. There is a voluntary fee of \$2 per pupil for the first three in a family; pupils from outside districts pay a tuition fee of \$5; the Provincial Government pays the statutory grant.

Pupils are conveyed in comfortable vans to a school of which they are justly proud. The average attendance has risen from 60% to 74%. Specially trained teachers have charge of properly graded classes and have suitable equipment for their work.

The course of studies has been enriched by Manual Training, Household Science, School Gardening and Nature Study, Music, Drawing and Physical Culture, all taught by specially trained teachers during time which would be wasted by classes in ungraded schools. Pupils are broadened socially by a widening of

^{*} Since the visit of the Commission this school has been closed temporarily from lack of financial support.

experience due to larger classes and increased attendance. They develop habits of industry by being continually under the eye of the teacher, and the 95% who never go beyond the Public School receive a training which better fits them for their life work.

Pupils have beautified their home grounds with lawns, shrubs and flowers; they have swept the Provincial Exhibitions of prizes for their products, and have competed successfully with the Charlottetown schools in inter-scholastic sports and football. The talent of the six districts has been brought back to the school and developed in the Literary and Social Club and in the Annual Concerts.

During these five years the School has matriculated 20 pupils from these same districts, which produced but one for the previous five years. It has also had pupils from 27 outside districts, and has matriculated 20 of them to the Prince of Wales College. Visitors coming from all parts of the Province have returned to make improvements in their own community and visitors from other Provinces —Earl Grey among the number—have held up this school as an object lesson in their efforts to improve educational conditions all over Canada.

#### SPECIAL CLASS FOR FARMERS' SONS.

In 1910 an extra teacher was appointed so that the Principal might be free for a special class for farmers' sons along the lines of the Agricultural High School movement in Ontario. This object lesson to the Province was made possible by the generosity of Dr. Robertson. Two evenings per week in the early autumn were devoted to practice in judging live stock, so that the big boys might be fitted to take part in the judging competition at the Provincial Exhibition. Those classes were sometimes attended by older farmers and created a great deal of interest. Eight boys took part in the competition and won \$30 of the \$60 offered in prizes.

Young men became so interested that they were enthusiastic over the idea of a special class for them at the school. At the end of November this class was organized, the course covering English, arithmetic, book-keeping, geography and history, anatomy and physiology, live stock, poultry, dairying, farm crops, agriculture, botany, horticulture, farm chemistry, physics. The admission fee was 50 cents a month for all residing in the Consolidated district and \$1 for all others. 16 boys ranging in age from 16 to 23 were enrolled; 5 came from the regular grades, and 4 from outside districts, driving or coming by train. Two of the 16 were later induced to join the Prince of Wales entrance class in the hope that they might continue their education at the Agricultural College.

The boys read widely and brought up questions for discussion in class. Most of them bought books on agriculture and stock judging, and took note of other books which would be of special value on the farm. They also sent to various Departments of Agriculture for reports and bulletins, and are thus beginning to build up libraries of their own. They visited the Fruit Growers' Association and received a special demonstration. Most of the class applied for scholarships to attend the free course at the Nova Scotia Agricultural College, and four received and took advantage of them.

The boys receive from Agricultural Colleges improved seeds and are now conducting experiments on their fathers' farms with alfalfa, six-rowed barley, Quebec yellow corn and winter wheat. Some of them are keeping daily records of milk from each cow in the herd.

A farm library embracing \$100 worth of books including agricultural papers, books and bulletins was made available for the studies.

There is no trouble in keeping these boys on the farm. They are setting to work with that application of intelligence which will help to solve the problem of rural life and raise farming to the rank of any profession.

This extension work attracted such attention throughout the Province that requests were received for addresses on the subject at Farmers' Institutes, the Summerside Seed Fair, and the Provincial Teachers' Association.

#### Advantages of Consolidation.

The regular work of the school was done in 9 grades. The total enrolment was 142, 29 from outside districts—11 came at their own expense from districts formerly in consolidation and paid the fee required from outsiders, the remaining 18 coming on the train or boarding near the school.

The vans missed a couple of days on account of bad weather. Two of them were driven quite satisfactorily by big boys who attended school. The drives to and from the school are usually much enjoyed by the pupils. By community co-operation in road improvement the cost of hauling might be considerably reduced, and pupils would not be so long on the road.

The work of this central rural school gives some idea of the advantages possible through consolidation. In the Kindergarten room the teacher with only three grades has time to introduce music, drawing and cardboard work, and each child has its plot of flowers and vegetables in the garden. In the more advanced rooms cardboard work gives place to Manual Training for the boys and Household Science for the girls, and these subjects may all be taught by specially trained teachers.

The garden, instead of being an expense to the school, is really a source of revenue. Last spring, seeds of vegetables and flowers were started in boxes in the window, and as the weather became warmer were removed to the green-house and cold frame. Pupils were supplied at reduced prices with seeds and plants for their plots, and orders were filled for the surrounding community. The boys of the upper grades had experimental plots on different farm crops, whilst the girls had a kitchen garden and flower border of annuals. The garden system of this school has attracted attention in other Provinces.

Manual Training is of the greatest importance as a foundation for Industrial Training. The boy applies arithmetic in his drawing, and develops habits of neatness and exactness. One boy made a pair of hames, and another a picture frame. The average cost of this Department is \$15 per year.

The Household Science department has been made self-sustaining by the ready sale of products.

#### 3 GEORGE V., A. 1913

Physical culture, music and recitations, and exercises have been carried on with excellent effect.

#### WHAT IS NEEDED.

Referring to the development of consolidated schools, Mr. LeLacheur's memorandum states that Prince Edward Island is the only Province which requires two languages besides English for entrance to its High School or Academy, and suggests that either French or Latin be eliminated for matriculation to Prince of Wales College. If this were done, he believes that so many pupils would go beyond the Public Schools that each county would likely require a High School or Academy, as in the case of Nova Scotia. He adds:—

"This question of rural education must be met, not only in the Consolidated District but in the whole Province. The cost of education must increase if we are to have a system in line with twentieth century progress, Nowhere in all Canada can consolidation be better worked out than in Prince Edward Island with her rich, level country and dense population of progressive people. Nova Scotia has 22 such schools. The ratepayers of the consolidated districts in Nova Scotia and New Brunswick pay as high as \$1 on the \$100 property valuation; and the Governments give special grants to encourage Manual Training, Household Science and School Gardening. The Government of Nova Scotia also gives a special grant to teachers who have special training."

#### EXHIBITION BY THE SCHOOL.

Principal Crockett, in his report for 1911, thus speaks of a distinctive feature of the work of this school: the exhibit at the Provincial Exhibition in September.

Here may be seen the finished product of the school garden, of the workshop and of the classroom. On the first floor of the main building there was a general exhibit of potted plants, cut flowers and garden vegetables; in the balcony was an artistic array of kindergarten and manual training work; specimens of pressed flowers, noxious weeds, and a second collection of cut flowers and garden vegetables. Here also were drawing books, maps and exercise books—the work of the pupils of the various grades. The exhibit this year included 38 varieties of garden vegetables, 36 varieties of potted plants, and 22 varietier of cut flowers.

In potted plants we won 15 first prizes and 7 seconds; in cut flowers 3 firsts and 6 seconds; in vegetables 4 firsts, 4 seconds and 4 thirds; in manual training 2 seconds; in Kindergarten 2 firsts; first for best collection of noxious weeds correctly named, first for collection of cut flowers, and first for best collection of garden vegetables. The partial failure of the cut flowers exhibit was due to an untimely frost that cut down all but very hardy annuals early in September.

# CHAPTER IX: AS TO INDUSTRIES AND RESOURCES.

Premier Haszard in welcoming the Commission at Charlottetown, expressed the hope that some technical instruction might be given along the lines of agriculture, dairying and fisheries, the chief industries of the Island. Owing to divided jurisdiction in regard to the latter, neither the Provincial nor the Federal Government is taking proper steps to protect, encourage or propagate the various fish. In industries there are some machine shops, foundries, sash and door factories, and others.

There has been very great progress in agriculture all through the Province because of more interest being taken in the subject of agriculture and the improvement of crops. Even before the Provincial Department of Agriculture was established, men were sent by the Dominion Government and held meetings and aroused interest.

The Islanders ship a good deal of produce to the old country; not as much to the United States as some years ago; and the Canadian market is a good one. It is felt that anything that would improve farming would benefit all and injure none, hence Industrial Education would be a good investment as a means of increasing and improving farm products.

A great deal has yet to be learned as to curing and packing fish that would be of value to the Islanders. Lobsters were not as plentiful in 1910 as the previous year, but those engaged in that fishery think there is no need for anxiety about the future. Oyster fishing is very important and valuable, but needs protection as beds are suffering somewhat from overfishing.

#### FISH, CHEESE, COLD STORAGE.

Mr. Horace Haszard, a business man in Charlottetown, said he had handled quantities of fish, but the system of curing had deteriorated from what it was years ago when there was a large quantity. There are various reasons for this. Hake was largely caught at one time, the "sounds" being worth about \$1.45 a lb., but they got so high that a substitute had to be found, and the price dropped to 25c; hence the fishermen found it useless to catch this fish. The same thing applies to codfish. Newfoundland cod come into the market much better cured than ours, and on account of poor curing, shippers of large quantities of fish to Havana and other places found the business did not pay, and dropped it. There is more demand and better prices here for fish to-day than 20 years ago, when more were caught. Last winter it was hard to get sufficient codfish here properly cured to satisfy the home demand, and some orders from the Pacific coast had to be filled from Gaspé. Codfish are just as plentiful at certain times as they ever were, but the fishermen found too small a demand for the cured article as the y

#### S GEORGE V., A. 1913

fixed it up, and they have got out of the way of it considerably. The business has decreased very largely on the Island, as consumers are becoming more particular than they were years ago in the quality of the goods. If they could get such men as the Scotchmen who came out to Canso to show how fish could be properly cured the business could be largely increased.

The methods adopted to push dairying on the Island did everything for this Province. Complaints are coming about the heating of cheese arriving on the other side, although the Government have a man following it from the place of shipment to destination. Witness had often wondered why the Dominion Government did not give the Island a cooling room, because cheese cooled in such rooms commands from 1c to  $1\frac{1}{2}$ c a lb. more than in any other way; but nothing of the kind had been furnished, and the Island is at a disadvantage, because cheese is becoming a very important factor in the Province. The temperature of the Island is cool, though in July and August there are some pretty hot days, and within a week witness had seen letters containing more complaints than usual as to heated cheese landing on the other side.

There were night schools here years ago, but none to-day. They would be a great advantage. There should be more industries in the Province than there are and some there were years ago are not now in existence; but the Island has too much politics. Some of the progressive men have been fighting for years for Cold Storage, and now that it has been established and is one of the greatest things they ever had in the Province, and would open up several lines of trade that they had not been able to touch at all, politicians are going through the country crying down the Government for giving a little assistance in that direction. If the people in the Island would stand together in pushing policies making for the efficiency of the people, they would be far better off.

#### TRANSPORTATION AND FISHERIES.

Mr. A. B. Warburton, M.P. for Queen's Co., said that fishing is widely engaged in, particularly on the North shore—codfish, halibut, mackerel, hake—but the fish are not cured so as to get the best price. Some years ago Mr. Cowie came here and took up the question of curing herring, but witness did not think this had been ever thought of in connection with other fish. Fishermen are very unwilling to take instruction from a teacher in words. A fisherman lives for to-day, not for the future. Formerly codfish were brought to Souris and cured, so that they could be sent down to hot countries and bring a better price.

There are no industries outside Charlottetown except the cheese and lobster factories. The Island turns out very little furniture. All over the Island there used to be carriage builders, but large factories can supply so much cheaper than local shops that the latter have been shut up for some years. The good woods of the Island have been largely exhausted.

Transportation facilities are poor. The Island Railway does not give the co-operation it might, and regular service across the Channel all the winter is exceptional. When witness was Premier 5 years ago he was detained 29 days on the steamer, and was 33 days getting from Ottawa to Charlottetown. That difficulty prevents

Island people from going into manufactures. That year a large quantity of smelts were sent down on a winter steamer, but they were destroyed, and great quantities of meat met the same fate. Something might be done with a plan to send these things out during the nine months when there is transportation, letting people look elsewhere for the other 3 months. One man has recently commenced putting up dry steamed codfish, a sample of which was very excellent. Mr. Warburton dealt fully with the matter of oyster fisheries and their development, of which he had made a special study.

