

CHAPTER VI: ORGANIZATION AND ADMINISTRATION OF INDUSTRIAL TRAINING AND TECHNICAL EDUCATION.

INTRODUCTORY.

Systems of education and courses of study have come into existence without much clear recognition of their character by the people as a whole. The character and position of the courses, and even of the subjects as logically related to the systems, have often been such as to obscure the pupil and his needs. However, the trend of progress in recent years has been in the direction of reversing that situation, and additions, extensions and enlargements of courses have been made until they have lost their organic unity for the dual purpose of training the powers of the pupil and imparting the necessary amount of useful and therefore cultural knowledge.

The greatest deficiency in recent years has been due to changing conditions under which occupations are followed, and which have in large measure deprived many young people of opportunities and means of being trained by participating in them. The system which included apprenticeship, or similar training with its accompanying discipline, provided a fair all-round training when supplemented by the usual intellectual studies of the school.

The question now is, since that opportunity of participating in occupations as apprentices no longer exists in the form in which it used to serve the young people, shall the schools be organized to meet the needs which were formerly met in the other way? In other words, shall public schools undertake not merely to give general education and Pre-vocational Education up to 14 years of age, but shall they also supplement the experience of those who have begun to earn their living at 14 in such a way that their ability as workers will be increased, their attitude towards life kept wholesome, and their habits of body and mind formed so as to ensure continued education. Another way of putting the question is, shall the schools continue to provide vocational education only or chiefly for those who are to follow professional occupations?

The chief reasons why pupils leave school at an early age, or before receiving a Secondary School education, are the limited resources of the parents or the dissatisfaction of the parent or the child with what they consider to be the unpractical and unprofitable work at the school.

One of the fundamental objects of Industrial and Technical Education is to develop as far as practicable the working capacity of the pupil and, at the same time, the experience of joy or satisfaction from the processes of the work itself. When education does not accomplish that, the schools do not promote industrial efficiency to the full extent; and in consequence young people enter upon their life's work without a right understanding of work itself and are likely

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to miss pleasure and satisfaction from doing it. The way to make men and women like their work is to help them to understand it and do it well.

The ideal or perfect system would provide for the participation in the opportunities for education of all individuals according to their ability, the occupation they are to follow, and the place they are to occupy in the State.

The nation, as well as the family and the individual, are concerned on the economic side. A well educated, that is a well informed and well trained, individual can produce more for himself and his family and at the same time contribute more in an economic sense to the community and the state. What is true in the economic sense is true also in a social sense and in respect to citizenship.

The great industries, and to a less extent the smaller trades, depend more and more upon the successful application of science and scientific methods to manufacturing processes. Improved methods of transportation are bringing all countries closer and placing them nearer the same level of opportunity in the use of natural resources. Improved tools and labor-saving machinery are rendering mere manual skill of less importance than formerly. What counts for most is dexterity, scientific knowledge and the skilful application of it to the needs of the industry by men and women of good character.

Apart from, and still contained within the interests of the State and the industries, the needs of the individual must be considered. Since the largest part of the life and strength of each individual will be taken up with the occupation whereby he earns a living for himself and his family, it is important that his education should prepare him to follow his trade or calling in such a way that he will derive not only satisfactory compensation in the form of wages, products or profits from his labors, but that he will have satisfaction and happiness in the actual doing of his work for its own sake. It is still more important that education should widen his interests and broaden his sympathies so that the chief object of work, which is to make life itself worth while, shall be attained in part through the experiences of the means whereby he makes his living.

An adequate system of Industrial Training and Technical Education should fit the social and economic conditions of the time in such a way that each individual would have the benefit of opportunity and influences for educational growth so long as there was growth of powers of body, mind or spirit. This does not imply that there should be, for most boys and girls after 14, much time spent in formal education in the Elementary or Secondary School. The Vocational School should enable the individual to go on with his education through its courses, through contact with his fellows, through the experience of his work, through the use of books, and through other means put within his reach under the existing organization of society.

SECTION 1: THE PRACTICE IN DIFFERENT COUNTRIES.

The organization of this kind of education has followed different courses in different countries. Sometimes it has been initiated by those in charge of the Government and in a measure imposed upon the people; in other cases it

appears to have arisen from the efforts of the people themselves in the several communities.

The control of education rests with different authorities in different countries and communities. In most cases the Central Authority for the State indicates the general direction in which education should be carried on, establishes standards for the training and qualification of teachers in schools which receive support from the public funds, whether State or local, and usually by means of advisory publications, inspection and the payment of additional grants for extra good work, endeavors to keep the education up to certain standards of efficiency.

The local community, through some means provided for by law, such as a municipal authority, school board, or corporation, has control of the institutions, the engagement of teachers and the general work of the school. Usually the Local Authority is allowed considerable latitude as to the Courses of Study and the manner in which they are to be followed. It also has full control or some control as to the qualifications required for the admission of pupils. The Local Authority is usually charged with the responsibility of providing buildings and equipment. Ordinarily these must conform to standards and regulations, and in some cases the Central Government provides part of the cost.

TO LEARN BUT NOT TO COPY.

The Commission does not consider that the form of organization, or the practice in administration, in any other country can be adopted in full with advantage in Canada. Differences in the traditions and organization of education and of society itself have to be taken into consideration.

The extended reports of the inquiry in the several countries reveal some general principles which are common to all their systems and methods. The Commission presents a statement of the means whereby these principles, which have been found suitable and beneficial, can be applied most advantageously to Canada in Chapter VII: A Dominion Development Policy.

The organization and administration in France is suggestive and instructive particularly in respect to the system of supervision and inspection.

In the case of Switzerland where the Federal Authorities contribute to the maintenance of Technical Education, the inspection by the Federal Authorities is of a sort which leaves nearly everything to the authorities of the Canton and of the Commune. The Federal Authorities seek to assure themselves that the money which they provide is used for the purposes for which it was voted and that the administration of it is reasonably efficient.

To supplement the Reports of the inquiry in the several countries as presented in Part III, the following appropriate matters relating to England, Germany and the United States are introduced here.

A: IN ENGLAND.

In England the administration of Industrial Training and Technical Education comes under the Education Authority which is responsible for

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Elementary and other public education in the County or Borough, as the case may be. The question of the further devolution of powers from the Education Authority to Local Bodies was referred by the Board of Education to the Consultative Committee. The following two paragraphs from their report shed some light on a common quality in human nature and a dominant motive for its exercise in the public service.

As regards the general principles which appear to them to underly any successful scheme of devolution, the Committee consider that experience shows that *local bodies* will, as a rule, work better and be better manned if, in the first place, important and interesting duties are intrusted to them, and if, in the second place, they are given considerable executive powers in carrying out those duties. This might be combined with the retention by the Education Committee of the ultimate control of their sub-committees' proceedings, although the exercise of that control might seldom be necessary.

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One word as to what we mean by devolution, and what the precise functions allotted to *local bodies* should be, and how far they should extend. The main object being to enlist local interest and enthusiasm on behalf of education, there must be responsibility attaching to the work; and it will be found that the real definition of responsibility amongst local bodies, whether Managers, Correspondents, Attendance Officers, or others, will be the expenditure of money.

B: IN GERMANY.

In some of the States the Governments took the initiative for the purpose of giving the people opportunities, and inducing them to avail themselves of these opportunities, whereby they might become efficient industrially, and develop qualities of good citizenship through contact with educational work after leaving the Elementary Schools. Individuals and Local Authorities supported the action of the Governments. In these matters it is difficult to tell which was the first cause, and which the effect. One can only say that the clearest intelligence of the communities, as represented on the one hand by individuals and on the other hand by the organized State Governments of the time, concurred in believing that the prosperity and the strength of the State would be benefited by Industrial Training and Technical Education; and that the ability of the individual, his well being and his means of providing for himself and family, would be increased. There is no hostility or conflict between the interests of the State as an organized whole and the interests of individuals as citizens, or the interests of individuals as workers.

In other States the Trade Guilds, Corporations and individuals took the initiative and were active in establishing and maintaining schools. The Guilds still give grants to the maintenance of some schools, and their members take an active part in the administration of them.

LOCAL BODIES AND CENTRAL AUTHORITIES.

Authority is usually left with the Local Body to make arrangements concerning Courses of Study to be provided, teachers to be employed and the general management and discipline of the schools. A Central or Higher Authority possesses the power, which as far as could be learned it seldom exer-

cises, of making general regulations as to minimum standard of attainment, minimum qualification of teachers, length of courses, and such matters. This Central or Higher Authority does exercise the right to examine the schools by means of visits of inspection to determine how well their work is being done. Systematic examination of pupils upon specified subjects is not followed. The State Authority exercises its power to examine schools, to the maintenance of which it does not contribute, as well as to inspect the others to ascertain that the funds which it does contribute are used for the purpose for which they are designated and that the work is carried on efficiently.

The management of the Continuation Schools in the larger towns is in the hands of special Boards of officials, who represent the employers, employees and educators. They have the general direction of the school work. Each school has its own Director, and when there is a system of schools in the place there is a Director of the system who is often a member of the Managing Board.

The general custom is to have this Board for the Continuation Schools distinct from the Board controlling general Elementary and Secondary Schools. Sometimes each division of the Continuation Schools has an Advisory Committee of persons who are intimately identified with the particular trade which it represents. In this way the employers and workers alike become interested and help to make the schools efficient and practical. The growth of confidence in the school is the result.

The several States, in which the eleven Technical High Schools are located, accept the full responsibility for their maintenance. The Technical High Schools, in the German system, correspond to Technical Colleges or Technical Universities in the United Kingdom and Canada.

GENERAL PRINCIPLES GOVERNING THE INSTRUCTION.

Throughout Germany the general principle is now accepted that the instruction in the Continuation Classes is most advantageous when grouped around the callings or occupations of the pupils. In those cities where the Continuation Schools are not provided at all, or are only provided meagrely, with workshops, tools or machinery, there is less close connection with the trades and industries by means of expert advisers or committees; and there are fewer of the teachers who have had practical experience in the workshops and factories.

The Continuation Schools are not only for those who are serving their apprenticeship and are between the ages of fourteen and eighteen. They also serve as schools for journeymen and even for the masters. These advanced Continuation Schools exist in connection with the school system of all the great cities of Germany. They enable young people, who are unable to give up their trade and devote their whole time to attendance at a Technical School, to go as far as their ability and the time at their disposal can carry them.

The Mittelschule or Technikum might be called a continuation of the Continuation School. The former are institutions where skilled workmen, who have already taken advantage of the Continuation Classes and had a good deal of experience in shop practice, can receive training and knowledge necessary to

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qualify them for positions as foremen, superintendents, etc. In Prussia these Secondary Technical Schools are carried on in connection with the Continuation Schools. In Bavaria they are carried on in connection with the Realschulen. In the latter case the pupil who takes the two year course after the Realschule may obtain admission to the Technical High School or he may take the third year in special work on the subjects for the particular occupation he intends to follow.

In the Continuation Schools or Classes, and in the Lower Technical Schools, the object of using materials, tools and machines is to prevent the pupils from becoming mechanical in doing their work. The practice and experience in school with tools and machines gives them an all-round training so that they may know something of each of the processes relating to their trade and be ready to become experts in any one of these by long or short practice.

In the Middle Technical and Technical High Schools (Technical Colleges) the work is chiefly of an intellectual character intended to fit men for positions of leadership. In but few cases does manual work in them occupy any considerable portion of the time.

The Technical High Schools are schools of technology and not schools of technique for manual work with machines or for handicrafts. They are the institutions of the highest grade and their aim is to train the students to independent thought and ability in their technical affairs. The students are taught and trained constantly to take a wide view in all their considerations and in all their doings. It is recognised that a failure in any undertaking shows that something had been overlooked or neglected. On the other hand if all the conditions have been taken into consideration, according to their importance, successful planning and satisfactory accomplishment may be expected.

In the Technical High Schools the workshop practice is not intended to teach the students a trade or to make them expert machinists or experts in any handicraft or tool or machine operation. The purpose is to give the students an adequate knowledge of materials, tools, machines, working methods and to make them acquainted with the workmen, their point of view and the conditions under which they work. All this is for the purpose of giving them clear ideas as to the conditions, means and limitations of manufacturing and workmanship, the workmen's attitude and capacity and of management of a factory.

FEATURES OF THE MUNICH SYSTEM.

The information furnished by Dr. Kerschensteiner on the organization and planning of the compulsory Technical Continuation Schools for boys in Munich is so clear, suggestive and illuminating that it is given at length in another place.

The features of the school system of Munich which stand out with lessons of value to Canada are:—

1. The effort to arrange courses, in the two final years of the public Elementary Schools, of such a character and in such a way that the children will be prepared

for going on with their education in the Continuation Classes, and disposed to seek willingly to derive benefit from classes in school after they have gone to work.

2. The effort to adapt the Continuation Classes to the needs of all the population, especially those between 14 and 18 years of age, and, at the same time, to adapt the work of the Continuation Classes to the needs of the various industries and occupations.

Every care is taken that there shall be close correlation of all the instruction in mathematics, computation, language, etc., with the particular occupation of the student. For example, boys from no fewer than 47 different trades are put into different classes in order to provide for this co-ordination. The occupation is made the pivot around which, and through which, the other studies are made to bear on the pupil. At the same time regard is had to broadening the interests and the sympathies of the pupil as well as widening the range of his knowledge and skill. One object of the compulsory Continuation School is to give the pupils an all-round training so that they shall know something of each of the processes relating to their occupation and as assistants can be put with advantage to anything in the trade itself.

3. The ample provision of schools wherein young men who have completed their attendance at the Continuation Classes and completed their apprenticeship can gain wider knowledge and experience bearing upon their own trade or occupation. These schools widen the worker's range of knowledge of principles, materials, tools and machines and also give him an opportunity to increase his ability and skill by the use of tools, materials and machines. Such workmen are encouraged to complete their masterpieces in connection with one of these schools. The halls and other places are full of specimens of superb workmanship. The boys attending the Continuation Classes have opportunities to see these, in fact cannot avoid seeing them, as in many cases the Workmasters Schools are held in the same building as the Continuation Classes. The stimulating effect of these pieces of workmanship with their content of art, skill, and beauty is subtle and incalculable.

FINANCIAL SUPPORT.

There is almost invariably some participation by the State in the support of schools which are primarily for local service and the immediate benefit of those who will be employed in the locality. Where a school purposely serves an area of population larger than the town where it is located, it is likely to have owed its establishment and a large part of its maintenance to the action of the State or some business, trade or philanthropic organization. When the State and City combine in meeting the expenses of such institutions the State usually takes the larger share of the burden particularly for the highest institutions.

The benefits which come directly to the individual, to the City and to the State are not separable. Moreover, whatever is of direct and real benefit to the community is thereby of advantage to the State, and therefore to some extent the State is warranted in meeting part of the cost.

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It is recognized that the lack of suitable training and of Technical Education has held back the economic development of entire districts and of considerable industries. It is also true that some communities which derive immediate and direct benefit from Technical Education are unable to assume or bear the whole burden of costs themselves. Rather than have the community go unserved in this way, the State comes to its assistance. No uniform rule is followed in settling the amount to be contributed respectively by the local community and State.

The representatives of the industries of the place, either through a Guild or Association or otherwise, often contribute to the maintenance. The reason for this lies in the obvious and immediate advantage to the industry from a supply of thoroughly trained and competent workers.

As a rule, for all except the institutions of the highest grade which serve the State as a whole, the local communities provide the buildings and maintain them.

As compared with the expenses of general education, the costs are higher in the case of Industrial Training and Technical Education. The buildings and equipment are more expensive for the number of pupils they can accommodate as is also the maintenance of the plant up to requirements. Competent teachers who are in touch with industry, and at the same time able to teach acceptably, although not scarce, command relatively high remuneration. Provision is now being made to grant such teachers pensions; and in case of death provisions for wife and family.

C: IN THE UNITED STATES.

The organization of Industrial Training and Technical Education in the United States differs widely in the several States in respect to the degree of control exercised by the State and the amount of financial support which it gives. In a recent publication* by Mr. C. A. Prosser, Secretary of the National Society for the Promotion of Industrial Education, some information on this subject has been given. The following facts are quoted from it. It presents a brief summary of important points, in this connection, which are to be found in the Commission's Report of the enquiry in the United States.

MAINTENANCE BY STATE AND COMMUNITY.

The entire cost of the public trade schools of Connecticut is met from the treasury of that commonwealth. In Massachusetts the local community builds and equips the plant and the state pays one-half the operating expenses. This is substantially true in Wisconsin as well. One-half of the amount expended by the local authorities is contributed by New Jersey, while New York gives the town or city five hundred dollars for the first teacher of practical work who is employed and two hundred and fifty dollars for each teacher of the same character who is added to the teaching force. In recent legislation the tendency is toward a state system which will require the local community to establish the school at its own expense, meet all the operating expenses and receive from the commonwealth one-half the cost of maintenance if the work is approved by the State Board of Control.

* "Vocational Education Legislation of 1910-11," published by American Political Science Review, November, 1912.

CHARACTER OF THE MANAGING AUTHORITY.

Everywhere there is a growing recognition of the need of close co-operation between the schoolmaster and the man of affairs in carrying on practical education in this country. Three means of securing the participation of laymen are possible, namely:—by lay representation on state boards of control, by lay representation on local boards of control, and by advisory committees surrounding the principals and teachers of vocational schools, composed of employers and employees who have had practical and successful experience in the kind of training which the schools give. Up to this time state boards of education and local school committees have not been chosen with the idea of their special fitness to deal with the problems of practical education. Hence the attempt to secure in recent legislation a larger helpful influence from the practical man in the work of schools fitting men and women for the duties of home and shop and farm.

CONNECTICUT.—The laws of the different states vary greatly in this matter. Connecticut has direct control of its trade schools by the State Board of Education, which also has charge of general education in that commonwealth. A majority of its members are lay rather than professional. Most of them have not been selected for their special fitness for dealing with the task of vocational education. There is no local board of control for the school and no local advisory committee surrounding it.

MASSACHUSETTS.—The State Board of Education in Massachusetts is responsible for the administration of vocational education, as well as general education. Its lay members have not in general been selected with any special reference to their experience and fitness to deal with problems of vocational education. The local boards of control for the state-aided schools of that commonwealth may be either the regular school committee of the community or a separate board of trustees chosen for their special fitness in dealing with the task; usually the former administers the school. The Act of 1911 requires all schools in the state asking for approval and aid to have advisory committees composed of members representing local trade industries and occupations whose duty it shall be to counsel with and advise the school officials in the discharge of their duties.

NEW YORK.—There is no state board, either professional or lay, in New York. The administration of the state-aided vocational schools is entirely in the hands of the Commissioner of Education and his assistants. The schools are managed locally by the regular school committee. The law requires the appointment of advisory boards similar to those of Massachusetts.

NEW JERSEY.—In New Jersey the State Board of Education, which is almost entirely a lay-body, has little control over the vocational schools. Usually the school is controlled by the local Board of Trustees, a lay-body, consisting of the Governor, Mayor and eight others appointed by the Governor. No advisory committees are authorized or required under the law.

WISCONSIN.—In the recent laws of Wisconsin, we find the most complete assertion of lay interest in the country. The part-time and continuation schools of the State and practically all other vocational training has been placed in the hands of the State Industrial Commission, made up largely of laymen and having no responsibility for the general education of the State. In the cities and towns, local boards of control, entirely independent of the regular school committee, are provided for and given the duty and power of carrying on the part-time and continuation schools. There is every indication that the legislation of the future will give a larger recognition to the place of the layman in the State systems of vocational training which cannot help but have its effect upon the practice of the regular schools in this respect.

PRONOUNCEMENT BY NATIONAL EDUCATION ASSOCIATION.

The following is taken from the Report of the National Education Association on *The Place of Industries in Public Education*.

ORGANIZATION AND ADMINISTRATION.

Vocational education under private and philanthropic auspices is commonly organized in separate and specialized schools. When it becomes a part of public education, several schemes of organization and administration become possible.

A. The vocational school may be completely separated in the administration and support. This type is illustrated in certain state schools, which have their own boards, and to which authorities make assignments of funds. The California Polytechnic has thus a completely separate organization. At times it has been proposed that a separate state machinery of administration was necessary to initiate and carry on vocational education. It is argued in support of this position that the administration of the newer type of education requires a different point of view, and different estimates of educational values from those which ordinarily prevail. Also that the degrees of affiliation with business and practical conditions is such as to be most effectively accomplished by having separate governing boards and specially provided funds. There are a variety of reasons why it may be expected that the state rather than the locality will contribute more to this form of education than to ordinary forms, the chief argument being found in the mobility of labor.

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B. The vocational education may be carried on by the regular educational authorities, but in distinctly separate schools, under principals or directors who pursue the distinctly vocational aim. Hitherto it has been hard to accomplish this form of organization in such a way as to produce distinctly vocational education. Only part of the work has been vocational in character, the aims of liberal education being pursued to the relative exclusion of others. But the intermediate schools now being organized in New York, under control of state and local departments of education, provide a variety of checks by which the vocational character of the school can be preserved. These are chiefly: (a) state inspection by a special agent of the state education department, (b) the provision that the vocational work must be carried on by a separate organization, and (c) the requirement that the shop teachers shall be men with practical training and experience in the industries.

C. It has often been proposed that vocational education should be organized simply as a phase of a complete educational scheme, much as manual training is now part of the general program. Various suggestions along this line have been made: (a) That half of each day be given to work of the academic character found in the upper grades, and half to shopwork, household arts, etc.; or (b) that the ordinary school day be kept for its present purposes, and that the hours from three to five and perhaps Saturday forenoon be devoted to practical work; (c) the tendency where vacation schools have been established to use the regular school buildings and equipment during the summer months for practical or vocational work.

Regarding these plans, it has been urged that in the present temper of schoolmen the vocational work could hardly be expected to meet with sufficient sympathy and support, and that the traditional subjects, because they lend themselves so effectively to ordinary methods of teaching, would displace the vocational work. Probably this will not always be the case; when vocational training shall have established its own methods and content it may be able to hold its own. Furthermore, programs like the above seem better adapted to elementary vocational work when that shall have been established. In the meantime, much may be said in favor of having the intermediate industrial-arts school under its own roof, and working completely under its own program. There is thus provided an industrial atmosphere, and such a school may be expected to develop its own social spirit. It may require time and tact to prevent the growth of obnoxious class distinctions between the patrons of two different kinds of schools, but this is a problem that has already been met and solved in the universities of America, and in the introduction of scientific and commercial studies into secondary education.

SECTION 2: THE CORRELATION OF COURSES OF STUDY TO OCCUPATIONS.

Not much real research work or experimental work has yet been done in organizing courses of study entirely suited to the needs of individuals following different occupations. One of the services which this Report may perform for educators will be through putting before them types, and in some cases details, of courses of study which have been worked out under conditions somewhat similar in many respects to those which prevail in Canada. Throughout the preparation of the parts of the Report that deal with courses of study, that aim has constantly been kept in mind.

THE EXPERIENCE OF MUNICH.

The case in which the most careful investigation was made of the results of experience in Courses of Study for Continuation Industrial Schools was that at Munich. In consequence, the courses of study in detail for two types of classes, viz. Schools for Machine and Metal Workers and Schools for the Building Trades, have been presented in full in the Report on Germany. A brief summary of what has been done there is presented in the two following paragraphs.

In Vocational Education an attempt is being made generally to use practical training in close relation to the occupation as the first form of instruction, and afterwards to use text-books to supplement that. The interest and goodwill of the pupils are aroused and maintained by this means better than by exclusive or predominating use of text-books at the beginning.

At Munich the Courses of Study for the Continuation Classes were practically re-cast into their present form, which was adopted in 1910. The Courses of Study which had been followed up to that time were given thorough examination and discussion by all the teachers and instructors of the different industrial schools. Experience as to the fitness of the Courses of Study had been obtained during the previous nine years. Forty-six of these conferences were held under the supervision of School Inspector Schmid, under whose immediate charge was this part of the school work, of Munich. The Courses of Study were then submitted to and studied in forty-six further conferences under the immediate supervision of Dr. Kerschensteiner. In these conferences the masters and journeymen of all the individual trades took part, and School Inspector Schmid and the Directors and heads of departments of the various industrial schools were present. Out of the fulness of discussion thus carried on, the present Courses of Study were shaped, and they have the approval of teachers, employers and employees.

From all the Commission could learn, the general verdict in Germany agreed with that of Munich, viz., that Courses of Study which did not have a direct bearing upon, and an easily recognized connection with and value to, the occupations of the pupils did not accomplish what was expected of them.

INSTANCES FROM MASSACHUSETTS.

An illustration of this principle is to be found in the statements of the experience of the Principal of the Industrial School at Worcester, Mass. He found an unwillingness on the part of the men to come for any Course unless it had to them a definite and direct bearing on their occupation. In this connection the experience of the teacher of Mathematics at the Co-operative High School at Fitchburg, Mass., may be cited. He was a graduate of McGill University. During the week in which the pupils attended his classes, he taught the Mathematics which had a direct bearing upon processes with which the pupils were concerned at that particular time in the shops where they worked. That was done regardless of the sequence of the parts of the subjects in the text books. Then during the last, that is the fourth, year of the Course, he reviewed the subject as a whole and correlated with the students the different parts which might have been overlooked under the method which he followed in giving the pupils practice in arithmetic which affected their interests at the particular time.

STATEMENT BY THE NATIONAL EDUCATION ASSOCIATION.

On the question of the organization of subject-matter and Courses the National Education Association presented its conclusions in its Report on the

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Place of Industries in Public Education. The following extracts from that Report present the case with such clearness and comprehensiveness that they are introduced here.

ORGANIZATION OF SUBJECT-MATTER.—It has already been made clear that the character of the subject-matter will vary according to predominant industries for which preparation is being made, and therefore according to locality. Under the discussion of the main groups or related industries, suggestions were tentatively made as to organization of subject-matter. The following summaries, though involving some repetition, are submitted for the sake of further clearness:

A. Concrete work.—Recalling that by this is meant all work with materials in a manipulative way, including analysis of machines, the following principles seem valid:

1. The concrete work should result in products which are usable and under favorable conditions salable. It will be noted that this principle is opposed to the one commonly employed in technical and manual training, where the emphasis is on the exercise, or isolated-type exercise. It is true that in some successful industrial education today, only exercises are dealt with; but almost without exception these schools have highly selected groups of workers. There appear to be strong pedagogic reasons for the acceptance of the above principle in the case of youths from fourteen to sixteen who are finding themselves in an industrial sense.

2. While in the earlier stages of industrial-arts training, attention will be given largely to quality of output, there will be stages in the course when, through actual experience, the significance of quantity should become understood. That is, commercial conditions should be sufficiently reproduced that an abiding appreciation of the importance of rate of work shall be developed. Some schools producing usable products accomplish this by keeping an account of each worker's contribution, and a computation of its probable or actual market value.

B. Technical work.—Already emphasis has been laid on the pedagogical desirability of having technical work—mathematics, drawing and art, sciences, laboratory manipulation, and even English on the formal or expressive side—grow out of and manifest its relations to the concrete work, in the intermediate stages of industrial-arts training. If this point of view is correct, it is evident that we may expect the evolution of more than one kind of shop mathematics, shop chemistry, shop study of physics, etc. The development of this principle will be persistently opposed by those who believe that the pedagogical order toward mastery is through the subject studied first in its pure form. From this point of view, mathematics must be studied as pure algebra, geometry, etc., first, then its applications; a course in general chemistry must precede applied chemistry in dyeing, foodstuffs, etc.

Experience thus far seems to demonstrate that when the available time of pupils here under consideration is taken into account, as well as the importance of securing vital interest in such studies the most effective method of approach in the technical studies is along the lines of their application, with comparatively short periods of time devoted to the study of pure forms.

There can be little doubt that all vocational education is today, in this respect, affected by certain generalizations which emanate from the trade schools connected with wood and iron work. Mechanical drawing, for example, figures largely in these industries, at least so far as the ability to interpret drawing is concerned; but there may be entire groups of industries in which mechanical drawing has little or no place as a vocational subject. Similarly with regard to certain sciences; chemistry may be of most fundamental importance in some groups of industries, and quite superfluous in others.

C. General vocational studies.—Around each group of industries may be gathered historical, geographical, economic, and sociological materials which, while not conferring immediate efficiency, do undoubtedly give vocational intelligence and vocational ideals. The evolution of any industry, or group of industries, may be studied (history); the present distribution of such industry over the world, the varying conditions found, the new movement in its sources, its materials, its machinery, its social importance, etc. (geography); rates of compensation, union conditions, relations between employees and employers, competition, effects of immigration, industrial hygiene, etc. (economic)—all these may be made appropriate objects of reading and study. To this group may be added, in certain lines, studies in the kind of English which has vocational significance.

The above program does not preclude the development in these schools of studies that frankly have no vocational significance. English literature, music, art, history, science, may, if time permits, be studied as cultural subjects, as resources against time of leisure, or, as sometimes denominated, avocational subjects. When we have once settled the program of vocational studies, we may find time to introduce others which are thus frankly non-vocational. Under this head might be placed social or civic studies which contribute to the making of the useful citizen. But for the present it seems that civic studies, sufficient for the type of youth here under consideration, can best be given in connection with vocational pursuits themselves, and hence in the division "general vocational studies."

SECTION 3: THE INFLUENCE OF TEXT-BOOKS AND EXAMINATIONS.

RIGHT AND WRONG USE OF TEXT-BOOKS.

The practice of using a text-book to get up a subject in such a way as to be able to pass a written examination on questions based upon the statements contained in it is of doubtful value. Later on in life the student may be able to avail himself of some of the information thus acquired, but the injury to the student comes from getting him into the habit of supposing that because he knows what is said about the subject in the book, he has a real knowledge of it and ability to manage processes or solve problems. Text-books have the greatest value when they are used to supplement knowledge and ability gained by the student from his observation, experiments and experience. They supplement the comparatively small amount of knowledge which any young person can acquire by his own observation and work.

Text-books are also useful as supplementary for the student who can interpret what is stated in them by the increasing amount of knowledge which he has made his own through his experience. Text-books also render valuable service in putting before the student a model for arrangement in presenting a subject or in making a report upon what he has done.

BOOKS FOR CORRESPONDENCE-STUDY COURSES.

In the testimony offered to the Commission during its enquiry in Canada, much favorable comment was made on the character of the text-books prepared for the International Correspondence Schools, with headquarters at Scranton, Pa. The favorable comment was usually based on the fact that the arrangement of the subject-matter was mainly in the order of the usual progress of the learner of a trade in acquiring ability in that trade. The plan of preparation in the main was reported to be as follows:—When a course was to be offered on a particular subject or branch of work, special writers prepared text-books. These were not constructed in such a way as to present the subject as a whole, in the order of its logical sequence of treatment, for the purpose of giving a full knowledge of such a subject as botany, mechanics, chemistry, etc. The matter was arranged in the order in which it would be come to, or be required by, the worker in learning or carrying on his occupation.

VALUE OF PERSONAL EFFORT BY PUPIL.

The work undertaken by the student and the spirit in which it is undertaken are of the first importance. These depend a good deal upon the teacher. The teacher is the prime factor in the school when he arranges conditions and directs efforts for the natural growth in power and knowledge by the pupil. The growth

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comes from the effort the pupil puts forth and not from the work done by the teacher for him. The text-book implies a passive and receptive attitude of mind, which should be followed by active, expressive, constructive effort. Text-books, appliances, apparatus, machines, tools and materials should all minister to the mental and physical activity of the pupil in acquiring ability, good habits and good will. He can apply his efforts to more advantage when the courses, the text-books and the equipment are all of the right sort. However, a multiplicity of equipment all arranged, materials ready for use and lesson in the text-book duly designated, may prevent the student from exercising that measure of judgment, comparison and initiative which are all-important in Industrial Training and Technical Education.

THE INFLUENCE OF EXAMINATIONS.

In classes and schools of Industrial Training and Technical Education it is necessary to get away from the established traditions as to the value of examinations. Courses of Study have been often framed directly for the purpose of enabling a student to pass a certain examination, appointed or dominated by some higher or different education authority which exists for a purpose other than the training of the bulk of the students in the lower schools for their life work.

POWER TO REMEMBER VS. POWER TO DO.

The kinds of examinations which have been set, as a rule, have been framed and used chiefly to test the knowledge of the candidate in respect to what he remembers of what he has read or been told. An examination which, in the major part, is a test of the memory of the student for information which he has accepted wholly on authority, is a poor means of discovering or determining the ability of the pupil to go on, or the amount of real knowledge he has acquired, or the power which he has developed by his previous education.

In Germany the plan usually followed is to require successful attendance for a given length of time at a school of a certain kind. The fact that the pupil attended such a school and took the courses to the satisfaction of the teacher is the best evidence of his having attained a certain amount of knowledge, intelligence and ability in regard to the subjects taught there. It is also evidence of the ground he has covered in regard to the subjects.

When the examination is chiefly a test of memory, the state of health of the candidate at the particular time has a good deal to do with the way in which he handles the questions. The making the most of the knowledge one has, and the power one has at examination time, is also to a large extent a question of temperament. Some candidates are so much disturbed by the prospect of an examination and examination conditions that they do not do themselves justice. In this connection it might be said that the temperament which lets a candidate become unfitted under special circumstances of examination would also do the same thing for him in practical life. However, if that be the case,

the inference should be that he needs training to remedy the defect, and he may be abundantly ready to receive the training although failure in the examination might prevent him being accepted as a pupil.

THE OPINION OF DR. PUTMAN.

The following are extracts from a communication from Dr. J. H. Putman, Inspector of Public Schools, to the Public School Board of Ottawa and the teachers.

The system of making promotions depend on a formal written examination encourages cramming, excessive memorizing, and superficial teaching at the expense of the development of power. It tends to throw on the examination a responsibility which should rest on the teacher—the responsibility of promoting her class, defectives and irregular attendants excepted. It makes a snap judgment, expressed in marks and percentages, and on which a year of the child's life depends, of more value in estimating the child's powers than the teacher's intimate knowledge of him. It exposes the child to the whims of examiners—both of those who set the papers and of those who examine them—and to the injustice of having to undergo this test when he may be unwell or in a state of excitement, and fright amounting sometimes almost to panic. It tends to shift the centre of gravity of the school away from teaching and conduct—its legitimate fields of action—to a preparation for examinations, at best a minor or merely incidental part of the work of the school.

Three of the important suggestions to teachers by Inspector Putman are:

"That a pupil's fitness for promotion should be decided mainly by the teacher's estimate of him as formed from his daily work in the class and from the results of the written tests given from time to time.

"That the pupil's age should always be considered, and the older he is, the greater is his claim for promotion.

"That any written tests given be given without notice to pupils, and at such intervals that no whole day or week be set apart for examination purposes."

RECOGNITION OF INTELLECTUAL DEVELOPMENT THROUGH WORK.

When the requirement of previous experience in practical work is laid down, it is evidently for the purpose of ensuring that the student has, in the development of power to do things, acquired for the purposes of his further education an equivalent of such knowledge as he would obtain from books and from reading for the purpose of going on to the study of language or literature or history, or some other book subject. The fact that a student has had prolonged mental training on subjects or problems or work, gives him a certain capacity and qualification for taking up new subjects or new kinds of work, as well as for going on with the old ones.

It is not suggested that examinations have no place or use in connection with admissions to classes or schools for Industrial Training and Technical Education, or have no value in the course of the student's progress after he has been admitted. But what is to be guarded against is the menace of examinations in so far as they direct the attention of the pupil and the school to seek first a successful pass, in the fond hope that other things will be added. A valid use of examinations for admission to any class or school should take cog-

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nizance of the following: (1) that the pupil shall be old enough to be at a stage of growth and intellectual development and bodily strength which will enable him to profit by the courses and the training which the class or school offers; (2) that he shall have sufficient knowledge, training and experience to be able to take up and go on with the course and its work without undue loss of time; (3) that he shall, in respect of his content of knowledge, mentality and method of work, be on nearly the same level as the others in the class.

SECTION 4: METHODS OF INSTRUCTION.

No matter how the Course of Study may be arranged or what subjects may be included in it, the methods of instruction that can be employed to advantage depend upon the particular object to be accomplished through the work to be done. The kind of work to be done will depend upon the trade, occupation or career for which the student is being prepared.

In the different schools of the several countries visited the method or methods of instruction may be said to follow one of two general lines, or to follow both, with sometimes more stress or emphasis upon the one than the other. On the one line the chief effort is directed to the acquisition of knowledge concerning the principles and theories that are connected with the trade or occupation; on the other the main part of the attention is given to gaining a wider knowledge of, and a great skill in, the use of materials, tools and machines. In many cases the time of the pupil is divided between these two, and because of that division there is increased progress along both.

In the kind of Industrial Training and Technical Education which follows immediately after the Elementary School, the general opinion seems to be that pupils make more progress and get more real benefit when they receive instruction in theory close in point of time to the practical work, whereby the theories may be put to the proof or put into practice, and whereby principles may be illustrated or demonstrated.