#### TRANSPORTATION DIFFICULTIES.

Mr. E. Bentley, President of the Board of Trade, Charlottetown, said the Board was concerned with the improvement of agriculture as well as of industries; the Board did not go so much into agriculture except as it affected commerce, but would be very cordial to any system or method of trade education to improve industries or promote trade. One of the principal difficulties in developing industries is the expense and delay in transportation. The high cost is the result of the "3 short hauls"—the first on the Island to the point of shipment, the second across the water to the mainland, and the third from the mainland point to destination. This has been a matter of complaint and grievance for years. The delay of boats, especially in winter, and weather changes, cause spoiling of meats and other perishable products. People who had contracted for supply of meats between here and Sydney, Nova Scotia, had to give it up, because the regularity of the supply could not be depended on, and customers refused business. Frozen smelts would be valuable business if shipped to Boston and other ports, but material loss has been met with in that industry.

Mr. Bentley believed they had more loss from these causes than other parts of Canada. In the shipment of freight they were closed up for about 2 months one winter, which was exceptional, but there are periods of several weeks' delay. The fear of such stoppages prevents the development of business. They cannot ship to any considerable extent in winter time, when the price is best, say, for potatoes. With proper transportation, trade and prices would be better. To overcome these difficulties, they will have to qualify themselves to produce better and cheaper articles. Cheese is an article that will not be spoiled by delays to the same extent as other products.

The transportation problem caused frequent comment, farmers on the North side being handicapped by lack of connection with Southern parts, while Northern parts are very difficult of approach. Though poultry is one of the largest businesses, the boats of the Steam Navigation Co. running to the mainland will not accept eggs in cold weather, notwithstanding the difference in price, 25c and 50c, as between Charlottetown and Halifax or St. John.

The lack of transportation is interfering with the agricultural industries. On oats, one of the prime products of the Island, the freight rate from Montreal to London or Liverpool is only a fraction of a cent more than from Summerside to the mainland, less than 50 miles distant.

#### 3 GEORGE V., A. 1913

Islanders have to pay three freight rates to any outside points—on the Island Railway, on the steamer, then on the mainland railway to shipping points. In the winter, when the Government runs the steamer as well as the railways, all three hauls are made by the Dominion Government; hence rates could be lowered.

To overcome this freight handicap, farmers should be instructed to produce more concentrated products such as cheese, butter, live stock, etc. The Island is fitted for fine fruit and vegetables, but nothing is now done in canning these.

#### OYSTER CULTURE.

Mr. Herbert Inman, Summerside, is getting small oysters from the Government from Richmond Bay, or when this is impossible, importing them from the United States, as they come in duty free and grow faster than our native oysters. He had experimented for two years before buying. Had bought oysters from the size of a 10-cent piece up to 4 inches, which would be about 3 years old, and marketable. The quality of United States oysters when they arrive here is not as good as the native ones, but small ones are just as good when they mature. The small oysters cannot be obtained in Canada for planting. One of the greatest dangers of the oyster industry is the taking away of the small ones. If taken away under 2 inches they would be very unprofitable, for they would never reproduce themselves, whereas if of proper size they will double themselves in two years. There is great room for improvement in oyster culture. They are usually taken up in October in the open season, until the frost comes early in November. There is no trouble in disposing of all there are. They are sold by the barrel. Small ones are not sold, as they are more valuable for planting, but there are always some small ones that will get in. The dealers all want large ones, even though they get fewer, so it is best to keep oysters till they get big. Only large oysters will be shipped, because the small ones have not given off any "spat,"-a technical term for spawn.

#### DIFFICULTIES WITH BAIT.

Mr. Alex. J. McFayden, Summerside, said that one difficulty in the fishing industry is to keep the fishermen supplied with bait. In certain seasons they get a certain supply by netting; then, when mackerel and herring become scarce, it is next to impossible to secure bait. The freezers have in part met this difficulty, and the fishermen say it is better than no bait, but not as good as fresh bait; it keeps them going for a time till mackerel come again. Mackerel are continually migrating from one position to another along the coast; they are found in one spot one day, and perhaps 10 miles away the next. The principal fishery is the lobster, then cod, then mackerel, then herring, and so on down.

In this section owing to the difficulties of transportation, salmon are canned. Lobsters are being fished out. The bottom dropped out of our fishing in 1909–10, and immediate and radical efforts are required to revive the industry, which witness was afraid is not permanent.

#### LOBSTERS BEING "FISHED OUT."

In 1905 fishermen experimented on a new trap, and it has been in general use since 1907. When this new trap went into use it simply cleaned them out. In 1883, a man in a boat with 150 traps, would land with 10,000 lobsters and upwards, reckoning 280 lbs. to a trap. About that rate continued till 1890, but some of the fishermen reduced the output per trap to 133 lbs. In 1903, in order to equal the man who fished in 1883, 4 boats, 8 men and 1200 traps were required, and in 1910 it will take 7 boats and 14 men and 2100 traps to equal one man in 1883. This shows the very rapid depletion, and the worst feature is that the fish being caught are immature. They have not come to the years when they reproduce.

A lobster must be 8 inches before it will spawn, and then it will produce 5,000 eggs; the quantity of eggs increases with its growth so that a 14 inch lobster gives about 80,000 eggs, and of course has very much greater food value. In 1883, canned lobster was worth \$4 to \$5 a case; in 1910 it was probably \$15 or \$16.

Witness suggested putting the lobster fisheries in the hands of an independent Commission that would appoint and control their own officials. While there are laws enough on the statute book, no effort is made to enforce them; the wardens do not do their work. It is necessary still further to reduce the time allowed for fishing. In this Province one season is sufficient. In the Gulf of St. Lawrence there are two seasons.

#### Education Needed for Fishermen and Canners.

Education is needed for the fishermen and the canners, for people in other parts are able to ship fresh fish, which is a good thing; but the fresh fish are displacing the canned. The previous spring, fresh mackerel were quoted very high in Boston, and a private shipment was tried, but it was found that the fishermen worked in a large measure for the express and transportation companies; hence they are deterred from taking the full benefit of the fisheries, because of transportation difficulties. The Island has sea fish as good as there are in the world, if not the best, and Canadian cities are ready to take them from us if they can get them, but fishermen are not inclined to work for the transportation companies.

Smelt fishing is a winter operation, and quite important to the Island revenue, being about \$30,000. There are men with fishing trawls now earning \$12 to \$15 a day. Since the 16th of May one man and his son had got \$300 worth; but the fishermen are being called away from here, and the country is being drained; the men fish in the spring and then go West on the harvester excursions; though some of them come back, many will not.

191d-Vol. IV-9

## CHAPTER X: AS TO TRADES AND LABOR.

Mr. Andrew McNair, Charlottetown, General Manager, Bruce Stewart Co., a trained mechanic, served 7 years under apprentice bonds on the River Glyde at Glasgow; employer also would have to forfeit bonds if he discharged witness. That system could not well be operated now; it would suit some men, but not others. Witness during apprenticeship was handed a piece of work to do, and if not correctly done, he was censured, and tried to do it better next time. He had to pick up the trade by watching other men; he got little instruction; did not go to Night School; learned to read plans by himself; did not have a chance to make any drawings while an apprentice; never had any instruction outside of shop work, but read a lot of textbooks on his subject; would have liked to go to Night School; instruction from an advanced and skilful man would have helped him considerably and not injured his health.

Apprentices now under witness serve three or four years, just as they wish. If a boy thinks he knows a thing, he is a journeyman and leaves. The training is not systematic. Witness was quite sure the young men in the shop would like Evening School because he had been several times asked if he would not get up that kind of thing for them, and he would encourage young fellows to go. It would not be workable to make it compulsory; he thought they would be only too eager to go if they had a chance, if the school were good and would not cost a great deal. As the lads would have to pay their own fees he thought the people, through the Government, should step in and give a helping hand. There was quite a need for Evening Schools, and he believed Germany was a proof of this.

#### OBJECT-LESSONS AND EVENING CLASSES.

It would be a good thing if mechanics were taught by object-lessons; e.g. taking the machinery apart and seeing the actual thing, so that they could understand it and compare it with drawings. At present some men could not comprehend drawings; but with a model cut in section right through the middle the object could be explained. Mechanical Drawing taught to those men would be a good thing.

Correspondence Courses, which some of the men are taking, are not as good as having a teacher present to explain difficulties arising at the time, because Correspondence students forget what they wanted to ask by the time the answer comes back. During apprenticeship, education in methods in the schools is good, but application of formulas in that branch has to be done by some one knowing it particularly. Such teachers could be found here. The foreman of any shop would explain these things well.

Young men working on fine engines would be better able to establish and carry on small businesses as masters by attending Evening School.

Manual Training would be a good thing for boys if it gave them nothing but the names and uses of tools. It would have been a great help to witness.

Witness would not offer to shorten time of apprentices who attended Evening

School, but might offer a premium to those who got promotion in school. He would himself like to attend Evening School for drawing and mechanics and said that the general feeling in the shop was that pretty nearly all would attend, especially the younger men. He thought that was true of these in town learning other trades. It would be a decided advantage to machinists if they learned to draw.

Witness' employees are mostly all machinists, who work from 7 to 6, at from \$1.50 to \$3.50 per day. Men are paid according to ability, and the one who has the better education is the better machinist.

Mr. T. L. Aitken, Charlottetown, Acting Foremah in railway shops, in charge of 13 men, never served any time. There are no apprentices in the car shops. There are plenty of well trained men, and very little unemployment. The work covers building and repairing of passenger and freight cars, and turning out all railway stock on the Island Railway. There is trouble in getting well-trained men. It would be better to have Evening Classes for the men to learn about drawing and strength of woods; cabinet makers learnt simply by occupation. Timber for cars is nearly all imported, birch and spruce being the only woods obtained in the Island. Men work 10 hours, from 7 to 6 and 4 o'clock on Saturdays all the year round.

Mr. J. Collins, Charlottetown, fitter in railway shop for 22 years, served four years in machine and fitting shop here. Got no help outside the shop except from textbooks. There was no Evening School. Witness would attend one if available at reasonable rate, and had no doubt that seven-eighths of the men would attend, as they all had time. No doubt Manual Training would have helped him.

Mr. Frank Hobbs, Charlottetown, 4th year apprentice, now serving his time with Bruce Stewart Co. in the machine shop, said he left West Kent School  $4\frac{1}{2}$  years ago; got Manual Training for probably a year there. Children now get three years. It helped him considerably, as he had to draw his own models, and made him more accurate in his work; it was a good thing for machinists. He had not attended classes since he became an apprentice, but read books and journals obtained from bookstores every month, which kept him in touch with the outside world in mechanics. Witness would attend Evening School, and he thought others would, and that two nights a week would be a great help, and not a strain on health, especially in winter. It would not make a fellow more tired than loafing around all evening, for loafing does not give much amusement or benefit. If pupils could see at an Evening School such models and sections as Mr. McNair mentioned, they would take more interest in it; they did not take much interest in such things when they read about them in books. Practical experience would be the best thing.

Witness said that his work hours are till 4 o'clock on Saturdays in summer, and 6 in winter; he never had Saturday afternoons off unless he asked permission. He found it pretty hard for young fellows to get recreation in Charlottetown. He knew of none whatever now, as the Y.M.C.A. is closed for certain months in the summer, and anyway it is too expensive for the majority of the working classes. There are no games whatever, unless a fellow belongs to some Clubs, and baseball is played in the daytime, when the working class cannot have that amusement; then at night it is dark, and they cannot get out to take such amusements.

191d-Vol. IV-91

## CHAPTER XI: AS TO AGRICULTURE.

## SECTION 1: INFORMATION OBTAINED FROM Mr. THEODORE ROSS, SECRETARY FOR AGRICULTURE.

Boys who had returned to the Island after attending courses in agriculture at Truro, N.S., had opened up books and kept proper accounts to see what money there is in farming. These boys are making plenty of money. Their farm problems satisfy their ambitions, hence they are staying on farms where cattle are fed and milking is done, but they become dissatisfied when oats and other cereals are sold off the place.