MAINTAINING THE INTEREST OF PUPILS.

Any method to be successful must be able to enlist and retain the interest of the pupil. The mood of mind in which the pupil comes to his work, as well as the spirit in which he carries it on, has much to do with the good he gets out of it and with the progress he makes in ability to turn out good work.

The gulf between memorized information and real knowledge is both deep and wide. For example, dramatic representation by a pupil of the information acquired often turns it into real knowledge. Among the things which young people instinctively desire to do is to act, in the dramatic sense. The use of that method of instruction in Industrial Training and Technical Education is practicable, in spirit if not in form, when the pupils observe and participate in some action or series of actions with any dramatic quality in them, even in the use of materials.

It has been said that a poor method in the hands of a good teacher is better than a good method with a poor teacher. Like some other rotund sayings, that does not convey a statement of much, if any, ascertained truth.

One of the essential qualifications of a teacher is ability to give such a setting to the activity of the pupil, and such direction to the work, that his interest will be awakened and sustained. Sometimes it becomes necessary for the teacher to supplement the formal method of instruction by the personal touch that arouses and sustains the interest. It is better when the kind of work to be done, as arranged for by the teacher, is in itself sufficient to awaken, sustain and increase the interest of the pupil.

The continuation of interest depends upon the recognition of a definite purpose by the student. Purposive work, especially if the object is one greatly desired by the pupil himself, is the kind that has highest educational value. In the judgment of educators that applies from the earliest years onward.

TOWARDS KNOWLEDGE, ABILITY AND HABITS.

Another point of importance is that the method or methods followed should be such as enable the student to use as much of his previous knowledge and skill as practicable. Growth in knowledge proceeds from the known to the unknown, and the teacher will nourish best who bears that in mind.

The methods should also be adapted to the development of the particular kind of knowledge, intelligence, skill and managing ability which will be called for in the occupation of the pupil. It is not known that ability to do one thing well implies that that ability will flow over and be available to the student to do other things of a different sort also well.

The methods followed should have regard also to the formation of habits as well as to the development of power to perform acts or a series of acts. It is possible to pursue certain studies under the conscious and compelling direction of authority without advancing the education of the pupil's mind and will.

When habits of the right sort are well formed, some powers of the body, mind and spirit are thereby released for application to other and higher tasks.

THE METHOD OF APPROACH.

Mention has already been made to the effect that an important function of the teacher is to indicate the direction in which the pupil should work and not to give him minute directions as to how he should do the work. The order in which the subject or project is presented to the attention of the pupil may constitute an important part of the method of the teacher. In this connection it is well to bear in mind that the logical sequence, which belongs to a subject when it is being studied by a mature mind, would not be suitable for the presentation of the subject to young persons of very limited range of experience and with mental powers undeveloped. Certainly there have been much waste of time, lack of interest, discontent and disappointment from the teaching of science in schools where the science subject has been presented or studied as

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arranged for by those who had written text-books presenting the subject in its logical sequence without regard to the sequence of growth and power in pupils to understand it. In this connection attention is directed to the memorandum by Dr. Lynde on Methods of Teaching Science (see page 124). The principles enunciated there apply with equal force to methods of training towards efficiency in industrial undertakings and technical knowledge.

Since most teachers teach as they were taught and not as they have been told to teach, it is important that the methods of the teachers who train Instructors for Industrial Training and Technical Education should be of the very best. In Germany and also in England the teachers for the practical workshop side are in most case recruited from those who have been excellent students in the Continuation School or Classes and have had practical experience in the works. When such persons have any aptness for teaching, they adopt the methods which they found to be most helpful from teachers under whom they worked.

Some of the methods which have been found highly successful in teaching and training in Drawing, and which are radically different from those which used to prevail wholly, and still prevail quite generally in Elementary and Secondary Schools, are so fully illustrative of the main features of what was observed and learned by the Commission regarding successful methods of instruction in Industrial Training and Technical Education that an outline of them is presented here.

DRAWING, DESIGN AND ART.

Reference has been made to the apparently marvellous results which were found from the method of teaching Drawing to elementary pupils in a village or rural school at Sompting in England. That is given in somewhat full detail in the Report at page 298. Contrary to ordinary expectation and accepted theory of what is required in teachers generally, the children in the village school learnt to draw well without the supervision or assistance of teachers who were themselves able to draw. The distinguishing features of the lessons there were that the children were directed to apply themselves in observing, obtaining impressions and then representing these impressions in form and colour according to their natural powers. The function of the teacher was to guide the child to criticize its own work and to further direct it to self-effort and self-realization through repeated attempts to make the drawing represent the thing as the pupil saw it and not as the pupil thought the teacher would like to have the picture look.

CLEAR "MENTAL PICTURES" COME FIRST.

Drawing has been regarded as a special subject to be taught by special teachers. The best authorities indicate that power to draw should be cultivated and developed from earliest years and be considered integrally part of Elementary Education in the same class with the arts of Reading, Writing and Computing. When the natural desire and ability to make pictures has been properly culti-

vated and developed it is easy to direct the pupil through such a course as will enable him or her to represent in form or colours what he sees or has seen.

This art in the Elementary and Secondary Schools should be considered first as a useful one for the purpose of communicating and recording impressions and recording images of situations which can be pictured in the mind. The authorities agree that attention should be given chiefly to training the pupil to observe closely and clearly in such a way that the mental image will be true to the thing observed and one that the memory can recall.

Concurrently with that a good deal of practice should be given to enable the pupil to control the instruments or tools by which the drawing is to be produced. That facility can best be acquired by much practice in actual drawing from things observed and then making comparisons of the drawing with the thing itself.

Much instruction or suggestion as to what to look for, what lines to make first, and other matters of technique, had better be left until the pupil has had considerable experience in discovering how nearly he can make his representations on paper look like the things which he has seen. After this practice the pupil will be ready to profit by instruction and training in matters of technique.

The following is taken from a Bulletin published by the Agricultural Education Committee of England, *Nature Knowledge, its Progress and Interpretation*, by Henry Boulton, author of "Nature Study with Brush Work Diagrams."

If the introduction of brushwork means bringing into our schools an ally that will assist us in training the children to observe correctly and to memorize what they see, then I am strongly of opinion that it should have an important place in our scheme of "nature-study," but on one condition—the work of the scholars should be judged not from the standpoint of artistic merit, but from that of accuracy in delineating and colouring those details of the object which the teacher desires to impress on the minds of the pupils. It has been said by some who advocate pattern brush-drawing, that it is too difficult a task for children to copy, in colours, natural objects. Our experience has proved this to be an entirely incorrect statement. If the start is made in Standard V. and upwards with the simplest natural forms—a shoot in Winter or Spring, a leaf in Summer, or a seed pod in Autumn—it will be easy to lead the class by carefully-graduated steps to the more difficult forms. We began last year, in the month of February, by giving about half-a-dozen lessons in "blob" and "line" work, in order to give facility of manipulation with the brush. In March, shoots of the lime with undeveloped buds were handed out, and the results were so encouraging that we arranged to continue the work as a study in bud position. Bud development into leaf, flower and fruit followed; and by the end of June an exhibit of brushwork from natural objects was prepared by the scholars for the Nature-Study Exhibition held in London last year, comprising illustrations of bud position; development of bud into leaf, flower and fruit; bulb and corm development; fruit spurs; fertilization dodges; and stages of insect and aquatic life. Some of the best work was done by girls, who, unlike the boys, had received no previous instruction in drawing. This exhibit was awarded a bronze medal. Lest some may think such results can only be expected under exceptional circumstances, allow me to say, for their encouragement, the staff is only what might be expected in a rural school, and only one has a drawing certificate—that known as the old "D." This should be a sufficient answer to the statement that such exercises are impracticable.

Brushwork, carried out on these lines, will be found to give added interest to the "nature-study." The children will watch more keenly for developments of the objects under observation if they know they may have to copy them; and the act of reproducing the shape and colours will lead to a greater concentration of mental effort on the part of the child.

LITTLE ATTENTION TO TECHNIQUE AT FIRST.

Drawings that are strictly accurate and well finished should not be looked for from beginners. It does not appear to be profitable to spend time in trying to do work perfect in technique, etc., until considerable facility has been developed in making sketches and simple pictures from objects observed. This

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applies also to making drawings for articles to be made by the pupil himself. Stress on accuracy and precision of drawing should come later, after the pupil has ability to easily make a rough sketch with the dimensions marked on it. In actual practice even a workman seldom has occasion to make a drawing that is exact in scale and perfect in detail. A sketch which represents the outline, the relative position of the parts with reasonable clearness, and has the dimensions marked on it leaves the pupil time for other work. If the course is for the purpose of making a finished draughtsman, more care should be devoted to the development of ability in the making of drawings for their own sakes.

The practice in a good many of the European schools is to have pupils make freehand drawings with the dimensions marked on, and afterwards make reasonably accurate drawings to scale with the dimensions marked on.

IT DISCIPLINES THE EYE AND HAND.

While Drawing is fundamental to all industrial training, the use of drawings by workmen is required in only a few occupations or industries. Many skilled craftsmen have almost no occasion to make drawings, and little occasion to read drawings. As for example those engaged in the occupations for the production and preparation of foods, those engaged in the chemical industries, those engaged in the boot and shoe industries, those engaged in the clothing industries, those engaged in the agricultural, mining and fishery industries. Ability to draw well and read drawings easily is of the highest technical value in the machinery trades and the building trades.

However, Drawing should be part of an individual's equipment as Writing is. It has so many uses apart from the application to the particular occupation and it trains the powers of observation so thoroughly that it has a high value as a disciplinary subject. One of the benefits is the making sure by practice of the co-operation of a practised eye and a practised hand. In this sense it is well to bear in mind that perception and expression are not two faculties but one; each is the very counterpart and correlate, each is the very life and soul of the other.

FOR YOUNG CHILDREN.

The authorities with whom the Commission discussed this matter in other countries, and who have most knowledge and experience, believe that Drawing is one of the most valuable elements in the education of even the very young. In only comparatively few schools has it yet been given its due position. It is still regarded by parents and teachers as an extra subject, an educational ornament, accomplishment or luxury, of little practical use except for the few who intend to become artists. On the other hand, where children are given opportunity and guidance towards representing their mental images in Drawing, the lesson is a delight, a discipline and a benefit to pupils and teachers.

While there is a good deal of difference in the aptitudes of different children, practically every child possesses the power to draw, a power that only requires educating to become both useful and delightful.

At Munich the objects sought by the teaching of Drawing in Continuation Classes as described in the lesson plan published in 1910, are as follows:—

The development of the power of obtaining knowledge by means of the eyes, of the power to give expression graphically to this knowledge, the promotion of the habit of observation and of æsthetic feeling. An hour a week is given to drawing in all classes from the first, that is, the lowest, to the fourth; three hours for boys and two for girls in the fifth, sixth, and seventh; and four for boys, and two for girls, in the eighth. Drawing is regarded as having all the importance of many different kinds of language. It is not treated as a separate subject, but as one which is almost as much inter-mixed, as is speech, with other subjects.

Instruction in handwork aims at the development of accurate elementary skill in the use of the hands through the execution of simple work in wood and iron. As far as possible, all the objects which are necessary for the courses of geometry are to be made in the school, and also those which are needed for chemical and physical experiments. For this purpose the class teacher and the giver of technical instruction must take counsel together.

DRAWING IN RELATION TO DESIGN.

In the Kindergarten at Hawick the pupils weaving with the strips of paper were directed to examine the designs they made, to see whether the design or pattern could actually be woven in a loom. When even such young children were doing their plaiting or weaving for the purpose of producing a design which could be repeated in products for sale, their interest was greatly increased and their attention and imagination were led on towards further effort and better work. The utilitarian is not the major motive with children, but it supplies an incentive which should not be overlooked. It supplies an incentive all the stronger to young men and women who are preparing for their vocation.

In the collection of Industrial Art brought by our Commission from Glasgow there is a valuable feature which might easily be introduced into any school, and yet it contains the germ of three separate arts and crafts. It consists of three parts: (1) a simple black pencil drawing on white paper, the subject being a bird; (2) the same outline cut, carved or engraved on the smooth side of a small piece of linoleum; and (3) the reproduction of this cutting or carving in printer's ink on a piece of wrapping paper, the pressure having been made by putting the linoleum "engraving" in an old-style letter-press.

(1) We thus have a drawing or design—the artist keeping constantly in view the fact that his lines are to be copied in carving or engraving, hence must be made simple, strong, expressive. This constant thinking of the material reproduction not only maintains intense practical interest in the young "artist," but it keeps his mind and hand down to the practical industrial problems—adaptation of means to end, cost of material, effectiveness of result.

(2) We have the carved or engraved reproduction of the bird, and the similar holding-down of the engraver to the industrial problems of material, and how to manipulate it so as to produce the effect of light and shade, of line and solid "body" of ink; of depth of cut necessary to produce proper effect.

(3) Finally we have the finished product, involving judgment as to quality, color and thickness of ink; its method of application; the laying on of the paper;

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the pressure required for the printing process, and the peculiar "upside down" appearance of the engraving, which must be held and looked at as is printing type—a reversal of the method of ordinary reading.

A boy who could manage the three stages of this work would have become familiar with the view-point, as well as some of the technical problems, of the designer, the engraver or modeller, and the printer or lithographer. And all this at a cost of a few cents for materials used, and a few dollars for an old letter press.

THE STUDY OF COLOURS.

One point which has impressed the Commission is the great improvement that might be made in the teaching of these subjects and the interest that might be added by the introduction of new material from time to time. For example, the study of the primary colours could and should be undertaken when children are quite young, instead of leaving it to be taken up as a scientific study in the High School, when the children who most need it are not present. The scientific terms need not be used, nor the refinements of "tones" and "tints" dealt with. But nothing could be more fascinating to a child than the display of bright colours; and these, if properly handled, can be used in laying a foundation of taste in house furnishing, in architecture, in gardening, and in all the arts, the so-called "Fine" as well as Industrial arts.

As children learn the seven notes of the musical scale, they may learn the colours of the chromatic scale. A "chord" can be struck with the three primary colours—yellow, red and blue—and the relation of these shown to the present-day art of 3-colour printing by which natural objects can be presented in their true colours and tints, as seen in coloured picture-cards. At almost any printing office it would be possible for teachers to procure specimens of each of these three printings separately; then the result of two—red upon yellow—and finally that of the blue upon both, or the completed product. Passing on from this, the teacher by simple talks and illustrations could show the intermediate colours and their relation to the primary ones.

While dealing with this problem of colours, the children might be shown that though white and black are not "colours," yet they are of great importance in art industries such as printing, lithography, etc., and in drawings for architecture in which they are known as "light" and "shade"; also in drawing in the round, in which the essence of the beauty is the distinction between light and shade.

Dr. Montessori has added much to the value of her didactic material by the introduction of the bobbins of silk threads, of which there are 8 colours and 8 gradations or shades of each. The "game" of distinguishing these and rearranging them, or picking them out from memory after a single "observation", is most exciting and at the same time profitable to the children, who at seven years of age learn to do what would puzzle mature art students and textile workers. Such a collection of fascinating colours could be procured by any school for a few dollars.

BASES OF BEAUTIFUL DESIGNS.

Familiarity with designs which have won for themselves general recognition as being appropriate and beautiful, will enable the student to enjoy good taste, to think along such lines, and ultimately to produce designs with similar characteristics of suitability and beauty for the particular purpose for which they are designed.

Since natural objects, such as flowers, leaves, trees, some birds, and some insects are pleasing to the eyes of nearly all people, Schools of Design usually begin their pupils by letting them draw such objects. After they have acquired some considerable ability in that, the pupils are directed to put the outline of the object in conventional form. The repetition of such conventional forms properly arranged usually results in a well balanced and pleasing design, the fundamental balances and symmetry resting upon qualities which are inherent in the object of nature. Making fantastic contortions of lines does not lead to designs which are acceptable, and does not develop power which can be used as an asset for earning wages or for advancing the good taste of those whom the objects serve.

DRAWING IN RELATION TO ART.

A good deal of confusion exists in the minds of teachers, parents and pupils as to the difference, if any, between Drawing and Art. If Art is taken to be the beautiful expression through material forms of some concept of the mind, then Drawing is an essential for the production of pictures, paintings and sculpture. It is also essential to the profession of architecture. Drawing should not be followed by pupils in schools of Industrial Training and Technical Education for the purpose of qualifying the learner to produce works of Art in the form of pictures or paintings. The exceptional few who have talent in that direction should have opportunities for training in order that they may be able to apply such talent as they possess. No one recommends the teaching of Reading or Writing for the direct object or specific purpose of making orators or writers in the sense of those who produce literature. Reading and Writing are useful arts for the purpose of communicating, recording and acquiring information. The few specially endowed to see best, not merely the material aspect of things but the meaning of things in an ideal and spiritual sense, become the painters, sculptors, writers, poets and dramatists.

THE VALUE OF MODELLING.

The following paragraphs are quoted from "Handwork Instruction for Boys" by Dr. Alwin Pabst:—

Translated from the German by Bertha Reed Coffman, A.M., published by the Manual Arts Press, Peoria, Ill.

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Experience teaches that artistic training cannot be given by means of lessons in the history of Art and by lecturing on works of Art, but above everything else it must be done by attempting to bring the pupil into personal relations with Art. This comes about most surely by his own activity in some field which stands close to Art and which leads finally to Art.

As a matter of course, the significance of Drawing is not depreciated by this fact; instruction in Drawing and practical work complement each other, and whenever the reformers of instruction in Drawing point toward a careful study of nature as the foundation for the entrance into Art, their efforts will be followed by instruction in Modelling, which completes and strengthens the instruction in Drawing.

Instead of solid, genuine work, we find false ostentation, imitation and trash. Not the excellence of work, but its cheapness is the desideratum, and with many people, even in the circles of the educated, the feeling for good workmanship is entirely lost. To acquire this feeling again and to win back Art for the people will be an important task for the future.

Under these circumstances the simplest object of utility becomes a work of Art, as the pictures and wood engravings of the old masters, of Durer, Rembrandt, and many others, show clearly. All of these masters had arisen from handwork. In fact, Art rests absolutely upon handwork. The best artists of the present time have seen this clearly and have turned back to the practice of the pure technique of handwork, so that Goethe's thought now seems to be verified again: "Handwork, which is acquired only in a limited way, must precede all life, all activity, all Art. More culture is gained by learning how to do one thing well than by attaining mediocrity in a hundred pursuits."

Recently, in connection with the efforts towards training in Art, which have already been mentioned, modelling has come more into the foreground. The significance of this in the teaching of Drawing is universally recognized by the reformers in this line of work. However different the kinds of work named may at first appear, yet the same thought lies at the foundation of all, and upon this their significance for education depends: instruction in handwork is to develop and strengthen the talents of perception and observation and make the hand capable of constructing out of given material something which will serve a definite purpose. Instruction in Drawing has the same end in view. But while here the representation executed by the crayon or paint brush must be limited to a flat surface, instruction in handwork has at its command much richer material for representation.

ARTISTIC ONLY WHEN HUMANISTIC.

The humanistic quality of Art teaching, when the best methods are followed, is made much of at the Glasgow School of Art and other schools visited by the Commission. The following passages are transferred from the information obtained in "Conversation" with Mr. Newbery, Director of the Glasgow School:—

"The School aims to make art applicable to industries. The object is to give people good taste and skill and power to apply good taste to the things they make, and to their own occupations. The School starts with the supposition that every boy and girl has an instinctive desire to express himself or herself in terms of Art. The point is to define exactly what is meant by Art. Mr. Newbery starts with the desire of the child to decorate itself, to surround itself with forms which are copies or impressions of what it sees, and he endeavors to make the child observe and study nature, and through this desire of decoration applied to itself or its surroundings to cultivate that side of beauty. It is a very simple proposition—to recognize a certain power which the child possesses, and to deal entirely with that.

"The old idea was that the school-master had so many homeopathic doses of Drawing to compound and count, throwing in stuff of no use to man or beast, and to serve that out to the children. The new idea is that Art students, like anybody else, have certain powers and instincts to be cultivated and directed.

Mr. Newbery said the result had warranted the new point of view, and he believed there were now in the West of Scotland a large number of people teaching Art by endeavoring to develop this instinct in the child and directing its attention to the observation of nature from a purely artistic point of view.

"A rather interesting experiment in educating the public taste is being carried on by Miss Macbeth, an instructress in charge of sewing and embroidery. Director Newbery said that when he was a boy in Dorset, the 'Dorset Smock' with its sewing, and the artistic decorations of the dwellings, were features of that country side. The people who made these smocks never heard of the Art School in their lives, yet they made extremely charming works of Art on traditional lines. So good was their work that when he could get hold of an old smock he bought it for the museum of the Art School as a work of Art relative to the craft.

"In sewing as taught in this School of Art, School Mistresses receive practical illustration of the belief of Art Teachers in the application of Art to the things of daily life. Hitherto they had been doing designs based upon floral forms, etc., now they had evolved a scheme whereby, in the very act of joining two pieces of cloth together, the stitches were so arranged that they formed a kind of decoration, the result being a work of Art.

"It is a step forward if people can be brought to see that Art ensues by simply doing a thing in an artistic way, for they then begin to feel that Art is not something exterior to themselves, or a technique apart from themselves.

"The child is a better artist at the end of the process just described than before, because the Art has developed outwards—which all Art must do."

Mr. C. Hanford Henderson puts the question thus:*

It seems to me that the weakness in the Art Schools lies in focussing their attention so exclusively upon the work. Their redemption will come when they turn to human life and make Art a means instead of an end. The current methods have the same defect that the motive has. They are largely prescribed, systematized, made mechanical and objective. They are not practical and causal, like the methods of the Kindergarten and Sloyd. And the method reaches its extreme chilliness when art students are taught how to teach Art. The defect in method will be remedied when the motive is humanized.

It would not be appropriate or useful in this Section which treats of "Methods of Instruction" to present a summary or review of the Reports on Art Education. Such a statement could only be disappointing as to the meaning and value of Drawing, Design and Art in general education and in Industrial and Art Education. Particulars may be found in the special Chapters or Sections devoted to those subjects.

However, the methods of instruction followed in the Preparatory Art Schools and the Branch Schools of Art at Leeds, shed so much light on the principles which have been discussed that this Section is ended by a statement of them from the official publication.

LEEDS—ART SCHOOLS.

Grade I.

PREPARATORY ART SCHOOLS.

The Course of Instruction in the Preparatory Art Schools is specially designed to give a sound educational groundwork in General Subjects and in Art Study, which shall be based on examples having vitality and interest, so as to stimulate and encourage beginners to further progressive and more advanced Courses of Study.

*"Education and the Larger Life," published by Houghton Mifflin Company: page 153.

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Great importance is attached to the Courses of Instruction in the Preparatory and Branch Art Schools.

These courses are to be regarded as leading up to the more advanced instruction in Art and in the allied crafts given in the Central School of Art. To this end the Course of Study in the Preparatory Art Schools will be so arranged that it may help the student to acquire, at the beginning, that quickness of perception and accuracy of expression which are essential to all successful Art work.

To arrive at this, the student must first be taught to "see" *i.e.*, to understand and correctly estimate the shape and proportions of any form placed in front of him, before he attempts to make a representation of it. The delineation of any form offers no difficulty when once that form has been thoroughly grasped and understood.

A portion of each evening may well be spent in the students judging, by the eye, the relative proportions of lines quickly drawn on the blackboard by the teacher, or of objects placed before the class, the teacher demonstrating the accuracy of their answers by measurement. Constant practice of this kind, and the rigorous suppression of all attempts at measuring before the decision has been arrived at, will soon produce the power to quickly and correctly determine the shape and proportions of even the most complicated form.

The importance of a well-trained memory to an Art worker cannot be too highly emphasized, and students should accustom themselves to draw from memory not only their class studies but also objects (and things) met with in their daily surroundings. They will thus provide themselves with an unfailing storehouse of material which will be of constant use to them in later years.

No lesson should be allowed to close without some remarks by the teacher which will increase the artistic perception and good taste of the students. It must not be forgotten that art exists not to produce useless objects, but to beautify the necessities and surroundings of our everyday existence. This can easily be demonstrated by taking articles of common use, and showing by sketches on the blackboard how the articles might be improved in shape and ornamentation. As regards methods of drawing, students should be encouraged to avoid the use of india-rubber and to practise executing their studies both in line and mass (*i.e.*, by means of pencil or pen or by brush), the aim being to produce free, correct, and intelligent draughtsmanship. All drawings should be made from large diagrams or drawings on the blackboard, or from simple objects or leaf forms. On no account should small copies for individual students be used.

Occasional instruction might with advantage be given in Free Arm Drawing on a large scale with chalk on the blackboard or with charcoal and chalk on brown paper. The students might also assist the teacher in the preparation of the diagrams and illustrations required in the lesson. The application of simple scales as the basis of draughtsman's work is recommended, and simple geometric constructions might be worked and used as the basis for elementary ornamental arrangements of the freehand studies previously drawn. These arrangements may afterwards be tinted with flat washes of colour, the teacher using the exercises as the means of introducing the elementary principles of colour harmony and contrast.

Students will not be allowed to produce works for the adornment of their homes or the delectation of their friends. They will be expected to follow a course of serious study which will serve as the groundwork for their future advancement in Art and its applications to industry.

It is through the lack of this thorough grounding that many students have failed to realise the promise of their early abilities and have found that their want of knowledge of the fundamental principles of Art has seriously hampered them in their career.

Grade II.

BRANCH SCHOOLS OF ART.

The subjects of instruction include:—

- (a) Drawing of common objects in daily use, with concurrent exercises in Memory Drawing.
- (b) Elementary plant form from Nature and its application to elementary design. Geometrical exercises with relation to design. Exercises in lettering with brush and pen.
- (c) Light and shade from casts, etc.
- (d) Elementary modelling in Clay.
- (e) Elementary Woodcarving.

The Course of Instruction is designed to lead directly to the Higher Art Instruction given in the Central School of Art. Its aim, in the first place, is to make the student proficient in the handling of the various methods of artistic expression, *i.e.*, in the flat by line or mass with point brush or stump, and in the round by clay handling, in fact, to equip him with the means of easily and intelligently expressing his artistic intentions in a variety of ways. In the second place it is planned to increase the student's perception of the laws and principles of good Art by bringing before him their occurrence in nature and in ornament. It must not be forgotten that these lessons are to be regarded as means towards an end—the practical application of Art knowledge to industry—consequently the student should be encouraged to constantly compare his work with the productions of manufacturers and to note any special artistic or practical qualities in such productions. It should be pointed out that the principles of his own elementary studies are applied in the manufactured object in a more advanced degree, and that both are founded on the same natural laws.

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No effort is spared to help the student to realize that his work in the Branch School of Art is in direct relationship with the work of the Central School of Art.

This is aided by the arrangement of occasional special exhibitions of advanced art or craft work in the Central School of Art, and by lectures and demonstrations by the principal and teachers of the Central School, at which the students in Branch Schools will be allowed to attend.

Loans of examples of advanced work done by pupils in the Central School are made to the Branch Schools, so that high ideals and a high standard of accomplishment may be constantly before the students. It is hoped by bringing out clearly the connection between the Branch Schools of Art and the Central Schools of Art that students may realize and appreciate the possibilities of advancement in Art Work offered to them, and that by thus securing definition of aim and continuity of purpose distinct benefit may accrue both to the individual and to the city.

SECTION 5: QUALIFICATIONS AND TRAINING OF INDUSTRIAL AND TECHNICAL TEACHERS.

In the organization of Technical Education perhaps the most important consideration and the one of the greatest difficulty is to find a supply of well-trained and competent teachers. The work of the Technical Teacher is to impart a knowledge of the subject which he teaches to his pupils, and for this purpose he must understand not only his subject but also the range and the limitation of the capacity of his pupils and something of their interests. He must also, for many parts of the work, be able to direct the pupil in the practical operations in such a way that he will profit by the experiences.

A point on which there is much discussion and much disagreement is whether Technical Instructors should be persons who have gone through a course of training in the principles and art of teaching and have supplemented that by having gone through a course of instruction in practical industrial work, or whether they should be practical workshop or scientific experts who have taken a short course of training in the art of teaching.

In the teaching of pupils under 14 years of age the trained teacher seems to be required and to have more success than one whose qualification is chiefly that of having skill and mastery in the practical operations, for in elementary work the mechanic is not likely to see the educational side; on the other hand, for pupils over 14 years of age a master of the mechanical or trade side appears to be very necessary. He readily secures the confidence and even the admiration of the pupils by any ability and skill which he is able to show in handling tools and materials.

FROM DR. SEATH'S REPORT.

Before presenting a brief statement of the provisions for the training of teachers which exist in the several countries visited by the Commission, a statement of the question is given from the report by Dr. John Seath, Superintendent of Education for Ontario, on *Education for Industrial Purposes*:—

A. THE QUALIFICATIONS OF THE TEACHERS.

Special necessity for training.

In any scheme of education, the question of the qualifications and training of teachers is a basal one, and it is especially so in the case of industrial and technical education, which, being in

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most respects a specialized form of education, requires teachers specially trained. Without teachers so trained, it would be useless to attempt to put into force programmes of study, be they ever so suitable. In all the European countries I visited, especially in Germany, provision is made for training such teachers, and inducements are offered them to avail themselves of it. Even in these countries, however, this is the part of the organization that often lags behind. Wherever industrial education has proved to be unsuccessful, its failure, I was invariably told, was due chiefly to defects in the teaching.

For Technical High Schools.

For technical high schools we must have technically trained graduates—men who have taken up science and mathematics as well as the shop work from the industrial point of view, and who are pedagogically fit for their work.

For Special Industrial Schools.

For special industrial schools competent workmen of the foremen grade are no doubt available; but, to be efficient instructors, these require special training; and for the complementary sciences, mathematics, and English, specially trained teachers will also be necessary. Most of our workmen do not possess the necessary theoretical knowledge of their trades; their general education is too often defective; and they have, of course, had no pedagogical training.

For General Industrial Schools.

For our general industrial schools in particular, we must have teachers who know and can teach the other subjects of the course, in addition to and in correlation with the drawing and the wood and metal work which have so far been the mainstay of the manual training departments. In this class of school, satisfactory results are best obtained when the related subjects are taught by the same teacher. At this stage he alone can correlate them properly. The department system is, however, often followed; and, when there are a number of teachers on the staff who act together under a strong and watchful principal the system appears to produce good results. But for a good many years the staffs of most of the schools will be small, and it will take time to secure generally an industrial outlook.

Manual Training Teachers not qualified.

For this reason it should be clearly understood that the manual training teacher is not now fully qualified for a position in an industrial school. We need, accordingly, to supplement his present education and to provide for that of the teachers of the technical and special industrial schools. For the former, the summer school would probably suffice; for the latter, ampler provision is indispensable.

IN ENGLAND.

In England the Commission did not learn of any special institutions or series of classes conducted for the purpose of training teachers for Industrial and Technical Education. The Technical Institutions themselves and the Departments of Applied Sciences of Colleges provide instruction for those who may be Principals or chief officers of instruction in the Technical Schools of higher grade. Some of the teachers had also had long and successful experience in practical work in shops or factories.

A sufficient supply of teachers required for Evening Classes is available from the ranks of those who have become successful craftsmen and who have had experience of instruction in Evening Classes themselves, as well as experience in the workshops or drafting offices. The general opinion was that it was highly advantageous, if not entirely necessary, that the teacher on the practical or shop side of the work for Evening Classes should be a successful workman and have a good knowledge of the materials, tools, machines and products of his trade.

AT BARROW-IN-FURNESS.

Mr. George Grace, Principal of the Technical School at Barrow-in-Furness, was good enough to have a conference with the Staff of the School on this subject

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and to furnish the Commission with a brief statement of their opinion in regard to the matter. That was as follows:—

The problem of providing the best kind of teacher for Technical Schools is not one which can be solved by one method alone. The subjects usually taken in these schools vary so much in their nature and in the kind of qualification necessary for their successful exposition that it is advisable to consider the problem under at least two heads.

A. Certain subjects, of which Mathematics is the most important, require clear thinking and thorough methods of teaching rather than extensive technical knowledge, and generally the best teachers are those who have been trained to the teaching profession but whose tastes lead them to take an interest in the industrial applications of their subject.

The only assistance needed by these teachers is in the collection of the right type of examples needed for Technical purposes and occasional assistance by some one with fuller technical knowledge.

B. Other subjects, such as Machine Drawing, Technical Electricity, Building Construction, etc., which deal mainly with Technical knowledge, are best taught by men having considerable experience.

This is especially true of the advanced classes. Even here, however, it is necessary to recognize that successful instruction must be based on the scientific principles underlying the subject, and it is essential that the teacher should have a thorough grasp of these as well as of the empirical knowledge to be gained in the shop.

Very few of these men are likely to make successful teachers without some training in teaching method. Where possible, they should spend some time working under an experienced teacher who should hear the lessons given by them and have authority to criticize or suggest improvement in method.

To take men straight from shop work and let them commence teaching without some training is likely in most cases to end in disaster.

At the same time, it must be borne in mind that there are exceptional cases where men seem to have the ability to teach well without any such training.

Also, that more skilled teaching is necessary for elementary students than for those more advanced, and that a man with the requisite technical knowledge may make a good teacher for advanced classes who might be unsuitable for a class of beginners in the same subject.

IN SCOTLAND.

In Scotland the teachers for Continuation Classes are, in many cases, the teachers from the ordinary schools who have taken short courses or otherwise qualified themselves specially for carrying on work in Evening Classes. In Edinburgh, where the proportion of teachers is 122 Professional teachers to 299 Instructors who follow other occupations, the School Board has provided short courses of lectures and demonstrations of methods of teaching to help to qualify the practical instructors to present their subjects in the manner most suitable for the pupils.

IN GERMANY.

In Germany the teachers for the Continuation Classes are drawn from two sources: from the ranks of the Professional Teachers in the Elementary and Secondary Schools and from the ranks of those who are engaged in practical industrial occupations. Among the latter are many who have had the advantage of prolonged education during the time they were serving as apprentices and often for several years after their apprenticeships were completed. When persons who have taken such courses have aptness to teach and an inclination towards teaching they are among the best of Instructors.

The trend of practice in Germany is towards the teacher in the Continuation Classes and in other Industrial and Technical Institutions who devotes his whole

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time to such work. At the same time it is held to be important that such a teacher should himself be a master of the particular trade, course or occupation from which the pupils in his particular class or classes come. The ability to do the work of the trade well is esteemed of no less importance than adequate knowledge and ability to explain the nature of principles and their application.

There is no short cut by which a sufficient body of competent teachers for Industrial Education for all the industries and for all the people in the various levels of service can be obtained. Perhaps the best course of preparation is one whereby the teacher or the prospective teacher, during the whole period of education from the Elementary Classes onward, has been taught the subjects and work which he will be required to teach, and has been taught by such methods and in such a way as he would be expected to teach. Many persons will rely upon the recollection of how they were taught to a greater extent than they will depend on their own ability to translate into practice the principles of teaching according to which they were told to teach.

Until that condition had been reached, and it has now been reached in Germany which is abundantly rich in such persons, it was necessary to make special provisions for the training of teachers for Industrial and Technical Schools. Scholarships were provided to secure enough persons to take the particular courses provided.

SPECIAL COURSES PROVIDED.

Among the best of these were the Courses provided at Carlsruhe in Baden. Students from the adjoining State of Wurttemberg were, under certain arrangements, permitted to participate in those classes. (See Report on Germany.)

The authorities in several cities are either conducting or planning to establish a Special Course for Vocational teachers which will give teachers in training one year after their ordinary Normal Course is completed. Chemnitz is one of the cities where that is in progress.

Director Goepfert, at Chemnitz, said he preferred the teacher who had had long practical experience, plus some pedagogic training, to the academic teacher with little or no practical experience.

At several of the schools visited all, or nearly all, the teachers had been teachers in the Elementary School with a year or more of practical experience in industry.

Frequently special departments were directed by men of the highest eminence in their professions who were left free to undertake commissions outside the duties of the school. For example, in one city the professor of Architecture was also advisor to the City Council and the designer of many new buildings which were being erected in the city. In the Art Departments in the Central Institutions in Glasgow and elsewhere the Instructors are encouraged to engage in professional work outside their classroom or school duties. That is done in order that they may be kept in touch with the practical side of progress.

PROFESSIONAL TEACHERS AND HANDICRAFTSMEN.

The regular vocations or occupations of persons, who were employed as teachers in the Continuation Schools of Prussia in the year 1908, may be indicated as follows:—

In the Industrial Continuation Schools:

Professional Teachers.....	12,068
Handicraftsmen and others.....	1,978

In the Commercial Continuation Schools:

Professional Teachers.....	2,287
Handicraftsmen and others.....	191

In the schools of the Guilds and Unions:

Professional Teachers.....	469
Handicraftsmen and others.....	920

The regular vocations or occupations of the persons who were employed in the Industrial Continuation Schools of Bavaria were:

Professional Teachers.....	2,271
Handicraftsmen and others.....	541

These may be compared with the proportions in the Continuation Classes in the City of Edinburgh, which are as follows:

Professional Certificated Teachers.....	122
Handicraftsmen and others.....	299

It will be observed that the ratio in Edinburgh comes somewhat close to the ratio in the Schools of the Guilds and Unions in Prussia.