One farmer at Margate fed to his cattle everything he grew, and though he had to borrow money the first year and pay interest, in 15 years he owned a valuable farm and had a comfortable sum in the bank. That farmer's son thought there was nothing like agriculture. This farmer had induced his neighbor to follow his good example. What he had done could be made very much more valuable to the community if his methods and figures were made public every year. Mr. Ross thinks the payment of a bonus to such men as this to induce them to publish their methods and figures would be a good policy and practice.

#### AGRICULTURE IN PRINCE OF WALES COLLEGE.

In Prince of Wales College Mr. Ross teaches what he calls Nature Study Agriculture—the habits of plants, nature of soils, etc.—to all pupils except those of the third year, who get botany but not agriculture. Only one per cent of the pupils had grown plants under observation before entering the College, hence much time is spent in elementary work, such as identifying common weeds and plants, which is as much a waste of time as if a class supposed to be reading Greek should spend half their time learning the alphabet.

Up till 1911 botany, agriculture and physiology (scientific temperance) were all included in one paper for College entrance, each subject being allotted onethird of the marks; and as only 40 marks were necessary for entrance, students could thus be admitted who were ignorant of the first elements of botany. The language subjects—Latin, French and English—had always been allotted 100 marks each. In 1912 botany and agriculture formed two separate papers, each carrying 100 marks. The mark system is arranged by the Board of Education practically the Principal of the College and the Superintendent of Education.

First-year students are not assumed to have any knowledge of botany other than names of different members of the flowers, and the work is almost wholly observation work. Of 100 marks, 25 are given for class work and exercises during term, and 75 for final examination at Christmas. The minimum of termin-

ology is taught the first year; students are expected to get this in their second year; then in the third the development of plant life is taken up beginning with the single cell, and some microscopic work is done.

#### AGRICULTURE TAUGHT FROM BOOKS.

Agriculture is taught in the College after Christmas very largely from books. There is a small greenhouse in connection with the Botany room, but it is impossible to teach practical work to classes numbering from 50 to 70. Practical class agriculture cannot be taught.

The course for the first year consists in identifying weed seeds and judging grain, and lectures are given on soils and fertilisers; students are expected to become familiar with the law relating to seeds, weeds, and fruit marks. In the second year bulletins on live stock are read and discussed, so that the students may know where various subjects can be found, in the hope that they will interest themselves in Farmers' Institutes and thus help to popularise these bulletins among the farmers. Lectures are also given in physiology, dealing largely with scientific temperance.

After Christmas physical geography has two or three hours weekly as a basis for lectures on agriculture, when the formation of soils is gone into somewhat fully.

All this work is done by lectures, the benefit of which Mr. Ross can hardly see, as agriculture must be made practical to be of advantage, and this cannot be done without equipment in winter. Even the study of bulletins is not of much use to young men and women who do not expect to employ themselves in agriculture, but are planning to become lawyers, doctors and theologians; and it cannot be expected to be taught with thoroughness when such a small percentage of the marks necessary for the diploma are given in this subject.

#### WHY SCHOOL GARDENS ARE FEW.

The best way to increase the interest of the children in farm life is through the school garden. The people want school gardens and Nature Study, but the problem is to work out a good scheme for it, and to train teachers. Without a school garden in connection with the Prince of Wales College teachers cannot be trained; but the long break in the College session from May till about the middle of September, with a large portion of May taken up with examinations, makes it impossible for students to give much attention to the school garden at the College. Then when College resumes in the fall, the large plants used for beginners' work have gone to seed. Mr. Ross suggests that the College term be lengthened, so as to give better opportunity for school garden work.

Mr. Ross knew of only 5 school gardens in actual operation on the Island, the reason for so few being that this work does not lead teachers to advancement or higher salaries. Trustees look first to the number of students passed into the Prince of Wales College, and on this the teachers' advancement depends. One teacher who had a school garden dropped the work for lack of recognition either in College entrance or the Report of the Superintendent of Education. While teachers for the most part are favorable to the school garden, a man getting \$325 salary cannot more than live on it, and it is useless to appeal to him to look at the interests of the children rather than his own advancement. Payments or recognition of school garden work would help it. Vacation is a serious obstacle to the school garden, though in some places the people insist upon the pupils keeping it up because they want them to learn the habits of tidiness, good manners and making their homes better, even though they do not pass into College. In one neighbourhood the children walked long distances during vacation and kept the school garden in splendid order; and not only was the garden itself a great success, but the school had better standing than before in the entrance examination.

But the teacher problem remains, and the task is all the harder where teachers are making their school work a stepping stone to another profession. Before this matter could be taken hold of, the entire spirit of education in the Province would have to be modified towards helping the Island population rather than simply leading a few to the University.

### SECTION 2: SUMMARY OF POINTS PRESENTED IN TESTIMONY.

#### THE ISLAND'S VARIED PRODUCTIONS.

Prince Edward Island is a beautiful agricultural country, its chief products being  $gt_{d',u}$ , potatoes, live stock, butter, cheese, pork, bacon, eggs, etc. Farming has improved during the last 15 years; weeds are being repressed, seed is cleaner (due partly to competitions), and farming is becoming more productive. Chickweed and Canada thistle are the most troublesome weeds; alfalfa has not generally been proved a success. Potatoes grow well, but higher prices are needed; dairying has greatly improved; rotation of crops (4 and 7 years) is followed by some farmers. Farmers are waking up. Occasionally there are deserted farms, but not many are vacated, Island farm values having gone up considerably within the last few years.

Progress is shown by the increase of exports to the Old Country. Enquiries come to the Island for seed potatoes from Alberta, Saskatchewan, and even British Columbia. With good climatic conditions during harvest, the Island produces probably the best grain in the world for seed purposes, according to one witness, who stated that he had shipped 200,000 bushels of oats to the North West last year, in competition with Scotch Oats. The Seed Commissioner at Ottawa reported that the Island oats were the best, though they had not been specially selected for seed grain, but had been gathered from all over the country and shipped in the middle of winter.

The Island produces the best class of everything on account of climatic conditions, humidity of atmosphere, the nature of the soil and the fact that the whole province is under-drained naturally by the porous subsoil.

One witness considered the Island the greatest horse country in Canada, and probably in America, north of Kentucky; and prices are higher than in New

Brunswick and Nova Scotia. If twice as many horses were produced the market would be still better.

#### EDUCATING FOR THE FARM.

Hon. John Richards, who had charge of the Department of Agriculture at the time of the Commission's visit, said that school children should learn more about farm matters, and teachers should be trained more in regard to school gardens, of which there are very few now; but he added that it takes a good while for the people to accept a new movement in education.

Mr. Artemas Clark, Superintendent of the Dominion Experimental Farm, was brought up on an Island farm, and after passing through Prince of Wales College, graduated at the Agricultural College at Guelph and also at Cornell University. He has had wide experience as a workman on a farm as well as in investigations at the University and in the Seed Division at Ottawa. He testified that he had got more out of his College Course on account of doing actual farm work before he went, because he was thus interested in the work done in College. He claimed that children who take care of school gardens would get more out of their agricultural botany and chemistry, and the school garden could also be of great assistance to teachers. It helped them to describe and explain, and the children understood better by seeing the actual things.

#### EDUCATING OFF THE FARM.

The President of one of the Farmer's Institutes said that the general verdict of thinking men was that the Islanders have been educating their boys and girls off the farm by holding up teachers and college professors as ideals of successful men; hence children are not satisfied unless they learn a lot of Latin and get away up in classical education, and then go out in the world and make a mark for themselves at the uppermost rung of the ladder. He claimed that the man with an agricultural education would make a better farmer than an ignorant man, for by applying his mind to the farm he would see things that the common man could not see, and would draw out what the other man could not find at all; but when the Province is poor and cannot pay for everything, he thought they should come down to essentials and pay for the things on which their very existence as a Province and a nation depended. He thought that all would admit that the community was not rich enough to give much money for high agricultural education for boys and girls-three years Latin free-and that teaching the theory of agriculture to teachers without an experiment or without the things that go with them would never amount to anything.

#### NATURE STUDY AT AN EARLY AGE.

He considered it absolutely necessary to begin the teaching of Nature Study in early childhood. Many farmers who have never been taught to observe will drive along the road and pass their own fields and not notice weeds that have never appeared there before. Such men could not tell a turnip seed from a weed

#### 3 GEORGE V., A. 1913

seed, whereas a boy who took charge of a school garden would be taught to take notice of things and distinguish them carefully. The men responsible for education on the Island had treated that subject as though anybody could learn sufficient in a few short lessons to be able to teach it to children. If children under a good teacher got a proper idea of Nature Study in early years, they would be ready for a far more thorough course when they went to Prince of Wales College, and if Nature Study were well taught in the common schools of the Island, there would be fewer going to that College and more staying on the farm. It would be well worth while to make a great effort now with those first teachers, so as to get the foundation laid. A first class teacher of Nature Study in the College should act as Supervisor of school gardens during vacations, which would be an immense benefit. Children have not been interested as much in the school garden as in other studies, because teachers change annually, and the effort is intermittent.

#### TEACHERS SHOULD BE BETTER PAID.

One witness thought children aged 6 should get Nature Study right out on the school grounds instead of being within four walls with older children all day. The question of future teachers is a great problem, and it would be a fine thing for the children if teachers could be got who love rural life. The remedy for changing teachers is to give them plenty of money and make teaching as good a business as there is, and they will stay in it. It is not poverty but apathy that keeps people from paying teachers good salaries; they are as well satisfied as ever they were with the schooling that children get. The population is so changing that a large percentage of ratepayers have no children, and thus the district suffers, for such people do not care very much, and it is hard to get the necessary votes. People could certainly afford more money for schools if they were willing. The problem of raising interest in schools is a difficult one.

#### HOSTILITY TO COST OF SCHOOLS.

One witness stated that there was a spirit of antagonism against the schools in the country. People were going to the annual meeting with that spirit to vote down the "supplement" to the teacher's salary, and vote down everything, the reason being that they did not want to spend the money. The love of money and of acquiring wealth is thus strangling the Island schools; and this spirit, together with indifference, makes the work very difficult. In education and other matters the population is facing a grave state of affairs, for while the people need education there is a lack of public spirit. If the press and pulpit and every educational influence would do its duty, that would be overcome. If the farmer saw that the school helped his boy to make money he would be interested enough to pay more for the school. People would stay on the farm if it pays better than anything else, but not otherwise.

#### A FARMER'S EXPERIENCE AT COLLEGE.

One farmer who had attended Prince of Wales College for two years said there was no nature study, very little agriculture, and little botany; the most important

subjects were Latin, Greek, French, etc. He thought that Latin did him some good, but that his time could have been better spent. It would have done him good at nine years of age to have learned of the caterpillar becoming a butterfly, how oats grew, etc. He believed there would not be a good system of education on the Island without consolidated schools. The opposition to consolidation is because of the expense; but even if the cost were double that of the ordinary schools, it would not hurt the farmer, for this Province does not pay as much per head for education as do other Provinces, and the Island schools cannot uphold their reputation unless they pay more for teachers. Probably a third of the local taxes go for education. The people need waking up. The teachers in non-graded country schools now take all subjects from primary up to matriculation for Prince of Wales College, hence they cannot do justice to every class.

The school garden at Tryon was referred to as a very beautiful spot, and the effect on the scholars was good. One witness had seen those young fellows at seed meetings, and they seemed to have very much better knowledge of the different seeds than their fathers.

#### THREE DEMONSTRATION FARMS AND GARDENS.

The school system of the Island, in the opinion of another farmer, was a very good one to educate people away from the farm, and Prince of Wales College proved to be the gateway out of the country for the best educated men of the Province. While the school garden would be a good thing, with a competent man in charge, the present teachers are not competent to give training in nature study, school gardens and agriculture. It would be well to keep a school garden at a demonstration farm. Three such farms at \$200 each, and 3 such gardens at \$100, would soon return the expense, and they also would be popular on the Island, for the farmers are waking up and do not object to expenditure for agriculture; but a different ideal must be set before the young people in the school.

#### TRAINING PEOPLE TO LEAVE THE ISLAND.

The country school teacher is measured not by what he will leave on the farm, but by the number of pupils who pass into Prince of Wales College to go away from the Island. Very often a boy who stays on the farm has to assume a mortgage in order to pay for the education of others of the family who go through the College. Farmers would not object to pay teachers more if they were competent to keep school gardens and help agriculture, and this makes the farmer's work more effective. Many teachers now engage with schools because they afford a good deal of spare time and opportunity to study for something else. Teachers talk about the successful Islander abroad and speak of him as having been trained at Prince of Wales College, etc., but say nothing about the man who stays at home, though he is the one the Province is interested in.

#### SPECIAL TEACHERS.

With a view to helping pupils to stay on the Island one witness suggested that the Government should contract with some well-equipped teachers for a

#### 3 GEORGE V., A. 1913

number of years and send them to Macdonald College for further training. Another said that all boys should go to the Agricultural College, and that farmers should spend as much on the education of their boys who intend staying on the farm as on those who are to be lawyers or doctors or clergymen, for the farmer requires more knowledge than the professional man. What was needed was to have enthusiasm awakened in the boys, to make the parents realize that they must spend money if they wish to make the farm a success, and their boys to earn such money as lawyers and doctors and other professional people make. Farmers should talk a good deal about the nobility of farming, try to put enthusiasm and love for the Province into the children and teachers, then have a first class professor of nature study who will teach it in an interesting and practical way to the teachers, who, in their turn, can make it interesting for the pupils in school. In this way children would be drawn nearer to nature and to the land, and would learn to love old Mother Earth and appreciate what she is doing for them.

One witness questioned the benefit to teachers from attending the Summer School of Science for one Session, as their knowledge would not extend to the farmers. An Agricultural Summer School for even a week, where farmers could take a short course, would be of some benefit.

#### VALUE OF AGRICULTURAL COLLEGE AT TRURO, N.S.

The Island Government gives \$10 towards scholarships to assist farmers and their sons to attend the short course at Truro (N.S.) Agricultural College, and the Nova Scotia Government usually accepts Island students without fees. Nothing gives better results, the course being highly appreciated, giving farmers great interest in their work and making them all anxious to go back. The ages of those who attend run from 18 to 50. The older men regret the lack of opportunity to attend when younger, hence they would gladly use opportunities for young people even nearer than Truro, though that place is convenient, with good travelling facilities. The work at Truro was highly commended, the good influence of Principal Cumming being specially mentioned. "There is an inspiration in meeting fellows from other Provinces there, and being put on Committees with them for live stock and seeds." The Provincial Government ought to countenance Truro Agricultural College more, one witness said; they ought not to be so saving in the use of money, for there is no way to spend money to such use for the Island as by helping the young men to go to Truro, as each of them becomes a centre of influence in his locality.

One farmer told of his boy having gone to Truro and since returning home he had put in practice a good deal of the knowledge he got there, with excellent results. The College was a great help in making him think that way. What the father said did not seem to have the same weight with the boy as if someone else said it, hence the parents' task was made much easier.

One witness did not favor teaching sewing and domestic science except in large towns and high schools, because of lack of time and the need for aiding nature study.

A good deal of the success of farming, in the opinion of another witness, depends on the work done at home by the women—cooking, washing, sewing; and he thought a girl gets better training in those things in the country than in the city.

#### FARMERS' INSTITUTES-HOW TO IMPROVE THEM.

Farmers' Institutes meet regularly in winter and frequently in summer, and farmers do some business through them, such as buying improved stock, seeds, etc. The opinion was generally expressed that Institute work might be improved by a Provincial Central Organization which would plan a course for the year and make the work of Institutes more definite. The Superintendent of the Central Institute might visit schools and talk farming to the boys and girls.

Highly trained and practical men to address Farmers' Institute Meetings would be valuable, as at present farmers just "talk among themselves." The Farmers' Institute system which was established nine years ago has brought about improvement in seed, stimulated farmers to work more scientifically, and, though very conservative, they are gradually getting out of the old rut with marked effect.

While one witness thought the school garden a good idea, one of the most pressing things, in his opinion, was to get the best possible education for the working force of farmers that are past school age. Great benefit had come from what the Dominion and Local Governments had done along those lines, and he could see quite a difference since the work of the Superintendent of Institutes had been carried on, but more help was needed.

#### SEED SELECTION, WEED DESTRUCTION AND DAIRYING.

Farmers are paying more attention to seed selection. Seed fairs, grain competitions and standing grain field competitions, assisted by prizes from the Department, are encouraging better seed and more careful preparation of soil, resulting in better crops than formerly.

Efforts are made to suppress weeds, but much remains to be done. Some farmers take pains and treat their seed with formalin to keep the smut down.

Farmers are welcomed at the Experimental Farm.

The class of farmers who need to be reached and educated would not go to the Government Farm, one witness thought, or if they did, they would remark, "They do not have to make this thing pay." A farmer running an Illustration Farm might be helped by two other practical men visiting his place two or three times a year, and talking over his business, but he would have to follow his own methods, as he would have to make the business pay.

A farmer near Charlottetown said there had been an experimental plot in his orchard, but very few people came to see it, hence it did not look as though people took an interest that way.

Another suggested that a farmer might send his boy to a neighbor or to some good farm in the country for a week or fortnight if the farmer was able to give him work, and he might thus learn this man's methods, compare them with his own, and adopt them if better. What farmers need is co-operation, talking and comparing notes, and centralization, especially in Institute work. Another said that a short course on an Illustration Farm during summer time would be a good idea, and that farmers would be interested in seeing better crops and live stock than they have.

One farmer suggested taking an ordinary farm having ordinary dairy stock, and getting the farmer to improve that stock by selection. The progress thus made would prove a great lesson in stock improvement, more than by beginning with pure-bred stock.

The cheese business got its development from having technically trained educated men in charge. The object-lessons given in co-operative dairying could be extended to the development of general agriculture.

Dairying has been a good thing for the Island, the output of butter and cheese from the factories in 1909 having been \$600,000. It is the best line of farming ever adopted there to maintain soil fertility, which one witness thought had been improved, adding that the land in the sections that have gone heaviest into dairying is the most fertile to-day. It also enables the farmer to take more profit out of the same number of acres than other lines of farming. Better cows and better care of milk will make dairying so profitable that other advantages will follow. and the farmer will take it up. The herd test improves the quality of the cows, but closer supervision of dairying by competent men is necessary to secure better care of milk.

#### DOMINION GOVERNMENT'S HELP.

Without dairy instructors the dairying business would not be where it is to-day. From 1892 until 1896 the Federal Government, through its Department of Agriculture, carried on the cheese factories and creameries for the farmers. No objection was ever heard about interference with Provincial rights; on the contrary, the people wanted all such interference they could get. The Dominion's help to an industry did not in any way interfere with the management and control of the system of Education in a Province, but rather added to its efficiency.

One witness impressed on the Commission the necessity of further support to education in dairying through the Dairymen's Association. The present dairying instructor is supported from three sources—the Dairying Department at Ottawa giving \$300, the Local Government \$300, the balance, which is half the total cost, being taxed on the factories. This is the only industry witness knew that is taxing itself to maintain educational work, and they found it to pay. What the factories want is a proper man, not under control or influence of a local section, coming in from outside, independently, to correct or really prohibit what is wrong.

#### PROFIT IN DAIRVING.

One witness, who has specialized in dairying for 10 years, said he was making more money every year, and did not expect soon to reach the limit, as there was plenty of room for progress. Any improvenment on his land was so much to the good. He had 80 acres cleared, average soil, kept 10 or 12 cows, and catered to a fancy butter trade, average yield 200 to 225 lbs. of butter per cow, besides keep of his house and raising calves. Skim milk was fed to calves and hogs. He sells

about 15 hogs at \$20 per piece, bringing \$300, and occasionally he sells a horse. When he started he was not as strong as many other men, and was \$1100 in debt. Any man in the settlement could have been in a better position to-day than the witness, who 20 years ago got a farm that had been cropped and the produce sold off until it was run out. He said he could have made faster progress if, when he was a boy at school, he had learned how oats grow, how weeds propagate themselves, the names of diseases that attack plants, what milk is, relation of cream to milk, the physics of the thermometer and windmill and pump, sanitation and wholesome conditions, etc.-things he had to learn in order to be successful. If the schools were made so that the children would learn all those things, it would make all the farms in the vicinity worth more. He added that not many farmers on the Island followed the same line as himself unless they happened to be distant from a cheese factory. He sold most of his produce in Halifax, and generally got for his butter 3c. or 4c. per lb. more than the ordinary rate, for he had good cows, put up a choice article, and manufactured it in the best way. The fear of competition did not disturb him.

# NEW BRUNSWICK.

# CHAPTER XII: OUTLINE OF THE EDUCATIONAL SYSTEM.

## SECTION 1: ORGANIZATION AND ADMINISTRATION.

The Public Education of the Province is controlled by the Board of Education composed of the Lieutenant Governor, members of the executive Council, the Chancellor of the University of New Brunswick, and the Chief Superintendent of Education. This Board provides the Normal and Model Schools for the training of teachers, appoints school inspectors, divides the Province into school districts and generally provides for an efficient system of education. The Chief Superintendent has the direction of inspectors; enforces the school act and regulations; apportions the County School Fund; offers suggestions on educational subjects and generally supervises education in the Province.

#### HOW FINANCED.

The Public Schools are under the control of the Provincial Board and are supported from three sources—Provincial grants, County Funds, and direct assessment.

The Provincial aid is given in various ways, superior school teachers receiving from \$250 to \$275 annually, providing the school trustees pay no less; Grammar School teachers receiving the same amount as from the District Trustees; Manual Training and High School teachers receiving from \$50 to \$200 annually from Government funds; Consolidated Schools receiving for three years after establishment special grants, determined by the number of districts in the consolidation and the average number of pupils attending the school, also half the cost of conveying children to and from the school. The Legislature also votes \$1000 annually to help poor districts to repair their district schools or build new ones. There are also grants to school gardens.

The County Fund is a direct tax included in the county assessment and provides 30c. per head of county population. Trustees of each school district receive from this fund \$30 or in poor districts \$40 per year for each licensed teacher in charge of a department of a school, the balance of this fund being apportioned among the schools of the county in proportion to the attendance of pupils in each school, as compared with that for the schools of the county, provision being made for paying \$100 per annum for each New Brunswick pupil attending the schools for the blind and deaf.

The District Assessment represents any balance required for school support, not provided by either of above funds, and is made by direct tax on ratepayers of the local school district, where the school is situated. Each male resident between the ages of 21 and 60 years of age must pay a poll tax of \$1 and the balance of the district assessment is levied by an equal rate on assessed property and income of the district. In cities and towns money required for schools over and above the Government and County Fund grants is voted by the city and town council, and collected with the other taxes.

The sum of \$196,957 was expended in Government grants in 1912, the total Provincial Revenue being only about \$1,000,000. There are 1906 schools and 2012 teachers with 63,073 pupils, the percentage of attendance being 68.33.

#### GRADES AND ATTENDANCE.

Pupils are graded in country schools in five grades, which correspond to the 8 grades in town schools, grade 5 roughly corresponding to grade 8 of the city schools. On completion of grade 8 the pupil enters the High School after examination. The number who go from High School to University is small.

There is a compulsory attendance law, but it is optional with localities and in country districts it is not generally enforced, though adopted at school meetings. In St. John there is a truant officer and results are regarded as most satisfactory and effective. Moneton has appointed a truant officer with most beneficial results, the percentage of attendance having been raised from 82.78 to 86.41, and the Chief of Police in that city reports a marked decrease in juvenile crime and petty depredations, due largely to the good effect of this law.

# SECTION 2: INFORMATION FROM Dr. W. S. CARTER, CHIEF SUPERINTENDENT OF EDUCATION.

#### UNDER-WORK AS A MENACE.

New Brunswick has not gone as far as Nova Scotia and Ontario in High School education because unable to afford it, and Superintendent Carter did not think the High Schools of as high a degree of excellence relatively as the Public Schools. He would like to see more consolidation in country schools. The town schools have a very good chance, but there is constant pressure being brought to add to the courses of instruction and equal pressure to diminish the time in which the same may be imparted to the children; some unreasonable people think children should have no legal holidays, while others complain of over-pressure in the schools. The Superintendent believes there is under-pressure, on account of the present tendency to get along easily, to get something for nothing, and that this would have to be combatted. He did not think the work in this country

#### 3 GEORGE V., A. 1913

compared at all in intensity with what the German children do in the schools, and he thought we should develop more self-reliance and a little of the gospel of work instead of speaking of over-pressure. It is impossible to add to, or even carry out, present courses if it is decided that there are to be no home lessons, with holidays on the slightest provocation and school hours shortened.