FURTHER PROVISIONS IN PRUSSIA.

Since the visit of the Commission to Germany a circular has been issued by the Ministry, to the Presidents of all the Provinces included in the Kingdom of Prussia, setting forth that it was intended to institute a course of training for teachers in Industrial Continuation Schools, beginning in 1913. The course is to be held in Berlin, will last one year and will be terminated with an examination.

The subjects taught will include Pedagogy, with special reference to the organization and methods of instruction in Continuation Schools, knowledge of Business Methods, Citizenship, and the elements of Technical Drawing. Admission to the course will be limited to:—

(1) Engineers and artisans who have received a good general education and have done at least three years' practical work. Preference will be given to those who have already taught in a Continuation School. A knowledge of foreign languages will not be required, but credit will be given for a thorough mastery of the German language, Literature, and History, as well as some acquaintance with the economic and artistic questions of the day.

(2.) Teachers who have already passed the second professional examination and who have studied some industrial or technical subject, and have some experience in a Continuation School. This latter condition may be waived in

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special cases. Preference will be given to candidates who have had practical experience in some branch of industry.

(3.) Other persons of a good general education who have already taught in a Continuation School and have done practical work.

Candidates for admission to the course must be not less than 24 nor more than 35 years of age. The fee for the course is 60 marks; this may be remitted in necessitous cases, or a scholarship may be granted where this has not already been done by the locality from which the candidate comes.

As the number of places for the course of training is limited, the passing of the entrance examination will not necessarily admit to the course, but candidates will be chosen according to the place taken by them and according to the date of application. Those who pass, but for whom there is not room, will be allowed to enter later without again taking the entrance examination.

IN THE UNITED STATES.

A course intended to fit Elementary Teachers for teaching the industrial work in the Trade Preparatory or Pre-vocational Schools has been begun in connection with the State Normal School at Fitchburg, Mass. Six months of Method Work is provided in all subjects taught below High School Grade, with opportunities for observation in all the grades.

Four afternoons a week are devoted to various forms of Industrial Work and to directing small groups of pupils from 11 to 13 at this work. In the first year the attention is devoted to mechanical drawing, the writing of specifications, estimating costs, science subjects, study of the common applications of power to industrial work; psychology, child study, pedagogy, and the history of education are taken in connection with those. During the second year course the teacher in training is given an opportunity to gain some experience and to test his ability in teaching, management, etc., by taking full charge of a classroom for 14 weeks—six hours a day, five days a week.

Provision was being made at the time of the visit of the Commission to Teachers' College, Columbia University, New York, for special classes for the training of teachers. The work in both of these places is so new, however, that no information can be obtained as yet as to the success of the efforts made.

OPINIONS OF LEADERS IN INDUSTRIAL EDUCATION.

The opinion of Mr. David Snedden, Commissioner of Education for Massachusetts:

We have reached a stage in the development of vocational education for boys when the greatest single handicap is the absence of administrators qualified to organize such education and of teachers trained to carry it on.

Not long ago we imagined that any teacher could get results in a vocational school. Now we know by sad experience that only men who have themselves had successful shop experience can be efficient teachers of vocations to boys.

Men having only the equipment given by Technical Schools cannot as a rule successfully teach machine shop practice, electrical working, plumbing or printing. All these lack something which only experience in productive work can give. But the mechanic, merely as a mechanic,

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is not necessarily a teacher. Teaching ability is sometimes a gift, but more commonly it is in some part a product of experience and training in the art of teaching. Our Vocational Schools, it is now clear, must be taught by persons whose first qualification is to be found in their mastery of a craft and who have somewhere added to this some mastery of the art of directing learners and of imparting knowledge.

The opinion of Mr. Charles R. Allen, Agent for Industrial Education under the Massachusetts State Board of Education:

The most efficient scheme of getting industrial teachers is to take persons who have already secured their trade experience by entering the industry and working in it for some time without any thought of ever becoming teachers. I believe the person most likely to make a successful industrial school teacher is a person who entered industry fairly young and whose ambition and thoughts have been turned for a number of years to securing the mastery of that trade, to securing promotion in that industry and to developing the efficiency and the intelligence which lead toward promotion. A young man, for example, of pleasing personality, who entered an industry at 15 or 16, has worked his way up to a foremanship, and kept his intelligence alive by Correspondence Courses, Evening School Courses and reading, is to my mind the best possible material out of which an effective teacher can be made. If after this period of 8 or 9 years of training he decides that he wishes to enter teaching, a course which will deal most efficiently with him is, I believe, the course most likely to furnish us with efficient teachers.

The opinion of Miss Mary Schenk Woolman, President of the Women's Educational and Industrial Union, Boston:

Adequate teaching in Trade and Vocational Schools for girls requires, in truth, a new kind of teacher with a new kind of preparation. Courses at present in the ordinary normal schools are entirely inadequate to meet the need. The trained Public School teacher cannot successfully teach skilled trades by having solely a short additional training in trade processes, for she knows nothing of workroom and business requirements and is academically predisposed. Neither does trade experience of itself make a good industrial teacher, the difficulties being (1) a narrow view point of the purpose of the training and the method of conducting it, (2) a one-sided and even prejudiced interest in the social, economic, labor, and industrial questions of the day, and (3) an over emphasis on the product rather than on the pupil.

The beginning of a few Trade and Vocational Schools on new lines is making some points clear as to the desirable preparation of the teachers: (1) The training of teachers for Industrial Schools for girls must combine the preparation of broadminded, industrially intelligent women with the experience of the real trade worker; (2) The following subjects should be given—while the list seems formidable the arranging of the work is entirely possible and has been tried already—household arts work, with a background of art and science; health and hygiene; trade academic education; trade-art education; business efficiency and forms for shop organization; practical social, labor, industrial, and economic knowledge; and psychology and pedagogy for a basis of teaching founded on philosophic thought. Accompanying these subjects must be investigations of industries employing women and also of living conditions of working girls under varied circumstances, trade experience in Normal School business shops followed by real work in trade itself, and practice and assistant teaching in Industrial Schools of various kinds.

FOR RURAL SCHOOLS.

This question has been discussed at some length in the chapter on Education for Rural Communities. (See page 285.)

Considerable experience has already been had in Canada as to the value of short courses for the preparation of teachers for the more elementary parts of education which lie on the borderland of Industrial Education. Short courses have been provided in Manual Training, in Nature Study, in School Gardening and in Household Science. Typical of the best of the courses now provided is that at the Macdonald Institute at the Ontario Agricultural College, at Guelph.

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At first under the Macdonald Rural Schools Fund, scholarships were given to a certain number of teachers from each of the five provinces east of the great Lakes which enabled them to take a course of five months at the Macdonald Institute. That work was successful, but it was intended only as an expedient to meet the situation at a few places until pupils coming through Rural Schools and afterwards through High Schools or Academies, when they came to teach, would teach as they were taught.

Later on special instruction was provided in those branches at practically all the Normal Schools in the various Provinces.

However, when all that can be done, in the way of preparation of Professional Teachers for Elementary Rural Schools, has been accomplished there still remains the fact that there are aspects and features of agriculture and housekeeping which the ordinary teacher is not competent to present to the classes from the lack of practical experience. That raises the question whether all the education which has been demanded of the school can be arranged for by the teacher alone.

It belongs to the parents and others to discharge their share of the responsibilities for the education and training of the children in the homes and at work; but as changed conditions are throwing more and more the obligation of education in early life upon the school and the teacher, it appears to be necessary, at least for a time, that the services of the Professional Teacher should be supplemented by assistance from Non-Professional Instructors on the vocational side of the work of the school.

The testimony given to the Commission, in many of the Provinces, indicated a willingness on the part of some of the leading farmers, to devote one or more half days a month, to take children over a farm and give them information in a form which they would understand and which would increase their interest in and ability for rural occupations.

SOME CONCLUSIONS.

There is no short cut by which a sufficient body of teachers for Industrial Education for all the industries and for all the people in the various levels of service can be obtained. Perhaps the best course of preparation is one whereby the teacher or the prospective teacher during the whole period of education from the Elementary Classes onward has been taught the subjects and the work which he will be required to teach and has been taught by such methods and in such a way as he would be expected to teach. Many persons will rely upon the recollection of how they were taught to a greater extent than they will depend on their own ability to translate into practice the principles of teaching according to which they were told to teach.

The Commission is of opinion that the training of persons, who are not professional teachers, for work in Industrial and Technical Schools might be begun and advanced by the following means:—

1. The establishment of classes for Foremen, and other intelligent and highly skilled workmen, should be undertaken for the first object of giving such men

greater qualification for their own occupations. Such classes would primarily be for the benefit of those who attended them. Out of the number of persons who might be expected to attend, doubtless a number would be revealed who would have some natural aptitude for teaching, and who during the following year would be disposed to teach in the Continuation Classes and to teach to some extent after the method by which they themselves had been instructed. To begin these classes it would be necessary to secure the services of a few men who had had successful experience in such work.

2. At the same time inducements should be offered to professional teachers, who already had a knowledge of and a taste for Industrial and Technical work, to spend some time in practical work in workshops or factories similar to those of the place in which they would afterwards teach.

3. By a combination of the two methods in a short time it would be possible to secure a local supply of men competent to conduct Continuation Classes and the Trade Classes in Day Technical Institutes. Men with more systematic and thorough training would be required for the higher places in Technical Institutes and Middle Technical Schools.

SECTION 6: BUILDINGS, EQUIPMENT, MUSEUMS AND LOAN COLLECTIONS.

THE BUILDINGS.

The essentials of a school building are that it should be well lighted, well ventilated, commodious enough for the teachers and pupils and their work, and comfortable in respect of temperature. The requisites of the equipment for instruction are that it shall be serviceable and adequate for the training of the pupils, for illustrating the principles of what they ought to understand, and for encouraging them and stimulating them to do their best. It would be quite impracticable and it would not be likely to be useful to report in detail the character of the buildings or the extent of the equipment found in the Industrial and Technical Schools which were visited. Every school requires a building and equipment to suit the particular needs of the community and the pupils. A good teacher and earnest pupils can make progress without very much equipment although the provision of suitable equipment is most advantageous.

The effect upon pupils of all ages of the appearance of the building, its arrangements, its intrinsic qualities of dignity and beauty and of the placing and use of the equipment are not to be overlooked or neglected. The appropriate housing of a great public interest like education has its effect on public opinion as well as upon the minds of the pupils who attend. One may ask the question whether the maintenance of religious exercises would have been so general and effective throughout the ages if the churches had not been in some cases housed in beautiful and enduring cathedrals.

EXAMPLES OF EQUIPMENT.

A few examples only of what was seen are cited as representative of scores of others which might be mentioned. Nearly all the more recently equipped Municipal Institutes and Technical Schools in England had a liberal provision of equipment to illustrate Mechanics. Miniature and in some cases full-sized apparatus were provided to illustrate the principles of motion and force exerted in such ways as are common in industries. These were not only provided plentifully but were evidently used a great deal.

In one of the Schools of Switzerland an enlarged model of the parts of a sewing machine was used. It could be taken apart and put together again by the pupils, who thereby obtained a clear idea of the mechanism and motions whereby the driving power was applied to the needle and the thread.

In all the textile schools single looms were provided. These could be taken apart and put together again by the pupils. Power weaving looms were used in the same way at the Textile Institute at Lowell, Mass. The pupils by such work gain power in not only the weaving of cloth but in the ability to understand the mechanical operations whereby the warp and woof become fabric to be afterwards finished into cloth.

The taking apart and putting together again of looms and other machines is usually a part of the regular Course of Study at Textile Schools. The making of drawings of the main parts of the machines and showing the relation of one part to another is frequently included in the Course.

At the Mining School at Cowden Beath, Scotland, the equipment included a complete model of the ventilating system of a Coal Mine showing the intake of the fresh air, the circulation through the various levels of the mine and the return.

At the Technikum, at Chemnitz, a steam engine for instruction was specially fitted with valves in such a way as to enable the students to test and record the loss in power and efficiency which would result from leaky valves, leaky packing or other defects such as might arise from prolonged wear or neglect in factory use.

At the Technical High School, at Charlottenburg, specimens of bridges of different designs, completely constructed to scale were provided in the museum. In this institution the models and specimens were in sufficient abundance to fill completely all the rooms of such a Technical School as would provide accommodation for all the work of 200 or more pupils in Canada.

SIMPLICITY AND SUITABILITY.

It is to be borne in mind that care should be taken that the equipment is entirely subordinate to and serviceable to the further growth, development and progress of the pupils. Excessive equipment or an equipment that is arranged to turn out desired results without the exercise of observation, examination, comparison, action, or judgment by the pupil has a tendency to make the pupil himself mechanical. The domination of the mechanical and the material

must be prevented and guarded against at all points if the object of the training and education is to be attained, viz., the development of the capacity and the power of the individual.

Liberal equipment is useful to the younger and less advanced pupils chiefly to illustrate facts and principle. Its chief use for older and more advanced pupils is to give them the wherewithal to work effectively. There is no clear line of demarcation between these two, but the consideration of them will enable those responsible for the equipment of schools and classes to make adequate provision without waste. An example: A witness before the Commission at Truro, Nova Scotia, with long experience as a locomotive engineer, told of teaching firemen and other learners the uses and relations of the various parts of a locomotive engine by a simple model in tin of the main parts which could be easily taken apart.

MUSEUMS AND LOAN COLLECTIONS.

In the Continuation Schools of Germany and also in the Middle Technical Schools for special Industries and the Technical High Schools, very liberal provision is made in the museums for instructional and illustrative materials.

Frequently arrangements are made in connection with some Central Museum, to provide loan collections of its specimens, which are obtainable by other places for limited periods of time. By the organisation of such circulation, practically the whole of the working part of the contents of a museum can be seen at the various branches or smaller places to which these loan collections are sent. The plan is in extensive operation in connection with Art Schools in England. An example may be taken from the Museum of the Embroidery School at Plauen.

AT PLAUE.

Examples of excellent specimens of products, similar to those from the occupations or trades with which the classes or schools are concerned, are purchased from time to time including ancient and modern, local, more distant and foreign. Students are encouraged to study these, with the view to analyzing and understanding their elements of beauty and the qualities that have made them serviceable and attractive.

Students, workmen and superintendents and owners of factories are permitted to borrow specimens to make such examination of them as they may see fit, to make drawings and to use them either for new designs or to reproduce them in modern materials.

The Director of the Museum is encouraged to refresh his collection every year, by the best specimens he can obtain, and relatively to other expenditures, liberal provision is made for this purpose.

AT NUREMBERG.

At Nuremberg courses of popular lectures are given in connection with the Museum. These provide information regarding new inventions likely to prove

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useful for trade purposes. Working men and women attend these in large numbers. Chemical research is pursued in connection with the museum. Students desirous of conducting experiments for research purposes receive gratuitous instruction from the professors. A collection of specifications of patents, carefully tabulated and open to all enquirers, is a special feature of the Museum. The Museum also has a Statistical Department containing a history of all the industries of the State of Bavaria arranged in classes and giving full accounts of all the processes of manufacture. Other details such as the owner may be willing to furnish are represented, such as the number of machines used, trade marks and patents owned, power employed, number of workpeople and annual output.

The Trade Museum at Nuremberg and its work may be taken as illustrative of similar museums in other States.

SOME RECOMMENDATIONS.

The Commission is of opinion,—

1. That there should be adequate equipment of teaching material and illustrative material in connection with all Industrial Training and Technical Education;

2. That in addition to the teaching equipment in the way of materials, instruments, tools, machines, etc., there should be a full collection of products, of designs, of machines, of tools, such as are used or may be used in the businesses that are carried on in the very best way;

3. That collections of such material should be loaned for periods from time to time to smaller places organized in connection with a larger centre for this purpose.

SECTION 7: SCHOLARSHIPS AND FEES.

The Commission is of opinion that where young workers, who are learning a trade, attend a Continuation School for one or two half days per week, it is in the interest and to the profit of the employer that such students should be paid wages for the hours of such attendance, at the same rate as they would receive for working in the shop or factory. The opinions expressed to the Commission by those who employ such apprentices were all to the effect, that the work done by the apprentices during the part of the week spent in the shop was of such a character and that their usefulness was so much increased, that the value of the apprentices to the concern for the whole week was greater when they spent one or two half days of time in a suitable Continuation School, than when they gave their whole time for the week to the work of the shop.

SCHOLARSHIPS.

Scholarships are provided for various purposes. Sometimes they are offered chiefly as incentives to pupils to do their best. They are given as rewards

for attentiveness, diligence and general good conduct and progress. These are frequently won as the result of good verbal memories. The Scholarships themselves usually provide for a sum of money. In case the pupil goes on to a higher institution and attends its classes they sometimes provide for tuition or tuition at reduced rates and sometimes a maintenance allowance. Sometimes they provide for a sum to enable the pupil to travel and observe and investigate conditions in other localities or in other countries.

In Scotland the Scholarships in connection with the Continuation Classes and Technical Education are given to equalize the opportunities to boys and girls and young men and women to take advantage of the instruction and classes provided by public authorities. When a young person has successfully exhausted the opportunities provided in the locality he may obtain a Scholarship sufficient to meet the necessary travelling expenses with some allowance for living expenses. Such a person would be thus put on a level so far as opportunity is concerned with the young people living in the vicinity if the institution or classes where the more advanced work was being carried on. In that way, without making it necessary for the people to subject themselves to any humiliation by proving poverty, all the young people who have ability and perseverance can obtain practically equal opportunities for pursuing their education to the highest extent.

The Scholarships available and paid annually in Scotland now amount to about £149,800, or about \$728,000. The bulk of the sum is awarded as Scholarships in connection with general Secondary and University Education but pupils for Technical Courses are receiving increasing amounts. (For further particulars see Reports on Scotland, Ireland, London, Denmark).

It is not suggested that Scholarships for identical purposes should be given in Canada, but it would seem to be desirable that Scholarships should be provided to equalize opportunities as far as possible, as between those who are within reach of a suitable Industrial or Technical School and those who through circumstances or location are not within reach of it.