#### HIGH SCHOOL COURSES.

One High School is allowed for each County, of which there are 15, but in one case two counties join, so that there are 14 High Schools which are quite successful and doing good work. The number of teachers is regulated by the number of pupils pursuing a certain course. In St. John there will be 10 or 12, in Moncton 5 or 6 and Fredericton 3 or 4. Classics are optional in all schools and there is plenty for a boy to take besides classics, and in many schools these are not taken at all. In St. John there is a kind of pressure brought on boys to take classics and in a school where these are taught a boy who does not take them is to a certain extent left to his own resources. With present accommodation the schools cannot depart too much from the curriculum, but the Superintendent would have at least a Classical and Modern Course in every High School, letting the latter consist of a Commercial or Industrial Course, though only two or three towns in the Province would add to their staff, so as to have the Industrial Course. Commercial education has not been put on the curriculum, because of the lack of demand from local School Boards. No doubt the Commercial would come in St. John immediately, and the Industrial when somebody finds some money, St. John being pretty heavily taxed now, the tax being \$2.00 on the \$100 for full valuation for general taxes for all purposes.

#### CHANGE OF VACATION.

The Superintendent would not favor Spring and Fall vacations when roads were bad, and keeping schools in session during the Summer, because in country districts boys are useful in haying, harvesting, berrying, etc., and in the towns the small percentage who go to the country have the largest voice in the community, and would like three months' Summer holidays, and it is very hard to resist the pressure they bring to increase the vacation.

#### LARGER SCHOOL DISTRICTS.

The great evil in the Province is inequality of assessment, some districts paying as low as 12c. while others contribute as high as \$2.00 per \$100. The Superintendent favors the parish area instead of the school district as an area for administration; this would help consolidation by removing local prejudices. The School Board would be for each parish, and would locate the schools where they would be to the best advantage, and the rich would help to educate the poor. The former Superintendent suggested that the County rate should be increased from 30c. to 50c. or 60c. per head. If this were done there would be \$100,000 additional from that quarter, which would be of very great advantage.

÷.

#### OCCUPATIONS AND RATES.

The three great material interests of the Province are agriculture, lumbering, and fishing. Agricultural demands on education are the greatest, and will increase rapidly. Lumbering will probably increase for some time. Fishing is not so general, but it is capable of great development. Mining interests are not great, although they have some very good prospects.

If public opinion were right, the Legislature would take up the question of technical education from the County School Fund; but even though some men would benefit greatly, the poorer tax-payers object to having the County Fund raised, looking to the increase of the tax and not to the returns they will get. The Superintendent thought there would be opposition to the parish sub-division for taxation, as each little district would want its autonomy, and this had prevented consolidation in many places. The Superintendent would like no district to contribute less than 50c. on the \$100 for schools.

#### HAND AND EYE TRAINING.

The grades in which Manual Training and Domestic Science were taken up vary according to the Principal. In St. John they had not enough to go all round, so they began there at Grade 5, and some High School pupils took a little. The Department would prefer it to be taken in Grades 5 to 8 if possible. Manual Training, Domestic Science and School Garden work are all given to a small extent in connection with the Public School, but much less than the Department wishes, and there are no Night Schools as Public Schools. Manual Training is given at the Normal School. It is not at all a hindrance to boys in their other work, if directed by a careful teacher. It develops general intelligence and helps in all subjects, but want of money and lack of room in the average country district have prevented its extension. School-rooms are usually taxed to fullest capacity, and it is difficult to introduce work-benches. There is not as much advance in Domestic Science as Manual Training, the Province depending on institutions outside for training teachers in that line. There is no branch of Domestic Science in the Normal School yet, but it is hoped to have it; Manual Training is given there, however. There is a feeling in favor of Domestic Science, perhaps stronger than for Manual Training, because it brings direct results. While Manual Training gives a boy a bent and valuable training, Domestic Science may be used directly in the household and its immediate utility is apparent to all. It has equal educational value with Manual Training.

#### AGRICULTURAL INSTRUCTION.

Slow progress is being made in Nature Study and School Garden work, which are a good deal hindered by lack of facilities for training teachers and lack of grounds in many cases, these having been selected without reference to school gardens, and many being rough and barren. Then the teaching of elementary agriculture has been a failure, chiefly because it has been all theory, and very 191d—Vol. IV—10

#### 3 GEORGE V., A. 1913

little practice; again, during the two months when the best object lessons in schoolgardening could be given, both teachers and pupils are scattered. A great deal of attention is being given by the Agricultural Department to the teaching of agriculture in the schools, and the latter are doing what they can to give this prominence. The more intelligent of the farmers regard the school garden very favorably, and all are in favor of attention being given to agriculture in Public Schools, though their ideas are indefinite as to how this should be done. If a school garden is badly conducted, the farming population would simply deride it, and it would be a bad influence in that locality. Hence the Superintendent thinks it better to have none rather than a poor one at the beginning, yet the children will get lessons even from a poor school garden which will be totally absent from the books. Inspector Steeves prepared a little pamphlet on Nature Study and Agriculture, with the object of developing power of observation by pupils on their way back and forth from school, noting weather conditions, weeds and their remedies, and all those things that may be done largely on the roadside, even where there are no school gardens. No apparatus is required for teaching this manual, except such as may be made at home. There is no Chemistry in the lower grades, though the Superintendent would favor having entirely Agricultural Chemistry. There is a school garden in connection with the Normal School to which a small share of time is given in connection with other subjects. Nature Study develops the intelligence; so should arithmetic, but there is a good deal in school of a routine character that does not appeal to the intelligence to the same extent as where hand and eye and brain work together. Normal students are all given the same training, and teachers emerge. If they could afford it, their best plan would be to get training in Nature Study and School Garden work in a Consolidated School or High School, but those who cannot afford it have to depend on a country school. The Superintendent thought it would be worth while to make a great effort for five years to have School Garden work done experimentally, and it would be of great value not only to teachers but to farmers' sons and daughters. If the teaching of Nature Study and School Garden work was general in Public Schools, the Normal School would be relieved.

#### HANDWORK OF VALUE TO ALL.

In Consolidated Schools, without exception, Manual Training, Domestic Science and Nature Study all receive attention, and their pupils do as well at examinations as those from other schools. Those subjects do not count directly on the examinations, but the Superintendent thinks that indirectly they do, as the teachers keep in view the passing of pupils in examinations. Fitness to go on to some advanced department is mostly the test, and the course of study is adjusted to that end. The curriculum is largely, but not exclusively, based on the requirements of the University. He thought that possibly, the one direct aim of education in New Brunswick was towards the University or preparing for College, hence he had always favored commercial education, especially in the cities, so that a man in business would have as good a right to prepare his boy for his particular business as a professional man would. In the opinion of the Super-

intendent, Manual Training, Domestic Science and Nature Study would be of equal value to those leaving school at the 5th or 6th grade as to those who go on with advanced work in the University, if the Province could afford to provide it. Something is needed to keep the boys at school, as they are now falling out for want of stimulus and of interest on the part of the teacher, and the introduction of these subjects would be the means of retaining them. At present the girls are getting the bulk of the education.

#### QUESTION OF HOME WORK.

As to home work, the Superintendent thought a little more should be done. Children of 7 have no home work. Older pupils do not all do the same amount of home work. If a boy can get up the work prescribed in his grade and pass examinations without working at home, it is nobody's affair. The trouble is with those who do not know enough and fail to grade. A parent will ask that the child have plenty of holidays and no home work, then complain grievously that he does not grade. With 50 children to a teacher and conditions as they now are, one child cannot be much more advanced than another, although they may acquire home lessons with much greater ease than the other. With a smaller number of pupils the teacher could study the individuality of each.

#### CONSOLIDATED HIGH SCHOOLS.

If Consolidated High Schools were established in the country, they would relieve the situation where located, and if numerous enough would cover the whole ground. The present tendency is for students to seek the nearest superior or High Consolidated School, but a good many cannot afford to do so. They are among the brightest pupils, and after getting a second class certificate work up to a first class. Consolidated Schools are difficult to carry on in this Province, because of their greater cost and because the average rural rate-payer looks at the money rather than the advantages, but sentiment is advancing and whereever tried in the Province, the Consolidated School has not gone back.

#### Evening Schools.

The Superintendent thinks Evening Schools will be very successful if entirely changed in character, so that pupils would have something to do with their hands as well as their heads. A Government grant is given wherever any local School Board wishes to conduct Evening Schools. Some spasmodic efforts have been made in St. John and one or two other towns in this direction, but in the opinion of the Superintendent failure was largely due to the fact that day school teachers taught them. He strongly holds that this is a mistake, as day teachers are not in a fit condition.

#### VOCATIONAL FARM SCHOOLS.

All trade schools would be useful, the Superintendent thinks, but the great difficulty would be to know what to introduce first. In most instances he thought they would be better started from the Public School. His plan would be for the

191d-Vol. IV-101

#### 3 GEORGE V., A. 1913

Government to rent small farms in two or three places in every county in connection with the High School or Superior School and put men on them permanently, giving boys and girls opportunity to work there from time to time for two or three years. These would serve not only as object lessons to the surrounding country, but as direct mediums of instruction, and boys and girls might come back during holidays and work upon them perhaps for a small reward; at all events, there would be always someone there to look after them. That is the only way, in the Superintendent's opinion, to successfully introduce agricultural instruction. The plan would necessarily be costly, but something of that kind is being done in Australia and Japan.

He would not like to say whether the attendance at those county farm schools should be compulsory for teachers-in-training, but he thought the latter should be willing to make some sacrifice, and as it was desirable for teachers to get those short courses, it would be good policy to make them compulsory, if there were no hardships in the way of expense. In connection with those suggested farm schools there might be a Summer School of Science, but this is largely a matter of ways and means as revenue was limited; and meantime teachers from the Province attended the present Interprovincial Summer School of Science.

### SECTION 3: AS TO TRAINING OF TEACHERS.

At the Normal School in Fredericton the enrolment in recent years has been increasing, the numbers being 340, 345, 366, and 374, yet the accommodation in the building is what it was 30 years ago with less than half the present number of students. The building is now entirely inadequate for properly carrying on the work, having no laboratory, no gymnasium, no room for physical drill, which has to be given in halls and corridors without proper ventilation, and no proper accommodation for the Manual Training Department. Plans were prepared in 1910 for an extension to accommodate Model Schools, Manual Training Department, and also a room for Physical Training and Gymnasium which could be used as required for farmers' meetings or agricultural work.

Improvement in average scholarship enables the teacher-in-training to devote more time to the purely professional side of the work and because the Normal School has been able to develop more definite methods and ideals among the young teachers, the latter are teaching the subjects in the lower grades of the schools better than ever before.

#### SCHOOL GARDENING AT NORMAL SCHOOL.

The school garden has been maintained in connection with the Normal School, the work of preparation and seeding being done by the students, as well as considerable improvement in the school grounds having been made under the direction of Dr. Hamilton. The garden is not pretentious but serves to show the students what might be done with a School Garden as an adjunct to a small country school.

#### LICENSES TO TEACH.

The law requires Normal School training of all teachers in New Brunswick, and it is observed by Trustees; though there may be a few local licenses, there should be none at all and 20 years ago there were not. The full course of attendance at the Normal is one year, but temporary licenses of the 3rd class require attendance only from September 1st to Christmas vacation, such teachers having opportunity for promotion into another course, and perhaps 30% have been so promoted during the past four years, the majority obtaining 1st class licenses. About 50% take second class licenses, teaching for a term, then returning the following year or later on to complete their full course. University and College Graduates are allowed to write on examinations for teachers' licenses without attending the Normal School.

#### SCHOLASTIC AND PROFESSIONAL WORK.

An effort is being made to relieve the Normal School of scholastic work, and have it purely a school of method, but this has not been done thus far, as a great number of schools are not equipped to give the scholastic training.

Part of the work in the Normal School is to give scholastic instruction, which would not be necessary if all the students came from High Schools, but the larger proportion of teachers-in-training come from country districts and not from towns and High Schools, and could not get the necessary training in their country districts while living at home. The year at the Normal which is necessary for a first class certificate is not regarded as full training, but is the best the Province can do. The Superintendent considers that not more than six months time is given to scholastic work in the Normal, that as much is got out of the courses as is done in the West, and that the duplication of High School work there is not serious because of the plan of issuing 4 grades of licenses, the great bulk of pupils from country districts not being able in their first attendance at Normal to undertake more than 3rd class license work.