The Principal of a school in Berlin said, regarding the grant of Scholarships to pupils who attended that institution: "that he did not know a case where either family, political, or church influence had been used to gain a scholarship for a pupil. The sole grounds of consideration were the needs of the pupil, the merits of the pupil and the aptitude and qualification which he had for profiting from further education such as the Scholarship provided."

CHARGING FEES.

The educational value is the one that receives most attention from educators. In so far as it increases the interest of the pupils it is of benefit to them in the Course. In some cases the fees are returned in full when the student has completed a certain percentage of the possible attendances. The stimulation to accomplish the number of attendances is not necessarily in proportion to the value of the amount to be returned. It is sometimes sought like the merit card for good

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conduct by a scholar, or like the ribbon or decoration of an Order by an older individual in the State, who has not lost his susceptibility to rewards that incite the immature.

The general opinion expressed to the Commission has been that charging fees to those who attend Continuation Classes from 14 to 18 years of age should be followed chiefly for the sake of the effect on the pupils themselves. In many places and cases, notably the Continuation Classes of Scotland, the fees charged to all students seventeen years of age and under are returned when the individuals have made at least 75% of the possible attendances at the classes for which they are enrolled.

In some communities and in connection with some schools the amount of fees collected form an appreciable source of revenue for maintenance. The tendency in the case of Continuation Schools and of all schools for what might be called the handicrafts, and the lower ranks of officials such as foremen in connection with industry, is to either charge no fees or charge such a small amount that it does not bar anyone from attending.

SECTION 8: CORRESPONDENCE STUDY COURSES AND TRAVELLING INSTRUCTORS;

Education by this means has some points of resemblance to the extramural work of Colleges and Universities whereby students are enabled to take a full course leading to a Degree without attending lectures or doing any laboratory work at the institution itself. The course of reading and study having been outlined, the student having done the work submits to examination and, if he passes successfully, obtains his standing.

METHODS OF CORRESPONDENCE SCHOOLS.

The Correspondence Schools took a similar course with students who could not attend Industrial or Technical Classes. The plan in the main was as follows:—When a course was to be offered on a particular subject or branch of work special writers prepared text-books. These text-books were not constructed in such a way as to present the subject in the order of its logical sequence of treatment as a whole. The matter was arranged in the order in which it would come to or be required by the worker in learning his occupation. Then when the student under the Correspondence Course came to any difficulty he was invited to write about it. An expert individual or staff examined his communication and sent him an appropriate answer. The answer was intended not merely to impart the information, but to indicate how the student could go about obtaining the information for himself on that question and similar questions that might arise.

A great many Courses have been provided in the effort to let the sequence of presentation of subject-matter be in somewhat close connection with the

progress which a young person makes in carrying on the particular occupation with which it deals. The principle which underlies this plan is in harmony with the principle which guided Dr. Kerschensteiner of Munich in providing Classes in the Continuation Schools for each important trade.

CORRESPONDENCE FROM STUDENTS THE WEAK POINT.

The testimony given to the Commission, by many men who had taken such Correspondence Courses, was to the effect that they got real good from them; that the Courses were arranged in such a way that they could follow them; and that when they took the trouble to write about a difficulty they always obtained prompt and complete answers. In many cases the students confessed they did not take the trouble to write about a difficulty; and the want of its removal prevented and discouraged them from completing the Course.

Most of the witnesses, who stated that they had taken a Course in a Correspondence School, said they had not completed the Course, but had derived benefit from it sufficient to cause them to say it was well worth while and that they had obtained value for the amount they paid.

When the subject-matter for any Course has been defined and arranged, some progress is within the capacity and power of almost any intelligent worker. However, more advantage and benefit would be derived by most workers if the Correspondence Course could be supplemented by visits or lessons from a Travelling Instructor. Such visits should be timed to occur with not more than one month of interval between them. Such a review as an Instructor could give, and such a survey of what was to come as he could present, would not merely increase the interest of the student but would enable him to do the work much better. Examples of this kind of work are now to be found in Wisconsin, in connection with the Correspondence-Study Courses and Extension Work carried on by the University.

CANVASSING FOR STUDENTS.

One reason for the marvellous expansion of the business of providing Correspondence Courses was the sagacious form of effort to secure students. The usual means of advertising and obtaining publicity were followed. Offices were opened in important centres, managers were appointed who acted as canvassers and personally commended the Courses to the residents and workers in their area. They took a leaf out of the book of the Life Insurance agents, and went after the business. Hundreds of young men, unaware of the Correspondence Schools, and indifferent to any help which might be obtained by such means, were induced by the persistence of the agent to take a Course and give the scheme a trial. Probably the agents received liberal commissions on the amount paid for each Course for which they secured a pupil.

The charges or fees varied according to the nature of the Course taken, usually from \$40 to \$80 for each Course. The payment included the books required, i.e., the books which contained the lessons of the Course, but not all the books which were valuable for supplementary reading.

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FROM DR. SEATH'S REPORT.

The report by Dr. Seath on *Education for Industrial Purposes* contains information regarding Correspondence-Study Courses, particularly by the University of Wisconsin, in terms so nearly similar to the notes and official publications obtained by the Commission that the following passages, including those relating to the University of Wisconsin, are taken from Dr. Seath's report.

THE CORRESPONDENCE-STUDY INDUSTRIAL AND TECHNICAL SCHOOL.

The Scranton Correspondence School, which is controlled by the International Printing Company of that city, with a capital of \$6,000,000, is probably the largest school of the kind in existence. Its advertising literature shows that in October, 1906, its Canadian agencies contributed \$180,000 to the yearly receipts. Most of this must have been collected from the workmen of the Dominion; most of it, also, must have been collected from the workmen of Ontario; and, as the industries of the Dominion are rapidly increasing, the total sum collected must now be much larger than that given above. A half a million of dollars is, I believe, now a moderate estimate, although some put it at a far higher figure. The school is maintained solely for the gain of its stockholders, and, like any other business house, it sends out "salesmen," who canvass the various districts into which the management has divided the United States and Canada, and even far New Zealand, Australia, and South Africa. When a high school inspector I met these salesmen more than once in hotel offices, where they were relating to eagerly listening workmen the advantages of the correspondence school. This company offers for workmen trade courses in drawing, lettering, sign painting, plumbing, heating and ventilation, sheet-metal work, boilermaking and shop and foundry practice; and technical courses in architectural drawing, civil engineering, electrical engineering, mechanical engineering, mining, steam and marine engineering, structural engineering, telegraph and telephone engineering, and textiles.

One of the chief reliances of the school is its list of text-books specially prepared for industrial work. The claim that the list is a good one is well supported. We also must have suitable text-books for all grades of our industrial schools.

The International Typographical School of Printing, at Chicago, is under the direction of the International Typographical Union's Commission on Supplementary Trade Education, and is supported by fees from students and appropriations from the International Typographical Union. The existence of this school under its conditions shows the value the workman attaches to the instruction given. Its object is to counteract the evils of specialization as practised in printing offices. This school is an institution with an educational, not a commercial, aim, and, I may add, is strongly favoured by the American Federation of Labour. In its report of 1909 this federation gives a list of seven other labour organizations that have undertaken a similar extension of education for their members, and takes occasion to commend enthusiastically such "supplemental technical education," and to report that it should be provided at the public expense.

The desirability of schools of this character was first suggested to me by some of the representatives of organized labour in the city of Toronto, and I have found on enquiry a very general desire on the part of labour men that a correspondence school should be provided in Ontario. It certainly appears to be reasonable that, in providing the workman with instruction, his convenience and necessities should be taken into account. Even when we have secured a system of day and evening industrial and technical schools, many will not be able to avail themselves even of the evening classes. There will also be small manufacturing centres—too many I fear—where it will be impossible to maintain evening classes effectively organized or evening classes at all.

CORRESPONDENCE-STUDY SCHOOLS AND THE UNIVERSITY OF WISCONSIN, MADISON.

The University of Wisconsin is a State-supported institution, its main revenue being derived from a two-seventh (2-7) mill tax. In addition to this, however, in recent years appropriations have been made for building and other purposes. The annual appropriation made by the State Legislature, including the tax and special appropriations, amounts to \$1,200,000. Each college of the University has its special staff.

UNIVERSITY EXTENSION DIVISION.

The University Extension Division is one of the co-ordinate colleges. It consists of four departments:

1. *Lecture Instruction Department.* University lectures are available for lecture courses or single lectures, commencement addresses, etc., in a large number of departments.

2. *Debating and Public Discussion Department.* This department issues bulletins, stating questions of live interest, gives affirmative and negative references upon them and lends libraries for preparing debates. Thousands throughout the State in High Schools, School Boards, Town Councils; and farmers' social and women's clubs, etc., have been assisted through this department.

3. *General Information and Welfare Department.* This department serves as the clearing-house for enquiries and for informal dissemination of useful and serviceable knowledge having a direct bearing upon general welfare.

4. *The Correspondence-study Department* is the one in which we are interested. The instruction in it is given in five main divisions as follows:—

- (1) Special Vocational Studies;
- (2) Elementary School Branches;
- (3) High School and Preparatory subjects;
- (4) Special Advance Work;
- (5) Regular University grade of work.

In the foregoing, thirty-five departments of the University are represented. These embrace 206 courses of study, the subjects taken by the correspondence students including nearly all that are offered.

As illustrations of the scope of the work done, I give the details of three of the grouped vocational studies:—

Mechanical Engineering: Mechanical Drafting, Stationary Engineering, Machine Design, Refrigeration, Heating and Ventilation, Power Plants, Gas Power Plants, Steam Engine and Boiler Operation.

Structural Engineering: Structural Designing, Structural Drafting, Bridge Construction, Building Construction, Masonry and Reinforced Concrete.

Electrical Engineering Lighting and Wiring, Car Operation, Electric Railways Telephony, Central Station Operation, Dynamo Running, Power Transmission.

A large percentage of students taking mechanical courses pay fees through orders on their employers, in small monthly instalments, many at the rate of \$2.00 a month and some at less.

CORRESPONDENCE-STUDY DEPARTMENT.

The students in the Correspondence Courses come from the ranks of labourers, apprentices, farmers, skilled mechanics, clerks, salesmen, travelling men,

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stenographers, druggists, bankers, business men, home workers, club women, students, teachers, lawyers, clergymen, doctors, civic officials.

Some of the members of the University Extension Division are appointed for Correspondence-Study work alone and devote their entire time to it. Others divide their time between correspondence and residence instruction. Others again give most of their time to residence and the rest to correspondence instruction. The professors and instructors for any course in correspondence read the recitation papers and give the instruction in these courses. Those who carry on the work in industrial education subjects have by their previous training and experience, special qualifications, not only for teaching these subjects, but even for the production of suitable texts.

LOCAL CLASSES.

In addition to the instruction given through correspondence, professors and instructors from the University make visits to communities in which a group of students are working along the same line and there supplement the correspondence instruction with class-room lectures and individual instruction. In communities where local centres have been developed, the University has provided a staff consisting of a local representative or manager, usually of professorial rank, and instructors in such branches as have a sufficient number of students to warrant special local instructors, and field organizers to present the character of the University extension work to those who may profit by this form of instruction. These local classes meet in the local University head-quarters, in rooms belonging to school boards or public libraries, or in specially appointed class-rooms in a commercial or industrial establishment set apart and equipped by that establishment for University Extension teaching purposes. In one instance the owner of large business interests has supplied well furnished class-rooms and has equipped them with books for the students' use. He has also offered to pay the fees of all employees who complete courses of study.

THE PRESIDENT'S REMEDY FOR DEFECTS.

It is significant of the success of the scheme that of the total number who began work only about 4 per cent. dropped out before completing the course, and those who did so had good and satisfactory reasons. One of the well known defects of the commercial correspondence schools, such as that of Scranton, has been that so many students drop out. This defect President Van Hise realized shortly after the establishment of his University Correspondence School. I quote his words:

The extension movement at the University has developed beyond our most sanguine expectations; indeed has expanded day by day, and I see before it almost limitless opportunity. Correspondence work at the outset followed the model of the commercial correspondence school, but Director L. E. Reber soon saw that there were two defects in that system—the defect that each student was obliged to work by himself, and the defect that he did not come in contact with his teacher. These two handicaps are so great that only a small percentage of those who begin a course of instruction continue to the end. It requires a great deal of stamina for a man, after he has worked nine or ten hours in a shop, to sit down by himself in the evening, study a lesson and

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write a paper; and thus a very large percentage of students in correspondence-study courses have in the past fallen out before the end is reached. To remedy these defects it was suggested that the artisans should be gathered into classes, and meet a teacher. Hence, we have instituted the travelling professor.

But in order to make this more successful, it was necessary to get the co-operation of the merchants and manufacturers. Therefore we came into Milwaukee and presented the case to the merchants and manufacturers of this city. Some of them said, we will give you an opportunity to meet the men in our shops; a number of them offered quarters for class-rooms; and some of them went so far as to say, we will pay the men for the time they are receiving class-room instruction. In Milwaukee at the present time we have more than 1,000 students doing vocational work in twenty different manufactories. Thus, the defects of correspondence work have been remedied, and instead of some ninety-five per cent. dropping out of a course before its completion, less than five per cent do so. Already we are told by the merchants and manufacturers of Milwaukee that the effect of this movement is seen in the increased efficiency of their workmen; that it furnishes them better-trained foremen, and in greater numbers.

ATTITUDE OF THE UNIVERSITY.

Although this department of the University has been in existence only since January, 1907, the registration had grown from 26 on that date to over 3,500. Of the latter number, nearly 2,000 are registered for special vocational studies.

President Van Hise's statement of the attitude of his University on the question of the extension movement for industrial education is well worth quoting; it is that of a State University which recognizes to the full its obligations to the people who support it:—

It is the desire of the University to fill the gap in the training of artisans—to do the work of the trade school until the trade school occupies the field; and when they do so fully, to take the artisans from these schools and make of them broader and better citizens; to give them an opportunity commensurate with their ability such as every citizen should enjoy in a democratic community, in a civilization where we do not recognize that one man is superior to another, and where we hold that the door of opportunity shall be open to all.

Nor is the University of Wisconsin the only University which has adopted an extension scheme. Within the past few years a number of other State Universities, of Chicago, Kansas, Nebraska, and Minnesota; and half-a-dozen others have introduced correspondence-study instruction on a similar basis, although, of course, they have not yet carried it so far.

TRAVELLING INSTRUCTORS.

Travelling Instructors were among the earliest of School-masters; and Canada has some satisfactory experience of their value. The large and important Dairy business was very greatly advanced by the employment of Travelling Instructors who visited the Cheese Factories and Creameries. That work was begun about 1884 by the employment of Professor Arnold, of New York State, by the Dairymen's Association of Western Ontario. It has been gradually extended and improved and has been regarded as so successful and beneficial that there are now over 30 such Instructors employed in the Province of Ontario alone, and about an equal number in the Province of Quebec.

Information in detail is given of the nature of the work of such Travelling Instructors for Rural Communities in the Report on Ireland and in the Chapter on Education for Rural Communities.

Travelling Instructors for Industrial Classes are employed by the University of Wisconsin in connection with its Correspondence-Study Courses and Extension Work.

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Travelling Instructors for specialized industries are employed in England, as for example in the boot and shoe making industry around Northampton.

Travelling Instructors are successfully employed in connection with the courses of the International Correspondence School, as for example in giving instruction in the use of air-brakes on locomotive engines and cars. Specially fitted cars are sent to Divisional points from time to time to be used in connection with the lessons.

SOME RECOMMENDATIONS.

The Commission recommends:—

1. That Correspondence-Study Courses be provided in connection with Provincial or Inter-Provincial Institutions for Industrial Training and Technical Education to serve workers in Industrial, Agricultural and Housekeeping occupations who are out of reach of classes.

2. That Travelling Instructors be arranged for to conduct Industrial Classes at intervals in small places where the population or attendance is not sufficient to engage the whole time of a teacher.

3. The employment of Supervising Instructors to visit small places where Industrial Classes are conducted and to assist any teacher of little experience to make the best of the time of the pupils.

4. That when Correspondence-Study Courses are provided by a Central Institution, Travelling Instructors should be provided to meet, from time to time, those who follow the Correspondence-Study Courses to explain such difficulties as might not be easily removed by correspondence only and to encourage them to complete a Course.

SECTION 9: CONCLUSIONS AND RECOMMENDATIONS.

GENERAL PRINCIPLES.

The Commission is of the opinion that Industrial Training and Technical Education in order to be of greatest benefit to individuals, to industrial development, to localities, to the several Provinces and to the Dominion as a whole, should be organized and maintained in accordance with the following principles:—

1. It should be under Provincial control and regulation.
2. It should receive financial support from individuals, from local authorities, from Provincial Governments and from the Dominion.
3. Provision should be made for active participation in its control, management and direction by individuals in the locality who would represent Industries as employers and employees, Agriculture, Women's Occupations particularly Housekeeping, Business and Organized Education.
4. It should provide educational opportunities for those who have gone to work and also for those who are able to return and to devote their time for

some months or years, as the case may be, to a course or courses of instruction and training.

5. It should make provision to ensure, as far as practicable, equality of opportunity for all preparing for industrial, agricultural and housekeeping occupations and for workers in such occupations.

6. It should be carried on in cordial co-operation with existing systems of education, and in such a way as to have the advantage of the use of existing buildings, equipment and teaching staff so far as these may be suitable and available.

EFFICIENCY BY FREE CO-OPERATION.

Any effort at control, by means of a proportion of members of the administrative body, based upon the relative contributions of money from Provincial and local sources, could not apply advantageously to work of this kind. The end to be sought is the most efficient and economical and suitable education which can be provided; and also the maintenance of local interest and the utilization of as much as possible of the local talent and the further equipment of that talent by the experience which the individuals would gain only by participating in the administration.

An instance: A statement made in this connection by Sir John Struthers, Secretary of the Scottish Education Department, is illustrative of much that came to the attention of the Commission in the countries visited. In substance he said that the Scotch Education Department would rather have a thousand men and women in Scotland thinking and planning and striving to make the courses of study and the education meet the needs of their own communities than have ten thousand implicitly doing what the Department directed.

Experience elsewhere indicates that it will be advantageous to leave the initiative, the control and administration of the general work of the school largely in the hands of the Local Authority. The Central or higher Authority should co-operate by putting at the service of the Local Body the full information which it alone could possess, and the benefit of inspection, counsel and advice by experts whom it only could employ. Supervision and inspection should all be directed to conserving and increasing local interest, and at the same time to maintaining high standards of work in the school, and raising these gradually as the pupils and teachers from experience are able to come up to them

TO FIT IN WITH GENERAL EDUCATION.