#### HAND AND EYE TRAINING AND NATURE STUDY.

Principal Bridges would like to see Domestic Science introduced into the Normal School, as it would make teachers more efficient in both country and town schools, but lack of means, opportunity, accommodation and equipment had prevented its introduction. He could make some arrangement as to time for this subject, but it might not be entirely satisfactory, the term being so short. On the whole, he thought that it would be to the students' advantage to give up something for the sake of taking Domestic Science, and that it would be a good thing to have all the teachers-in-training get it. Nature Study and School Garden work are not now on the course in the Normal School, though the students had looked after the school garden, had taken an interest in it, and were very fond of it, and it was a practical one they had learned something from it.

If Manual Training, Domestic Science and Nature Study became more general in the common schools, so that pupils coming from them to the Normal would have had some of each of these subjects in their school days, Principal Bridges thought more advanced work could be given in the Normal so that these students would be still better able to teach those subjects efficiently. At present the work done in those subjects must be elementary because of lack of training in the students before coming to the Normal. If the teacher of a district school is herself experienced in those subjects in her own school days, she can teach them.

Of the 265 students who have already applied for entrance this year, about 50 have passed matriculation examinations for the University course—about 100 from Superior Schools and the balance from ordinary district schools of 5 grades. Matriculants enter in what is called first class license. Those from Superior Schools have reached 10th grade work, which is one year below matriculation, and have had more school gardening than matriculants.

Of the total number of teachers in attendance (about 370) at the Normal School, 30 are men; the previous year the number of males was 60, the largest number the Normal has had.

When the additions are made to the building, the Normal School will be well adapted for courses in a Summer School. Teachers' Institutes are held in each County once a year, generally in the Autumn, some few in May or June, and these would afford good opportunities to supplement the instruction given on a farm.

## SECTION 4: AS TO HAND AND EYE TRAINING.

The School Acts, Section 123, provides:-

(a) A Provincial grant of half of the total amount expended for necessary benches, tools, material and other equipment required for instruction in Manual Training to any Board of School Trustees, whether in city or rural schools;

(b) To any licensed teacher, who obtains from any Manual Training School approved by the Board of Education a certificate of fitness to teach the system, and who gives instruction in Manual Training in addition to the regular work of the school, a grant of Fifty Dollars per annum in addition to the Provincial Grant;

(c) To any certified teacher who gives his full time to instruction in Manual Training in the schools of a city, town or other populous district under the direction of the local School Board, the sum of Two Hundred Dollars per annum;

(d) To the New Brunswick teachers, who take Manual Training Courses at any school approved by the Board of Education and who afterwards actually teach the system in any New Brunswick school, Twenty-four Dollars for travelling expenses;

(e) To the duly licensed teachers who qualify for teaching nature lessons in connection with a School Garden, either at Macdonald Institute, Guelph, or any other institution approved by the Board of Education, and thereafter give instruction in said subjects in any public school having a school garden attached, a grant of Thirty Dollars per annum;

(f) To the Trustees of school districts, which provide and maintain school gardens in connection with the several schools, the sum of Twenty Dollars per

annum to assist them in caring for such garden and improving and keeping in proper condition the School grounds;

(g) To such teachers as may, after nomination by the Board of Education, pursue a course of 3 months in Nature Study and School Gardening at the Macdonald Institute, Guelph, for the purpose of qualifying themselves to give instructions in these subjects in the public schools, Scholarships of the value of Fifty Dollars each in the case of female teachers and of Seventy-five Dollars each in the case of male teachers; not more than twenty-four such scholarships to be given in any one year.

During the last quarter of 1911, there were 18 Manual Training Departments, 17 school woodworking shops, 8 in rural and 4 in consolidated schools, the work being taken by all boys from grade 6 upwards. This condition also obtains in 5 city and town schools. Four of the 8 rural schools have been closed, one because the village was burned down, another because a teacher could not be had to go to the remote village; another teacher got married and no one else would go; and in the 4th the population dwindled. The other four were quite successful. Some bench work is done by teachers who take it for an hour each afternoon after dismissing the small children. An equipment as low as three benches is recognized. Town and rural schools are treated in the same way as to grants, the Government paying half the cost of equipment and half the initial cost of materials, with teachers' grants additional—\$50 to rural teachers who give Manual Training as an extra, and \$200 to town teachers who devote their whole time.

#### ELEMENTARY HANDWORK.

Systematic elementary handwork is carried on in comparatively few schools in the Province. No serious effort is made in the others to carry out the course authorized by the Department. The Superintendent does not hope for great improvement in this branch of Manual Training until it is more definitely recognised by the Board of Education and given a place in the semi-annual returns of the grade teachers. At the Normal School every lady student takes the full course in handwork, with notes on how to teach it; therefore the majority of the teachers are well equipped to take up the work in the schools, and doubtless would do so if the subject were given proper encouragement and recognition.

#### MANUAL TRAINING.

The Manual Training course is a very general one, with two processes in wood, the aim being to develop the pupil physically and mentally and give him that degree of manual dexterity so necessary in every walk of life. Drawing is emphasised as a feature of shopwork in every case, because of its educational value as a developer of manual and mental power and of its practical utility, as it forms the basis of practically every constructional industry. It requires but small outlay for equipment and hence is well adapted to the schools of the Province. The Superintendent regrets that the course taken by High School students is very largely a repetition of operations mastered in the lower course; and he thinks the time of these advanced students could be more economically utilised by special courses giving a thorough groundwork for taking up trades, and a start in them.

The Superintendent thinks that as the "practical man of affairs" pays the bulk of the taxes, it is a good policy to emphasise the practical utility side of Manual Training, as is the policy of many of the best German, English and American schools.

The Manual Training of the first five or six grades must, in the opinion of the Superintendent, be purely developmental in its aim; but after that stage the sexes should be separated into specialised courses and a higher standard of technique fixed, so that at the end of a High School course, a girl should have a broad, intelligent and thoroughly practical conception of household arts and home economics, and be able to do her own millinery if necessary, and certainly make her graduation dress. The work in the special courses should bear direct relation to local conditions and industries. In New Brunswick, which has a large rural population, special courses in carpentry, cement work and forging should be acceptable, and one or more of these might be given in connection with every Consolidated and Superior School, as they do not involve very expensive equipment. For the cities and larger towns, courses in drafting, machine shop work, cabinetmaking, pattern-making, etc., would be suitable, according to the special needs of the locality. The Director recommends Evening Continuation Courses in the practical subjects embraced in Manual Training.

In boys' classes the processes and technique should be as near as possible like those of the best workmen of the trades concerned, otherwise the work of school workshops will not command the respect of the tradesmen, who should see that their sons will have nothing to unlearn after leaving school and taking up the trade, and that they are advanced in earning capacity — not that the school should teach trades in full, but that it should give a proper and thorough start in those touched. This kind of Manual Training would induce many boys to remain at school who otherwise could not afford or did not care to do so. Thus they would get the advantage of purely cultural subjects, the value of which they do not appreciate when so young.

#### HOUSEHOLD SCIENCE.

Nine new departments have been opened in the Province, the subject being presented to girls of grades 6 to 11 inclusive, except in two cases. In St. John only the girls of grades 8 and 9 take the work, although sewing is carried on to a limited extent in that city in some of the lower grades. In some schools throughout the country, grades 4 and 5 take sewing regularly. Although only 8 teachers in Domestic Science are employed throughout the Province, they represent 5 distinct training institutions and courses. The desire for uniform courses for the Province is almost universal because of the difficulty of teachers taking up work in a way different from that of their predecessors, thus greatly aggravating the usual inconvenience of changing teachers, and hindering the progress of the subject. "By giving young women definite and practical knowledge of the value and

nature of foodstuffs, textiles, furnishings, home nursing, sanitation, etc., we are adopting the surest means of putting our future homes on a sound economic basis as far as judicious spending is concerned."

#### TRAINING TEACHERS FOR SPECIAL WORK.

The supply of men to teach shopwork in the schools is very limited, however, and the Normal facilities for equipping them are very poor. Such teachers must possess the sound pedagogy of the schoolman and the technique of the tradesman. The latter qualification is obtained by giving a special course of 5 months to men who have had training and experience in teaching literary subjects. This special training course is so short that it has to be confined to a set of lessons in the general tool processes, a little drafting—not sufficient to make them draftsmen—and a smattering of theory. As a consequence men have almost abandoned this field; (there were only three employed in the Province during the last term of 1911) and Manual Training has not advanced as in other countries.

Director Peacock suggests that the course be extended to one year; that the male teachers be advanced to \$75 and \$200 per annum respectively in rural and town schools; and that the Manual Training Department at the Normal School be re-organised and more favourably quartered. There should also be a regular summer course for teachers in this line. In order to start in this direction it will be necessary either to import a few well-equipped men or to send some of our own men away to qualify, so that they may on their return teach our teachers. The handwork course as organised by Mr. Kidner is most excellent; the director having studied it carefully and found it second to none.

Rural teachers may take a three months' course and give instruction as a sort of side line, the minimum time allotted being three hours weekly. Those who wish to teach as Specialists must have received Normal School training, and devote their whole time each day to Manual Training. In 1909 there were 7 Specialists. The three months' course would give more than Normal Students get in their regular course, which is two weekly periods of 35 minutes, because in the short course two periods were taken together and 75 or 80 minutes weekly are given and no time lost in changing. Pupils in rural schools would not have as much Manual Training running over four years as is given in the three months special course in the Normal School.

For training efficient Manual Training teachers, Director Kidner would have Summer Courses every year, and allow teachers to return and qualify in extra subjects. Five weeks is all that teachers can be expected to take in Summer and two such Summer courses would qualify teachers for rural school work. This short course would compare favorably in point of time with what the English Schools had when they began it, except that the latter teachers had the advantage of nearness to each other, whereas New Brunswick teachers are widely separated. He thought the teachers would like the Summer course, for in 1905, with nothing but a notice in some newspapers, about 40 teachers attended for nearly five weeks at their own expense, and some returned and took the whole course.
### A PREPARATION FOR INDUSTRIAL TRAINING.

According to Mr. T. B. Kidner, formerly Director of Manual Training in New Brunswick and now Director of Technical Education at Calgary, Alta., Manual Training was found in England to be a great preparation for industrial training, and in technical schools it was the custom to put the boys who had attended Manual Training schools in one section and they could go at once into the drawing connected with their trade. while the other boys had to learn mechanical drawing. Hence many boys, attracted to the trade classes and wanting to take up such drawing and work of their trades, get tired of the very elementary work they had to do because of not having received Manual Training.

The lads in the New Brunswick schools have not only had enough Manual Training to qualify a number of them to take advanced drawing work at night schools, but they are already taking positions because of their Manual Training experience. Mr. Kidner had found that the draughtsmen at a woodworking mill had been trained in the Manual Training School. If Manual Training can be given a shop bias and the drawing particularly looked after, so that **a** boy who has gone through the elementary manual training school can learn from a book a good deal about the particular drawing of his trade, he is fitted for something higher.

In this Province the young men and women trained as instructors in Manual Training are competent to give good courses in mechanical and freehand drawing. There is a good freehand drawing course in connection with the Normal. They would not have skill to carry on any evening elementary classes in design.

The Manual Training course is not adjusted to rural schools as to articles made, but as in other parts of America the course is responding to the social influence and only weaker teachers seek definite sequence of small articles to be made. As an example Mr. Kidner found on a visit to one rural school that most of the articles made had been taken home, but next morning a farmer's waggon came with pieces of furniture collected from farmers' houses—every house in the neighbourhood having been benefited from the small school equipment of 4 benches.

The neighbourhood industry problem has not been attacked successfully, but things have been made that appealed to pupils and that they wanted for their own household or school-house. In spots the movement is making progress towards development of home industries for recreational purposes, rather than for profit.

The present direction of the public mind toward technical education is due very largely, Mr. Kidner thinks, to the introduction of Manual Training during the past ten years. People welcomed it because they thought it stood for a measure of industrial education, as an entering of the wedge for other things in that direction, and he thought the people would be ready to spend money for the advanced movement as they had been ready to do for Manual Training.