In order that there might be the least amount of waste in pupils passing from the Elementary or General Schools into the schools or classes for Industrial Training and Technical Education, and the greatest economy in the use of buildings, plant and competent teachers already in the service of the place, it would appear desirable that the Local Authority administering Industrial and Technical Education should be identical with the Local Authority controlling general education or in close organic association with it. If separate from the other it would

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seem expedient that it should be appointed either wholly by the Local Educational Authority or that at least a majority of its members should be so appointed, and that they should be; persons representing industries as employers and employees, business men, in the rural districts farmers, women who are housekeepers, and educators who have practical knowledge of school administration.

THE LAY ELEMENTS TO BE REPRESENTED.

Experience in all countries indicates that it is highly desirable that the Committee which has control of the Courses should contain representatives of the employers and of the employees actively engaged in or connected with the several occupations for which the students are being prepared or in which they are engaged. The co-operation of these persons who are engaged in industry with the educators or teachers ensures that the Courses of Study provided, and the kind of work to be carried on in the school, will be such as to meet the needs of the industries, the personal requirements of the young people and also conform to the judgment of the workmen who have had experience as to what is most useful to them. Such co-operation also helps to make the work of the school not merely acceptable to the pupils and satisfactory to the parents but also to keep it in accord with the desires and judgment of the men already engaged in the several occupations.

KINDS OF SCHOOLS AND COURSES.

It appears to the Commission desirable that provision should be made to enable all individuals in a community to continue their education for at least some portion of each week, month or year, until the age of 18 years. When it is not practicable for such persons to attend classes, it is desirable that they should be led to follow Correspondence-Study Courses, reading courses and private study, in order that the growth of intellectual interests and the appreciation of social duties might keep pace with the maturing of the body and the progress in mastering some occupation.

The provision of opportunities for the development of individuals and for the training of workers for all the occupations can be accomplished only by gradual development. Only in that way can they become an economical part of the public service which contributes to the industrial, economic, intellectual and social progress of the nation.

EQUALITY OF OPPORTUNITY.

Sometimes an idea prevails that a scheme of education provides equality of opportunity by letting all who desire have access to the same classes. Equality of opportunity, to mean anything real, must have regard to the varying needs, tastes, abilities and after lives of the pupils. To be able to attend schools, whose Courses are provided chiefly for those whose education can be continued until

18 or 20 years of age, does not ensure any sort of equality of preparation for occupation or for living to those who are compelled to leave at 14. Equality of opportunity to enter a school designed to prepare leaders, is not what is needed and is not what is wanted by the parents of most of the children. Equality of opportunity, to be sincere and operative, must offer opportunities of education which will serve the pupils not all the same thing, but will serve them all alike in preparing them for the occupations which they are to follow and the lives which they are to lead.

The problem is to unite in well-ordered Courses of Study what has been proven thoroughly useful in formal education with what has been found really educational in industrial and technical work. The Commission indicates how that may be done in the Chapter VII on Some Provisions in a System of Industrial Training and Technical Education.

STATEMENT OF AIMS.

The aims of Industrial Training and Technical Education are arranged here in an order of importance for the guidance of those who plan the courses and kinds of work to be done:—

1. The preservation of health and the vigour of life.
2. The formation of good habits.
3. The development of the sense of responsibility and duty.
4. *The preparation of the body, mind and spirit for following some useful occupation.*
5. *The cultivation of the mental powers, the acquisition of knowledge and the development of the scientific spirit, with direct reference to the occupation.*
6. The promotion of goodwill and desire and ability to co-operate with others.
7. The maintenance of standards and ideals.
8. As all-inclusive and ultimate, the perfecting of the human spirit, the improvement of the quality of life itself and the betterment of the conditions of labour, leisure and living.

MEANS TOWARDS ATTAINMENT.

The full results of Industrial Training and Technical Education are to be sought through,—

1. The discipline which comes from interest in work and from co-operation with others in educational classes to at least 17 years of age;
2. The conservation of the love of work and of satisfaction in doing it well;
3. The acquisition of technical scientific knowledge, and the development of the scientific spirit;
4. The preservation and strengthening of a spirit of willingness to accept and fill one's place in organized society which implies relative positions and relative degrees of authority.

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The acquisition of mere trade or craft skill is only one of the means which in education can be made helpful for reaching the larger ends. General education also promotes these ends; and there need be no essential difference between the aims of Industrial Training and Technical Education and those of general education. The main distinction is in the narrower field and more direct methods by which Industrial Training and Technical Education seek to provide qualification for the working or earning part of life's activity.

THE GROUND TO BE COVERED.

In the opinion of the Commission, it is important:—

1. That the needs of the individuals for knowledge, ability and skill in their vocations or occupations should be considered in all the courses of study and methods of education which are provided at public expense;
2. That from 12 years of age and onward the general and cultural education may with advantage include adequate vocational education;
3. That, while the ultimate or ideal end should be kept in mind, the immediate effort should be directed to meet successfully the most pressing needs of existing conditions;

4. That the effort should be directed to provide,—

(a) An adequate supply of competent instructors, as well-informed and trained as practicable, to carry on the work which may be attempted;

(b) Courses of study and work in the several classes or institutions which would help the individual workers in connection with their occupations and thereby utilize the interest aroused to keep them in touch with educational effort and influence for development of the more purely mental qualities and moral powers;

(c) Such a system as can be most advantageously connected with the existing systems of education and existing institutions, classes and efforts.

The Commission does not recommend that the effort should be directed mainly to make Industrial Training and Technical Education fit in with the existing systems of education, existing institutions or classes; but rather to secure, as far as practicable, the co-operation of all the educational interests, in order to ensure progress in the most effective way in the shortest time and with the greatest benefit to the pupils.

The Commission would regard it as a misfortune if the aims, systems, institutions, classes or methods of different parts of education should be made to clash with each other. So long as the dominant purpose is to direct them all towards the real benefit of the pupil, of the community and of industry, they converge towards, or radiate from, a common centre and do not lose effectiveness and power by mutual oppositions.

The problem is not to subordinate one part of education to another, but to provide for all parts and kinds. The special aim of Industrial Training and Technical Education should not be permitted to obscure or dominate the whole aim of education, which for the individual is the perfecting of the spirit and the development of all the powers of body and mind.

MUST BE ATTRACTIVE AND ADEQUATE.

One of the first considerations is that the Classes and Courses must be attractive to the young people themselves.

Many different kinds of school work are needed to meet all the requirements of all the young workers. This statement requires to be repeated and again repeated.

The general principles now accepted as essential to the success of Industrial and Technical Continuation Schools are:—

1. That the subject matter of every Course shall be directly related to the real problems of the daily life and occupation of the pupils.
2. That the pupils shall be arranged into classes so that those in one class will have common aims and purposes.
3. That the teachers shall have had practical experience in the occupations dealt with and be skilful in teaching, enthusiastic and sympathetic.
4. That the continuity of Courses shall be maintained for one year at least and where practicable for several years in sequence.
5. That the schools shall be equipped with illustrative and teaching material adequate to meet the practical needs of the pupils and to appeal to their imagination and, so far as possible, to their artistic tastes.
6. That the rooms where the classes are held shall be attractive, comfortable and convenient, that the atmosphere of the place, in an intellectual sense, shall be encouraging and stimulating and that opportunities shall be provided for the right kinds of social intercourse.

TO MEET INDIVIDUAL, INDUSTRIAL AND NATIONAL NEEDS.

The Commission recommends:—

1. That wherever practicable Continuation Classes should be constituted on the basis of identity or similarity of interests on the part of the pupils, rather than on the basis of ages, or academic or literary attainments. The best basis to indicate a similarity of interests is that of the occupation followed. In order that none might be excluded, from their inability to join in such work as constitutes the Course, it is desirable that there should be Preparatory Classes.
2. That the Continuation Classes should provide Courses for the learners in the industrial, agricultural, commercial and housekeeping occupations of the community.
3. That the Courses should be progressive from year to year, and that pupils should be encouraged to attend them for a period of not less than three years.
4. That Continuation Classes should be provided also for workmen and foremen, workwomen and forewomen, to enable them to extend their knowledge and increase their ability and skill for management and planning.

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5. That Schools or Courses should be provided of the grade of Intermediate and Secondary Industrial and Technical Education for those who are able to continue at school for from two to four years after the age for Elementary Education.

6. That Middle Technical Schools or Courses (Industrial, Agricultural and Housekeeping) should be provided for those who are able to return to school for periods of from 3 months to 3 years after having been at work until at least 17 years of age.

7. That Courses of a suitable sort should be provided for highly skilled foremen and managers. These might take the form of Short Courses, lasting from ten days up to one month, according to the needs of the particular industry and locality.

8. That existing institutions of College rank should receive whatever additional financial support may be necessary to enable them to fill their place in a national system of Industrial Training and Technical Education.

SOURCES OF FINANCIAL SUPPORT.

In the establishment and maintenance of Industrial Training and Technical Education in the several countries visited, the proportion of financial support provided by the several authorities was so various that no general statement of a principle can be deduced from the information obtained.

In the case of countries such as England and Scotland, in which substantially the same public authorities share in the control and expense of Industrial Training and Technical Education as carry on the work of general education, the proportion contributed by the Central Authority is sometimes more and sometimes less than in the case of its grants towards the support of general education.

In Germany the Imperial or Federal Government does not contribute towards the maintenance of education or exercise any control in regard to it with the exception of indicating the standard which qualifies those who pass the examination to give only one year instead of two of military service, which qualification can be attained by boys at about their 16th year.

The proportion of the cost provided by the several authorities varies in the different States of the Empire and also in the several cities and sometimes in the one city in the case of each institution or kind of school. In the higher or more expensive forms of Industrial or Technical Instruction the State, being the larger and financially the stronger authority, pays the largest proportion. The reason for that lies in the fact that those who receive the higher forms of Technical Instruction are best qualified to serve the State and advance its interests as a whole rather than those of any particular community.

In the United States public education is provided and maintained by the organized action of communities, county or district areas and the several States. The Federal Government exercises no control over and contributes nothing to the support of general education. In several Acts the Federal Government has

provided substantial financial assistance for the establishment and maintenance of State Colleges of Agriculture and Mechanic Arts.

The United States and Switzerland are the two countries visited by the Commission in which the Federal Government does contribute substantially towards the establishment and maintenance of Industrial Training and Technical Education. In Switzerland the maintenance of general public education is wholly a question for the Communes and Cantons, although the Federal Authority has begun in recent years to give grants for the maintenance of general education in needy localities. The Federal Government or Bund gives substantial grants for the maintenance of Technical Education and maintains the renowned Polytechnic at Zurich.

CONSIDERATIONS TO BE KEPT IN MIND.

The Commission is of opinion that the following considerations, and others of a minor character, indicate that individuals, Corporations, Associations, Municipalities, the Provinces and the Dominion should co-operate in providing financial support for a system of Industrial Training and Technical Education for Canada. The Commission has endeavored to outline a plan whereby that may be done, with advantage to all interests concerned and injury to none, in Chapter VII: A Development Policy for Canada. The considerations referred to above are as follows:—

1. Since Industrial Training and Technical Education have everywhere proved advantageous, and advantageous only, to the community and the nation, it follows as expedient and proper that the State and the community should assist in providing the means of such education. Moreover, since such education is of immediate benefit to the individual it may be claimed that the individual or his parents should meet part of the expense. However, the interests of the community and the Province predominate so much that, in order to prevent any disability which the charging of relatively high fees might impose, Public Elementary and Secondary Education is substantially free to the individual. There are exceptions, but the trend is in the direction of the school, without fees, maintained by the public funds. Although some of the Universities and Colleges charge high fees, in their case a considerable share of the total cost of education is provided either by grants from the Provincial Governments, revenues from endowments or contributions from philanthropic sources.

2. The incidence of the charge, for the cost of schools, should have regard to the ability to pay as well as to the advantage that will result from the education. This principle should be applied in seeking a basis which would be equitable, from which to obtain revenues to maintain Industrial Training and Technical Education. It may be assumed that the fees should not be considered as a main or important source of revenue, but should be rather for the sake of the effect on the attitude, earnestness and regularity of attendance of the pupils.

3. The cities derive the most immediate benefit from the maintenance of Industrial Training and Technical Education and are financially better able

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to support it than the small communities in towns and villages and in rural districts. For both reasons a larger proportion of the total cost of Industrial Training and Technical Education might and should be borne by cities than by the smaller towns and rural communities.

4. The industrial efficiency of the individual worker is of value not merely to himself, to the particular trade at which he works, to the community in which he lives, but also to the nation as a whole. Moreover, the facilities for travel and the frequent change of residence indicate that, while the individual would obtain the benefit of Industrial Training and Technical Education in one locality, he might follow his occupation in another that might be far distant. That would be the more common and likely because of the large and rapid growth and development of Canada.

5. The very considerable increase in the population of Canada by immigration is throwing additional burdens for Elementary Education upon the communities and the provinces. The enhanced public revenues, due to growth by immigration, goes in a large measure into the Dominion Exchequer. The increase of the volume of trade brings in larger amounts through the Customs Offices. This would indicate that the new financial responsibility and burdens for Industrial Training and Technical Education, on a scale large enough and generous enough to be available to all the people between the ages of 14 and 18, should be sustained in large measure by funds from the Dominion Government.

6. The work carried on by the Dominion Experimental Farms, while mostly devoted to research work by experiment, is similar to some of the Technical Instruction provided in other countries as a part of the Educational system. The many and valuable bulletins issued, the frequent and useful addresses by members of the Staff at meetings of farmers and others, and the visits of thousands of farmers to the Experimental Farms, are all definitely intended as a means to educate the farmers into a wider knowledge of the systems and methods of farming and the principles which underlie them.

7. The work of the Dairy and Cold Storage Commissioner, the Live Stock Commissioner and the Seed Commissioner are also in very deed educational, although not nominally so.

8. Those institutions and offices, and the activities of the officers themselves, are intended to have educational results affecting the knowledge and ability of the farming community, affecting the methods whereby their work is being carried on, and in general developing the power of the workers through intelligence and increased skill in the management of their business. That they have so affected them is written large on the progress of agriculture, and the education of farmers, during the past quarter of a century.

9. A Dominion Act for the granting of aid for the advancement of Agricultural Instruction in the Provinces was assented to at the session of Parliament 1912-13. Section 3 of that Act (*The Agricultural Instruction Act*) is as follows:

3. For the purpose of aiding and advancing the farming industry by instruction in agriculture, and for the purposes authorized by this Act, the following sums, aggregating ten million dollars, shall be appropriated and paid out of the Consolidated Revenue Fund of Canada during each fiscal

year for the period of ten years beginning with the year ending the thirty-first day of March, one thousand nine hundred and fourteen, namely:—

During the fiscal year ending the thirty-first day of March, one thousand nine hundred and fourteen, the sum of seven hundred thousand dollars;

During the fiscal year ending the thirty-first day of March, one thousand nine hundred and fifteen, the sum of eight hundred thousand dollars;

During the fiscal year ending the thirty-first day of March, one thousand nine hundred and sixteen, the sum of nine hundred thousand dollars;

During the fiscal year ending the thirty-first day of March, one thousand nine hundred and seventeen, the sum of one million dollars;

During the fiscal year ending the thirty-first day of March, one thousand nine hundred and eighteen, the sum of one million one hundred thousand dollars; and the like sum of one million one hundred thousand dollars during each of the succeeding fiscal years until the expiration of the fiscal year ending the thirty-first day of March, one thousand nine hundred and twenty three; provided that any portion of any of the above sums which may remain unearned or unpaid at the expiration of any of the said fiscal years previous to the last shall be carried forward and remain available according to its apportionment for the purposes of this Act during any one or more of the succeeding years.

GRANTS IN AID OF PUBLIC SERVICE.

Some of the general principles which by experience have been found politically and economically successful, in the providing of Grants in Aid of various kinds of public service, by a Central Authority are concisely and clearly set forth by Mr. Sidney Webb.* The following statements, based upon his book, are presented as illustrating the trend of administrative practice in the United Kingdom and as being a summary of competent opinion in so far as it appears to be related to this question in Canada:—

VARIABLE CHARACTERISTICS.

By a "Grant-in-Aid" the English administrator understands a subvention payable from the Exchequer of the United Kingdom to a Local Governing Authority, in order to assist that Authority in execution of some or all of its statutory duties. The subvention may be an isolated payment, but is usually recurrent or annual. It may be a matter of statutory obligation or dependent on the recurring decision of the Minister in charge of a particular department. It may be unconditionally of fixed amount, or variable according to the circumstances of the time. Most important of all, its variable amount may be dependent on the growth of population, or of a particular section of it, on the amount of some particular service, on the number of officers appointed, or the sum of their salaries, on the expenditure of the receiving Authority, on the rateable value of its district, on the efficiency of its work, or on some other condition. And according to the conditions and stipulations that are attached to the Grant-in-Aid, so will be, whether or not we like it or foresee it, its effect on public administration.

Their use has often been sought as a means for making an inroad on the Exchequer and to save the local rates, for a service which the locality would otherwise be required to maintain wholly for itself.

AS AN INSTRUMENT OF GOOD GOVERNMENT.

The importance of a system of Grants-in-Aid as an instrument of good government is coming to be recognized more and more. Legislators and the public connect a system of Grants-in-Aid with legislation to make it effective. In that regard much depends on the particular conditions upon which the Grant-in-Aid is made and can be obtained.

**Grant-in-Aid*, by Sidney Webb: Longmans, Green & Co., London, 1911.

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In the actual practice of administration Grants-in-Aid are becoming more and more pivots on which the machinery of government really works.

Central executive departments have at their command a wider experience and a greater knowledge than any local body could possess. The combination most highly to be desired is that of liberty for the locality with efficiency through co-operation with the Central Authority. The combination of local interest, knowledge and ability with central interest, knowledge and ability give the best results.

Grants-in-Aid are means of equalizing the burden of taxation. Extreme inequality of burden exists between that of one district and another. This is aggravated by inequality of means to bear the cost, and also by the larger cost per head of population, owing to local, social and economic conditions. When the burden of taxation is felt by the people of the locality to be inequitable, that itself hinders the proper development of the public service.

The amount of Grant-in-Aid from the Central Authority should bear some equitable proportion to the actual amount or cost of the public service in each locality considered in the light of the ascertained ability of the locality to pay.

A most important use of Grants-in-Aid is through them to give weight to the suggestions, criticism and authoritative instructions, by which the Central Authority seeks to secure greater efficiency and economy of administration. The verdict of experience is that when properly devised and applied they afford a basis for the best of all relations between Central and Local Authorities.

ENCOURAGING DESIRABLE LOCAL EXPENDITURES.