# CHAPTER XIII: CONSOLIDATED SCHOOLS.

### THE SUPERINTENDENT'S REVIEW.

Notwithstanding the generous aid granted by the Provincial Government, the Superintendent of Education, in a review of the Consolidated Schools of the Province, reports:---- 'Consolidation is slowly winning its way and will increase with increased material prosperity. When the ratepayers become educated to spend more for education, as they are spending more for everything else, there will be more of it. Little apparent progress is being made in the consolidation of school districts in this Inspectorate; the movement is not popular. People cannot be made to realize the importance of having the graded organization, Manual Training, Domestic Science and School Garden. In their amazing ignorance and the self-complacency which ignorance brings, they call it 'trying to ape the towns'. They do not know that for a slight increase in expenditure they could have better schools than most of the towns, more up-to-date that is, and that for every dollar of increased cost they would receive two dollars worth of increased efficiency. Time will remove all the hindrances and eventually convince the majority, as the minority is already convinced, that along the line of consolidation, or at all events of larger units than that of districts, lies the next important advance in our public school system."

## SECTION 1: INFORMATION FROM INSPECTOR STEEVES.

The school in Sussex, N.B. is a fine type of modern school. The school building with the land cost between \$50,000 and \$60,000 entirely borne by the district without any Government help. There are 14 rooms containing all the latest features in lighting and ventilation, etc., and a laboratory giving facilities for excellent work in physics, science and botany. Manual Training, Domestic Science and School Gardening are thoroughly taken up. Manual Training and Domestic Science run from grade 3 to 8. This work does not interfere with ordinary school work, but rather helps by correlating the work in geography, grammar, and arithmetic.

Inspector Steeves, the author of the pamphlet on Nature Study that is used in the rural schools, has taken special interest in the Sussex School, and has used it for working out many of his ideas. He looks upon physics and mechanics as preparing for the practical life of the people and thus far more important than having much time spent on classics.

### NATURE STUDY AND INDUSTRIAL WORK.

His experience has been that introducing practical Nature Study work and subjects that correlate with them in the various grades, and connecting these with the industries of the town and Province, will educate with more purpose than

### 3 GEORGE V., A. 1913

at present. He would begin Nature Study work at the very lowest grades. He thinks that to the neglect of this is traceable largely the decimation of country sections. Nature Study would help a child to go from the known to the unknown and he will work out other lines and take in other ideas as he is engaged in his work. More Nature Study and industrial work in country schools would create a class of pupils capable of taking the High School course within their own county; and with Nature Study would develop another class of pupils who would seek an Agricultural College education. Inspector Steeves had an idea that the Sussex School might be utilized for this latter purpose and if the trustees bought  $5\frac{1}{2}$  acres of land in connection with the school, established the school garden and provided the additional rooms, he felt that a large number of pupils could be drawn from the country sections in the county who would take an agricultural course, using as a help the outlying farms which are well equipped and capable of giving them excellent instruction. Thus a great deal of advanced agricultural work could be done, leading to the Agricultural College. Many young men have wished they could take such courses, feeling that they would have done a great deal better work if they had had such instruction while growing up.

At the Teachers' Convention of King's and Queen's Counties last year, Agricultural Societies within Mr. Steeves' inspectorate were invited to co-operate and as a result took charge of one session of the Teachers' Institute. It was such a success that it was to be continued, when a program would be arranged especially for Agricultural Societies at which work pertaining to Trustees' interest in schools would be discussed. The two days' program is planned along the lines interesting not only to teachers, but Trustees and farmers; the idea being to bring the school to the home and take the farm to the school.

### LARGER SCHOOL DISTRICTS.

Inspector Steeves is strongly in favor of the Parish instead of the District being made the unit for school purposes, so that instead of District Trustees there should be Parish Trustees, the tax being a County instead of a Parish tax, and on all property in the County, the rate being raised to 40c. or 60c. on all, so that the strong would help the weak and give an even chance to all people to get a fair education. This would tend to consolidations of districts where it could be done with equal efficiency and less expense, but in other places **a** one-roomed school would have to continue, advanced pupils being carried to larger schools with additional advantages.

When three or more school districts unite to form one district with a central school providing, in addition to the regular subjects, Manual Training and Household Science with a School Garden, such a school is called a Consolidated School. The Provincial Government pays not only half the cost of conveying the children to and from the school in vans, but also half the cost of the equipment for the Manual Training and Household Science department and half the cost of the initial supply of material for them.

The reports from the Principals of the Consolidated Schools are very interstineg, as showing the great benefits derived by the pupils. For example, at

Kingston, the people showed their appreciation of the benefits of consolidation in a most convincing manner. Their building was destroyed by fire, but the people decided to rebuild and go on, although the district had not a large valuation and the problem of conveyance presents many difficulties, more vans being required than in any other Consolidated School.

# SECTION 2: THE RIVERSIDE CONSOLIDATED SCHOOL.

At Riverside extensive school grounds have been cleared and laid out in an artistic manner by a landscape gardener, and the natural contour and disposition of the grounds afford a splendid opportunity for effective landscape gardening. The pupils are bright and alert, the teachers enthusiastic and industrious and the Board intelligent and progressive. The building has been admirably planned and contains modern appliances within and without. During 1910 the school became the owner of some 7 acres of land, thereby making generous provision for boys' and girls' playgrounds, a large garden plot and plenty to spare for a future van shed. This school tried an experiment by permitting all pupils except those of grades 8 and 11, who maintained an average of 80 per cent. on their work throughout the year, to advance to the next grade without final examination. Principal Anderson remarks that it is perhaps too early to tell with finality the results of the plan, but he pointed out that a large number of the leading pupils of all the grades this year are of those who were so advanced.

At the end of 5 years' record of the school it is interesting to note the careers of graduates who have continued their studies. The record shows that two have taken Arts courses, 5 Science courses, 4 Ladies' College, 2 Commercial College and 7 Teacher's courses. Thus 20 out of a total number of 34 graduates have continued their studies in High School, which is probably a higher percentage than that of city schools. The Principal remarks: "This is a further evidence that it is to those who purpose entering the professions that the upper grade courses of study appeal; possibly also that the appeal is more exclusively to this class in a country community than in the city." He notes that a 10th grade student of last year was one of two from New Brunswick who passed the entrance examination to the Naval College in Halifax. The basis for drawing inferences as to the work in Manual Training and Domestic Science is too narrow, but the Principal remarks that the lack of opportunity for engaging in woodwork in the immediate vicinity of the school may affect the result. The school attempted to do something toward teaching singing, but changes in the staff rendered it impossible to The Principal asks, "How long will it be ere our Normal continue the work. School can furnish us with teachers competent to perform this service?"

The Domestic Science department is one of the most popular with the pupils; the department won a medal and diploma for sewing at the Dominion Exhibition in St. John. Manual Training and Domestic Science departments are collaborating for the furnishing of the school office. While the Principal is fully convinced of the need and possibility of the School Garden movement, intimate acquaintance with it has convinced him that it has not yet been perfectly worked out. The principal difficulties and hindrances which have yet to be surmounted are (1) lack of co-ordination of science with garden work; (2) lack of care during the 8 weeks summer holidays, in a district where many of the pupils are from  $2\frac{1}{2}$  to 6 miles distant from the school and where others are away a part of the whole vacation; (3) teachers who are ill prepared to direct the work; (4) shortness of the growing season, rendering almost impossible in our climate the accomplishment of very much of account before the summer vacation.

In order to provide for the summer care of a garden, a prize of a two days' trip to the Dominion Exhibition at St. John was offered for the best School Garden tended wholly by a pupil. This secured more or less thorough care from 14 or 15 pupils, about a quarter of those in the classes. A pupil was hired to do the work of other plots whose proprietors forfeited their claim to the product in consequence. A school exhibit, including home garden products, resulted in 10 or 12 pupils operating gardens—a phase of the work from which much may come under proper direction and encouragement. The exhibit included also Manual Training, writing books, Domestic Science drawing books; School Garden science notebooks; home garden; geometry notebooks; natural science collections; the school paper, and a sketch plan for the improvement of the school grounds, as laid out by a local landscape gardener, Mr. Herbert E. Goold. Lack of interest in the garden work is all the more regrettable in a section so predominantly agricultural. Possibly the case is that the garden work is tacked on to the regular school syllabus rather than being incorporated in it. The Principal remarks that the amount and nature of science adapted to grades of a school serving an agricultural community is surely different from that fitted for a school in a manufacturing centre, whereas our teachers have been trained to teach such science as is fitted to qualify pupils for college entrance and hence are ill prepared for School Garden work.

# SECTION 3: THE FLORENCEVILLE CONSOLIDATED SCHOOL.

Principal Simms, of the Florenceville Consolidated School, speaks encouragingly of the work in Manual Training and Domestic Science-5 hours a week are devoted to these branches-and he believes the time is well spent with general satisfaction. School Garden work was done in common by the pupils during the holidays. The trustees provided for the care of it, and after the products were gathered, the place was ploughed for the next season. There is a widespread desire for more of such instruction. Considerable time is being devoted to Natural Science and Agriculture. After 5 years of consolidation in Florenceville the argument rests in favor of the principle. The attendance is certainly more regular than in any other school where Mr. Simms has been located. The means and advantages for teaching need no demonstration. If the cost has increased, such increase is not in the same ratio as that of the cost of living or price of labor. With a number of old bills carried over into the estimates for the present year, the amount raised for the school comes to a rate of nine-tenths of one per cent.-lower than the majority of the other villages in the country and of many country districts. The deportment of the pupils is excellent, and the Principal is much

encouraged in his work. Manual Training is conducted by a lady, Miss Wetmore, who also has charge of grades 3 and 4. Through her enterprise, the school has been provided with several useful articles, such as towel racks, picture frames, etc., this work having been done by her class outside of the regular hours. Principal Simms says he has met no one in the section who does not praise the work and aim of Manual Training. He thinks it possible, from the interest in School Gardening shown among the lower grades, to cultivate more sympathy for this work where now, especially among the older ones, particularly the girls, there seems a distaste. He supposes this would be reversed if the whole class were sent to Domestic Science.

#### DOMESTIC SCIENCE.

There being a number of large landowners in the district having no representation in the school, with the idea of interesting them and benefiting them, a Farmers' Club was organized in connection with the school, and after some public meetings, when men prominent in agriculture gave addresses, a regular Agricultural Society was formed which meets monthly for discussions of important topics. There is much enthusiasm for the project and it has worked well.

## SECTION 4: THE HAMPTON CONSOLIDATED SCHOOL.

The Hampton Consolidated School runs only one van which brings 11 children from a district 4 miles distant, but the increasing popularity of the school is drawing 15 children from 4 other districts. Some of the pupils walk a distance of 4 miles; others drive or come by train, while still others board in Hampton. The Manual Training and Domestic Science courses are increasingly popular among the parents and pupils. A sewing machine has been purchased for the Domestic Science department and the effort is to make the work as practical as possible, and while teaching girls to sew and make little articles of needlework, at the same time getting them to make articles that are in themselves worth while. Principal Delong thinks the aim should be to get the girls of the higher grades to do some of their plain sewing in school, and in this work the machine is a prime necessity.

The School Garden was well kept during the summer holidays, the trustees having made provision for weeding, so that at the opening of the school it presented a fine appearance. There was no lack of willing workers for the ingathering of the crop, while in the advanced department the nature lessons connected with it were followed with interest.

The experience of the Principal in Hampton has convinced him that consolidation is the system needed for rural schools. It helps attendance, rainy weather and snow storms being no bar, even to girls or young children, and this has been especially helpful in the lower departments. The class rooms are commodious, well lighted, heated and ventilated, with good apparatus, including an electric bell system; enthusiastic teachers and pupils anxious to help the school and its work in every way, modern courses in Domestic Science and Manuaj Training within the reach of all—conditions which are much more favorable than exist in most of our town schools, and all directly due to consolidation.

In 1910, 93 pupils prepared and looked after garden plots and a great deal of time was spent voluntarily by pupils after school, and many took entire care of their plots during the summer vacation. The pupils made careful records of work done-the time of planting, the appearance of the seeds above ground, amount of seed for produce, etc., and the teachers correlated this practical work with the general Nature Study, more especially with lectures on compositions of soils, plant food, germination, and so on. The School Board was very generous in its outlay for the garden, spending \$33 for a caretaker during the holidays. This school was awarded 2 prizes for the best general exhibit at the Dominion Exhibition at St. John, and also the 1st, 2nd and 3rd prizes for exhibits from indvidual plots; the prize money amounting to \$11 out of a total sum of \$21 granted by the exhibition. The pupils have started a magazine, which they have made financially successful. It is not only stimulating to literary composition, but also to attendance and regularity, punctuality, etc., as the names of pupils who make the highest standing in these respects are published. Pupils from this school stood third and sixth in the Normal School entrance examination for 1st class certificates, and a candidate for second class stood well up on the list.

These facts are cited as proof that the special subjects in this school do not in any way detract from excellent work in the ordinary subjects. The full classical course is now in operation in the High School, and candidates are being prepared for University matriculation. Manual Training and Domestic Science still retain their high place in the estimation of pupils and ratepayers. During the past term pupils have shown a greater zeal and earnestness than ever before. Their deportment is exceedingly good, and they are very careful of their fine school building, which is in almost perfect condition, both inside and outside, and gives no evidence of the fact that it is almost four years old.

# CHAPTER XIV: FROM SCHOOL INSPECTORS' REPORTS.

Inspectors come in close contact with the teachers and know all the problems of each section in minute detail; hence their reports are intensely interesting and suggestive. In New Brunswick the inspectors' reports are prominent in the records of education, and a reference to them may be in place, particularly in relation to the subjects with which this Commission is specially charged.

WRITING—One Inspector says that the new copy books have encouraged a form of hybrid writing, a mixture of the vertical and natural slant; but he thinks that this is only a temporary drawback, and on the average the results are up to requirements.

DRAWING—Another reports considerable progress made in Drawing. The trouble heretofore has been that there was too much copying, and too much accuracy was exacted in the primary grades. Now, pupils' crudest efforts are accepted as having value, provided they do their best, and it is marvellous to note the difference from term to term under the stimulation of encouragement. He suggests that a paper on Drawing at the entrance examination would further emphasize this subject. In the majority of schools in one district, Drawing is practically a dead letter.

GENERAL EDUCATION—An Inspector reports added interest and increased regularity of attendance where schools are doing some work in special subjects, and he notes that a more thorough education on purely scholastic lines is being given in consequence. He considers that the great work of the public schools is to impart ability to read and spell well; to speak and write well in concise and grammatical English expressive of the exact thought in the mind; to correctly and rapidly perform the fundamental rules of arithmetic and apply such knowledge to the solution of problems; and to acquire an intelligent knowledge of geography and history.

One Inspector reports that the work done in ungraded schools is for the most part satisfactory; the majority of the teachers are energetic and enthusiastic; they often work under great difficulties, the Board of Trustees not being sufficiently attentive to provide necessary apparatus, in some cases the teacher by her own energy procures funds to equip the school.

One feature affecting rural schools is rather disquieting; some districts have been so depopulated by emigration that the school can be maintained only with great difficulty. The enrolment in some cases is less than 12 and in one case as low as 3, so that the cost per pupil is very high. Certain districts could undoubtedly be consolidated with advantage, but there seems to be an almost insuperable obstacle in local jealousies.

An Inspector whose experience had been almost entirely in city graded schools, believes the country schools compare very favourably both as regards effi-

19d1-Vol. IV-11

ciency of teachers and intelligence of pupils with those of cities and towns. He believes the frequent change of teachers results in too much attention being given to the older and more advanced pupils, younger ones being neglected.

The loss to the Province occasioned by the removal of so many teachers to the West is deplored in most of the reports. One Inspector points out the serious economic nature of the problem by considering the cost of educating a pupil up to Grammar School license, then his value to the community as expressed by the capitalization of his earning capacity. The gravest aspect of the problem is that the maintenance of the high educational standard attained in the Province is absolutely dependent on the retention of teachers of the Grammar School class.

One Inspector philosophically remarks that when one considers the success achieved against such odds as apathy and indifference, irregularity of attendance, too frequent changes of teachers, false principles of economy, and many other difficulties constantly thrown in the way of educational progress, it is safe to say that there surely exists a spirit of enterprise and progress which will ultimately triumph along the lines of educational advancement. He remarks that in the majority of cases the school buildings are good, but put up a miserable exterior appearance owing to lack of paint, and in not a few cases the bright appearance of the school house is impaired by the wretched state of the grounds and surroundings.

Another Inspector reports that Trustees seldom visit the schools unless something disagreeable forces them to call. Ratepayers who have children at school, as well as Trustees, miss many a chance through neglect to help the school to reach a higher state of efficiency.

An Inspector suggests that as people take a lively interest in themselves, their ancestors and the locality in which they live, the teacher cannot be occupied with better outside work than studying the history of the district, locating historical sites, collecting records, traditions and such historical data as are available. Teachers would thus preserve their mental freshness and their sympathy with striving pupils. Some ratepayers speak of the lazy, lounging habits of some teachers. Every teacher should be cultivating a physiographical, historical and economic interest in the districts surrounding his school.

One Inspector finds that many otherwise sensible people think that the chores children do in their homes provide all the physical exercise necessary for bodily development; yet he has heard no objection to the physical drill in schools, but on the contrary, many commendations. He wants to see children grow up with straight backs, full chests, strong limbs and all the other points of a good, sound body.

The matter of unequal taxation in Districts situated in the same Parish is a serious hindrance to the welfare of the public schools. In one District an Inspector found the rate of taxation to be nearly 2 per cent on assessed valuation, while in the adjoining district it was about one-fourth of 1 per cent. In still another he was informed that a very large amount of property escaped taxation for school purposes altogether. He considers that the only remedy for such an anomaly is to make the Parish the unit for purposes of taxation, with a Parish Board of Trustees.

Manual Training and Domestic Science are being favorably regarded. School Gardens and Nature Study, appealing as they do to the outside and industrial life of the people, and requiring small expenditure for equipment and maintenance, possess advantages for practical education which will give them a great lead in country schools until Consolidated Schools become general.

### NATURE STUDY AND SCHOOL GARDENING.

"The Nature Study and School Gardening course authorized by the Board of Education in September 1908, if conscientiously followed by all concerned, cannot fail to give a great impetus to the study of nature in our schools".—Such is the opinion of one Inspector.

One Inspector reports that in most country schools the weather report is kept and the children's observing powers are being developed by requiring them to observe the direction of the wind, and other phenomena from day to day, as well as in noticing the migration of birds, budding of trees and plants, and the gradual unfolding of these buds into flowers and leaves. Through the study of farm weeds and insects injurious to crops, the country children are being led to take more intelligent interest in farm work and it is hoped this may induce many to remain on the land.

The teaching of this subject is taking more prominence in proportion as teachers are recognizing its stimulating effect upon the pupil and upon the work of the whole school. The point and purpose of the work are coming to be better understood. Definiteness is secured by a careful apportionment of instruction. The senses of the children are being trained to be alert to gather information from their environment. Such activity must be of the greatest advantage in all school work.

In the Sussex district a series of 5 lectures on farming to 10 schools was conducted by the Provincial Dairy Superintendent, and many people expressed their high appreciation of such instruction in schools, as it tends to increase the children's interest in home activities and stimulates them to more consistent application to the study of history, geography, science and drawing by awakening and directing their perceptions to real life and also affords more material for both oral and written composition.

#### SCHOOL GARDENS.

School Gardens are constantly increasing in usefulness and popularity, but the work is seriously hindered by the need for trained teachers who are willing to qualify by study and adapt themselves to the requirements of the work. At the Teachers' Institute for the counties of King's and Queen's a new feature was the setting apart of one session to the discussion of educational matters having a bearing on country interests. This drew a very large audience, presided over by the Provincial Commissioner for Agriculture, and addresses were given on forestry, school gardening and soil and its treatment. In many schools the growing plant has been made to illustrate some of the nature and science studies of the schoolroom; the

191d-Vol. IV-111

bulletin "Farm Weeds in Canada" has been distributed to most of the schools and is proving of great assistance.

Other Inspectors note the increasing interest in this subject. The work of the educational and agricultural authorities and of many enthusiastic individuals is slowly but surely bearing fruit. Much better provision must be made for training teachers in these subjects.

One Inspector doubts if it is advisable to encourage teachers who are not especially qualified for the work to attempt systematic garden work. The Normal School building is so crowded, the classes are so very large, the staff small and the courses short, while the prescribed work in other subjects is so extensive, that the teachers are very inadequately prepared for Nature Study and Agriculture. He recommends a short Summer School in these subjects, with financial inducements to Inspectors and teachers to attend. The Inspectors generally take hearty interest in the School Garden. The Provincial Supervisor of School Gardens believes that in order to do effective work, he should be in a position to devote nearly all his time to organising, supervising, addressing meetings, etc., as is the case in Manual Training.

A teacher in an ungraded school reports that the effect of the study has been to make the children more observant, more free to talk and better able to record their ideas. The interest taken in this subject has in many schools been extended to the other subjects of the course.

The inspectorate in which Fredericton is situated does not contain a single School Garden outside of the Normal School. The Inspector believes that the time is not far distant when teachers and inspectors will be required to take a special course in agriculture in order to qualify for work in rural schools.

#### NATURE STUDY.

Teachers report that the few minutes required are not missed, while the study has proved both interesting and instructive to pupils. Weeds and pressed leaves from different trees have been used in drawing. The big sons and daughters of fishermen in one district were much interested in the weather report, and added another column headed "Forecast", in which they predicted the weather for the following day.

In another school a list was kept on the board each month of flowers reported by pupils; estimates were made of various farm products of the district at current prices and also drawings and bills of same. This work did not injure the regular school studies as much was done out of school hours. The pupils seemed particularly interested in collecting and reporting on flowers, weeds and seeds.

The teacher of the Boys' Industrial Home, Crouchville, reports that if everything falling under the head of handwork were eliminated, the teacher would be compelled to leave the schoolroom. To the boy, Nature Study is as good as play and stores his mind with useful knowledge, training his eye to careful and accurate observation. One boy who had given considerable trouble by running away, showed his first interest in two tiny house plants and by the time he had planted, tended and harvested his School Garden plot, he was one of the steadiest

and best boys in the Home, Nature Study doing for him what teachers had failed to do—interest him in life and in being alive.

The results of the special effort to make this work effective are very encouraging to one Inspector, who after reading reports from 120 teachers, notes that they are unanimous in stating that this work has introduced the element of interest in the schoolroom. Most of the boys' work in composition brought under his notice during the year was the outcome of the child's natural desire to express in writing what he had been led to observe in the Nature Study course. Not a few schools already have their collection of different weeds, minerals, soils, seeds and plants, all collected in the neighborhood.

Arbor Day was observed in 90 districts of one inspectorate; 224 trees and 69 shrubs were planted and 167 flower beds made. Great efforts are being made to beautify school premises. Inspector Hanson is convinced that in the majority of his districts, Arbor Day is a failure, there being too often no work done in the grounds, and he has felt impelled to disallow the day when reports have come in.

### THE NATURE STUDY AND AGRICULTURAL COURSE FOR COUNTRY SCHOOLS.

The purpose of this course is to develop a habit of intelligent observation; to actively connect home and school interests; to increase the child's knowledge of his own neighbourhood, its flora and fauna; to use all with educative interest, and to correlate the work laid down with the other regular school work, this branch being made to help all others. Thus, point and interest can be given to Arithmetic, Spelling, Composition, Drawing, Geography and History by relating them to features and conditions of the district, and the teaching in this way can be made more effective. No attempt at scientific treatment is expected. Much can be done by pupils at home and on the road to and from school, the teacher guiding and stimulating endeavor in the pupils, and personally leading the way in collecting information, reporting, making drawings, asking questions, and encouraging and commending the pupils' efforts.

The course covers: (1) Weather report, pupils being taught to observe and accurately record daily conditions; (2) Bird calendar. Birds are observed, described, named; their coming and departure accurately noted; their habits studied; lessons given on their food and economic value; and monthly exercises in drawing the birds which have been studied; (3) Study of the district. A physical map of the district on a larger scale is gradually constructed throughout the year, indicating hilly and forest land by different shading; streams, brooks creeks and rivers are marked, and the location of roads, bridges, churches, halls and post office indicated, each pupil marking in his own residence; (4) Observations, arranged in grades, for each month, covering such points as farm weeds, insects and birds; plants, seeds and crops grown; domestic animals and their habits; rain, frost, snow, ice, fruit blights; export and markets of districts; soils and their fertility, etc.

The teachers are required to report to the Inspector during the last school week in December as to the character and effect of this work.