The Grants-in-Aid are used to stimulate and promote expenditures in the ways thought desirable, rather than in other ways. Given for education they are conditioned on schools maintained in efficiency.

Some of the grounds on which the policy of Grants-in-Aid can be justified or advocated:—

1. They may be given as a recognition of the fact that the local service thus aided is one which is performed, not for the locality alone, but, in part at least, in furtherance of the interests of the community as a whole.

2. They may be made, not for services arbitrarily styled "National" (because they are services which every community needs and derives benefit from), but for certain definitely selected services in the efficiency of and results from which the community as a whole has considerable interest.

All the successful grants have taken the form of proportional subventions towards the cause of specific services. A lump sum grant for general purposes becomes an encouragement to extravagance and laxity of administration. Whatever sum is paid should vary from year to year according to the extent and efficiency of the service by a Local Authority. There are advantages from variable grants, and also advantages from the grant being one on which the Local Authority can depend.

Local Authorities are eager for increased subventions. The thing to do is to put the payment of the subvention on conditions which will not merely relieve the ratepayers, but also promote the efficiency of the service and secure service of value to the community as a whole, which would not otherwise be provided.

As a rule grants should be variable in the interests of efficiency, and should afford special encouragement to poor districts. Therefore grants may be given in lump sums in proportion to the total expenditures on the service by the Local Authority, and in proportion to its poverty or ability. That seems to be the best basis which experience dictates.

PROMOTING EFFICIENCY IN ADMINISTRATION.

There is need for an efficiency audit. The community as a whole which provides the money for a Grant-in-Aid has the right to satisfy itself, by the inspection through expert officers of the central departments concerned, that the service is performed up to the extent, and with at least the degree of efficiency that the community may in its own interests from time to time prescribe. No grants should be payable unless a certificate is given by the department of the government concerned, that the Local Authority is administering the service alike in adequacy and efficiency in accordance with law and authoritative regulations, up to at least the national minimum, and doing its best according to its means. The advantages of local over national or central administration are very great. It is important that local government should be preserved, extended and improved. The object should be to secure co-operation between the Local Authority and the Central Authority, and not to cause conflict through any policy or plan by which the Local is expected or required to be active only in obedience to the instructions or requirements of the Central.

An efficiency audit should extend to more than the question of the bare legality of the expenditure and of the fact that it was made in a certain direction on certain indicated objects.

RESTATEMENT OF SOME PRINCIPLES.

The Commission is of opinion,—

1. That financial support should be provided by Public Authorities, and by individuals, Corporations and Associations who are directly concerned and who would be likely to profit by the results to be obtained.
2. That the relative measure of support should be in some equitable proportion to the interest in the results, and the ability to pay, of the four possible classes of contributors, viz,—(a) the individuals, Corporations and Associations, (b) the local community such as the Town, City or County, (c) the Province and (d) the Dominion.
3. That in determining the proportion of the cost of Industrial Training and Technical Education, to be contributed by different public authorities, regard should be had not only to the benefit to the local community to be expected from Industrial Training and Technical Education, but also to the ability of the community, and to some extent to its willingness, to provide the education of an adequate kind and to a sufficient extent.
4. That it is reasonable and desirable that the Public Authority with the larger financial resources should meet the largest proportion of the cost for the communities where population is most sparse and the amount of taxable property, per head of pupils to be educated, is lowest.
5. That the prevention of progress in a locality and the lack of development in individuals, which might result from delay in providing suitable education until the local community was both able and willing to provide it in full or in a large measure, would be felt not only by that community itself, but by the Province and Dominion as a whole. In consequence, on economic as well as other grounds, the larger Public Authority, Provincial or Dominion, which is able to give a large measure of financial assistance, to a community weak in resources, would find such a course to be an excellent investment. The development of Industrial Training and Technical Education in such a community would bring it forward into ability to take a larger share for itself in maintaining the cost of such education and other public services.
6. That the Authorities, by whom financial support is furnished, should have sufficient cognizance of the results from it to be able to pass intelligent and fair judgment on the question of continuing or lessening or increasing the amount of support to be given.
7. That the financial support should be arranged for under such legislation as would warrant individuals and communities in deciding to devote a considerable period of time and amount of money to the evolution of Industrial Training and Technical Education. In order that plans might be made with reasonable confidence in the permanence of the undertaking, it is highly important that such provision should be made as would give reasonable assurance to the teachers and instructors, who become qualified to carry on the work, that satisfactory remuneration would be paid to them and continued employment provided for them.

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8. That the financial support provided from Provincial or Dominion sources, as grants to Local Authorities, should be devoted mainly if not wholly to the provision of competent teachers and the payment of a proportion of teachers' salaries and of the cost of equipment for instruction.

ORDER OF PROCEDURE IN LOCALITIES.

The Commission is of opinion,—

1. That in smaller towns the provision at first should be in the nature of Courses in Industrial Science, Drawing and Calculation, with opportunities for constructive work in wood, metals, textiles, foods, or other materials appropriate to the larger industries of the neighborhood. Out of such Courses would grow Classes or Courses specifically appropriate for the workers in the various industries.

2. That in the larger places it would be expedient to provide Courses appropriate for the groups of fundamental industrial occupations such as the building trades; metal and machine trades; wood working trades; electric trades; textile trades; clothing trades; boot and shoe trades; printing and lithographing trades; leather, glove and harness trades; paper making; and art trades.

3. That when Classes or Courses for these grouped trades have been carried on, Classes or Courses for the particular trades could be evolved. For example, for the building trades, there would be Classes or Courses for masons, bricklayers, carpenters, painters, etc. In like manner there would be developed for the metal and machine trades, particular Classes or Courses for machinists, moulders, blacksmiths, etc. In a similar manner, out of the woodworking trades, would come Classes or Courses for cabinet makers, furniture makers, pattern makers, wooden utensil and tool makers, etc. Out of the general school for the textile trades, special Classes for spinners, weavers, lace makers and the makers of embroidery would be arranged.

4. That in every case a Local Development Board, or other Local Authority, should make, or cause to be made, a plotted-survey of the needs of the population by numbers, ages and occupations, and another plotted-survey of the provision (if any) which exists in buildings, equipment and teaching force suitable and available for use. When the one plotted-survey is placed over the other the situation can be studied with the greatest advantage to all interests. In this connection consideration should be given to what was done at Leeds and Edinburgh.

5. That the training of teachers and executive workers for service in Industrial and Technical Schools should be advanced as soon as practicable.

6. That Classes for Foremen, and workmen who are both intelligent and highly skilled, should be undertaken for the first object of giving such men greater qualification for their own occupations. Such classes would primarily be for the benefit of those who attended them. Out of those who attended doubtless a number would be revealed who would have some natural aptitude for teaching, and who during the following year would be disposed to teach in the Continuation Classes and to teach to some extent after the method by which they

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themselves had been instructed. To begin these classes it would be necessary to secure the services of a few highly efficient teachers who had had successful experience in such work.

7. That inducements should be offered to professional teachers, who already had a knowledge of and a taste for Industrial and Technical work, to spend some time in practical work in workshops or factories similiar to those of the place in which they would afterwards teach.

8. That by a combination of these two methods, in a short time, it would be possible to secure a local supply of men competent to conduct Continuation Classes and the Trade Classes in Day Technical Institutes. Men with more systematic and thorough training would be required for the higher places in Technical Institutes and Middle Technical Schools.

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CHAPTER VII: A DOMINION DEVELOPMENT POLICY.

SECTION I: PROVISIONS FOR INDUSTRIAL TRAINING AND TECHNICAL EDUCATION.

The Commission considers that the Provisions which are indicated hereafter under the names of Classes, Courses, Schools, Institutes and Colleges are necessary in a system or systems of Industrial Training and Technical Education for Canada.

The plan of statement by Classes (or Schools) is adopted because it is believed that by this means Local Authorities and Provincial Authorities will be helped in the best way to co-ordinate the Provisions which now exist with what is to be provided, in so far as that is desirable, and *vice versa*.

The Provisions have been arranged under three main headings:—

FOR THOSE WHO ARE TO CONTINUE AT SCHOOL IN URBAN COMMUNITIES;

FOR THOSE WHO HAVE GONE TO WORK IN URBAN COMMUNITIES;

FOR RURAL COMMUNITIES.

Under each heading the Provisions have been put in Divisions beginning with the elementary and going upward. For example, under the heading FOR THOSE WHO ARE TO CONTINUE AT SCHOOL, Division I comprises Intermediate Industrial Classes (or Schools), and Division VI contains Technical Colleges and other institutions of similar rank.

Instead of attempting to present in this Chapter a statement in great detail of the character of the Courses of Study of the Classes of any Division, references are given at the end of each Division to pages where full information may be found. A fuller discussion of matters dealt with here will be found in Chapter VI on Organization and Administration; Chapter IX on Education for Rural Communities; and Chapter X on Education for Housekeeping Occupations.

The lower Divisions under each heading are the immediate concern of all communities, although no locality can be wholly without interest in the higher institutions since some of the teachers for the lower Divisions will be educated in them and also some of the men and the women for the foremost positions in industrial, rural and housekeeping life.

Practically every Urban Community requires the Provisions in the first three Divisions, whereas, with the exception of the two largest Provinces, there is not room or need at present for more than one Technical College of the highest grade in any Province.

MAKING THE MOST OF EXISTING PROVISIONS.

Some of the Provisions recommended herein already exist in more or less developed and organized form in some places. In the matter of the highest

institutions, such as Technical Colleges, Colleges of Agriculture and Colleges of Domestic or Household Science, Canada appears to have a sufficient number. They could all be used to their utmost capacity and to great advantage in connection with the education of teachers and other leaders in all departments of Industrial Training and Technical Education.

It is not to be inferred that the Classes (or Schools) of any Division require buildings, equipment or staff for themselves, wholly separate from what is required for the Classes (or Schools) in the other Divisions. Whether an institution should have accommodation and facilities for more than one kind of Classes (or Schools) is a matter to be decided according to local conditions. There are undoubted advantages from having Classes of the different Divisions (and of different kinds in the same Division) in one institution, and there are advantages from having the more elementary Classes in a building or buildings convenient to the homes of the pupils. Local needs, conditions and resources furnish the only adequate data for guidance in that respect.

The Commission counsels energetic action in all the Provinces in arranging for the Classes; and advises prudent consideration before deciding upon new and permanent buildings. A year or two of experience in provisional quarters would enable the Local Authority to avoid serious mistakes. Expert counsel and criticism which should be available from headquarters, would assist it to provide for its needs economically, adequately and effectively. For example, in the City of Belfast six years of creditable work were accomplished before the Municipal Technical Institute was completed. By that time its arrangements and equipment provided just the right kind of facilities. They have become a tribute to the wisdom and ability of those in charge and a model for other towns and cities.

The first thing for a Local Development Board to do is to make a Census-Survey of the community, the industries, the occupations and the existing accommodation and facilities. The examples of Leeds and Edinburgh are noteworthy in this connection.

The next step is to consult an expert or experts, from Provincial or Dominion headquarters, as to how a beginning can be made to meet present conditions and to provide for future development economically, prudently and effectively.

The third step is to make plans and send forward a proposal and budget to the proper Provincial Authority.

The remainder of the path will reveal itself by experience, discussion, counsel and co-operation.

The Provisions recommended are as follows:

FOR THOSE WHO ARE TO CONTINUE AT SCHOOL IN URBAN COMMUNITIES.

Division I. Intermediate Industrial Classes (or Schools).

" II. Co-ordinated Technical Classes (or Schools).

" III. Technical High Schools.

" IV. Apprentices' Schools.

" V. Industrial and Technical Institutes.

" VI. Technical, Home Economics and Fine Arts Colleges.

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FOR THOSE WHO HAVE GONE TO WORK IN URBAN COMMUNITIES.

Division I. Continuation Classes (or Schools).

- " II. Co-ordinated Technical Classes (or Schools).
- " III. Middle Technical Classes (or Schools).
- " IV. Apprentices' Classes (or Schools) in Workshops.
- " V. Industrial and Technical Institutes.
- " VI. Extension Lectures and Correspondence-Study Courses.

FOR RURAL COMMUNITIES.

Division I. Intermediate Rural Classes (or Schools).

- " II. Rural High Schools.
- " III. Continuation Agricultural Classes (or Schools) under Resident or Travelling District Instructors.
- " IV. Continuation Housekeeping Classes (or Schools) under Resident or Travelling District Instructresses.
- " V. County or District Agricultural and Housekeeping Schools.
- " VI. Young People's Social Service Schools.
- " VII. Schools for Agricultural Apprentices.
- " VIII. Agricultural and Home Economics Colleges.
- " IX. Correspondence-Study Courses.

FOR THOSE WHO ARE TO CONTINUE AT SCHOOL IN URBAN COMMUNITIES.

DIVISION I.—INTERMEDIATE INDUSTRIAL CLASSES (OR SCHOOLS).

Qualifications for admission:—

Age, 13 years and over;

Completion of the work of the Elementary School, or ability to read, write, draw and calculate to the satisfaction of the Principal or a Committee on Admission.

Completion of two years of Pre-Vocational classes in an elementary school would be most advantageous.

Wherever necessary Preparatory Classes should be conducted to enable pupils who are not qualified for the Industrial Classes to receive the required instruction.

There should be separate schools for boys and girls, or separate departments in the same school.

*Courses:—*Two years or less.

The kind of work and study should provide series of experiences arranged in proper sequence to give the training and knowledge which would be advantageous to young people who are to follow industrial occupations. As far as practicable the manipulations of materials, (such as wood, clay and stone products, metals, paper, textiles and foods), the work with tools and machines and the articles made, should have regard to the industries of the area and the population served by the school.

The theoretical, science and language work should be kept in close association with the life interests of the pupils and should be taken up to the extent of their capacity, considering age and degree of previous attainment, and in keeping with the primary object of the school, which is to ensure progress by the pupils towards efficiency in "doing things" and becoming good citizens.

It is entirely desirable that the theoretical and book work should be related directly to the doing-projects of the pupils and *vice versa*. Taking up subject-studies in Mathematics, Drawing and Science which are out of immediate relation to the practical work of the pupils has not been found a profitable way of using the time.

About half the time should be devoted to acquiring ability to use books and drawings, to gaining a knowledge of principles, and an acquaintance with and an understanding of Mathematics, Science, Geography, History, Literature and the duties, rights and privileges of citizens.

About half the time should be devoted to training in "doing things" as indicated; and it would be entirely advantageous to have things made that have commercial or economic values.

Types of Schools similar to those in this Division which should be studied from Part III in connection herewith:—

Trade Preparatory Schools as reported upon at Leeds and Halifax, England;

Classes at Tynecastle Workshop Schools, as reported on at Edinburgh, Scotland;

Trade Preparatory School, at Belfast, Ireland;

Practical Schools of Commerce and Industry (Industrial Section), France;

Pre-Apprentice School, Paris, France;

The Independent Industrial Schools of Massachusetts as represented by the School at Newton, Mass.;

Vocational School, Springfield, Mass.;

Intermediate Industrial Schools of New York, as represented by the Schools at Rochester, N.Y.;

Seneca Vocational School, Buffalo, N.Y.;

State Trade School, Bridgeport, Conn.

Where products are sold.

The Commission regards it as undesirable that schools maintained at the public expense should be used for the production of commodities, or the doing of work, in such a way as to injure private business through competition in selling such products or for the purpose of making profit from the labor of the students. Two facts have been brought to the attention of the Commission: (1) the actual amount of products which goes on the market from Industrial Schools, where such products are sold, is never as large in quantity as the volume of products which the same young persons would be the means of turning out, if they were employed in the commercial factories or shops instead of being at the Industrial School; (2) the work is not of inferior grade, but is often of a higher standard of finish than similar output

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from commercial shops, because a greater amount of labor has been expended in order that the students might have the kind of experience that leads to thoroughness of workmanship and completeness of finish.

DIVISION II.—CO-ORDINATED TECHNICAL CLASSES (OR SCHOOLS).

Qualifications for admission:—

Age 14 to 16 years and over;

Completion of the work of the Elementary School or ability to read, write, draw, and calculate to the satisfaction of the Principal or the Committee on Admission.

Completion of one year in an Intermediate Industrial Class would be most advantageous.

*Courses:—*Four years.

NOTES:—

The work and study should provide series of experiences at school arranged to fit in with the experiences at the workshop.

Preferably the whole of the first year to be devoted to school work. During that year the work to be done would be similar to that of the second year of the Intermediate Industrial Classes with particular regard, in the practical, operative, "doing things" part of the work, to the particular trade or occupation to be followed by the pupil.

Three years to be devoted to school and workshop experience, about half time to each, preferably alternating the attendance week about.

In cases of trades in which there are periods of slackness or "no work", the alternate periods might be made to suit the conditions of the trade. For example, in some of the building trades the summer months might be spent continuously at work, and some months in the winter continuously at school.

Types of Schools similar to those in this Division which should be studied from Part III in connection herewith:—

Part-time or Half-time Co-operative Industrial Schools of United States;

The Co-operative High School, Fitchburg, Mass.;

Co-operative Industrial School, Beverley, Mass.;

The Worcester Trade School, Worcester, Mass.;

The Co-operative High School, Cincinnati, Ohio;

Smith's Agricultural School and Northampton School of Technology, Northampton, Mass.

DIVISION III.—TECHNICAL HIGH SCHOOLS.

Qualifications for admission:—

Age 13 years and over;

Completion of the work of the Elementary School, or of the first year of the Intermediate Industrial School.

Courses:—Four years.

These would be provided in Departments of a General, or "Union", High School, or in separate High Schools according to the needs of the community. These might be arranged as:—General or Professional; Scientific; Commercial; Technical; Agricultural; Housekeeping; Fine Arts.

The General Department would provide general secondary education and prepare pupils for admission to Arts Courses in Colleges and to Normal Schools.

The Scientific Department would prepare pupils for admission to higher institutions, with a view to education for such professions as Medicine, the different kinds of Engineers (Civil, Chemical, Sanitary, Mechanical, Electrical, Mining, Rural), etc.

NOTE:—

The foregoing departments would be considered as part of general Secondary Education as now provided at High Schools and Academies under the Public School systems.

The Commercial Department would prepare pupils for entering upon occupations in business (Commerce, Transportation, Banking, Civil Service) and also for admission to higher institutions.

The Technical Department with separate classes for boys and girls would prepare pupils for entering upon occupations in trades and industries. It would provide suitable school training for those who, after some years of practical experience, might become foremen and fill the directive positions in industries. Its course and work would differ from the Intermediate Industrial School in so far as the equipment for "doing things" and the doing of things by the pupils would have more regard to enabling them to understand the principles underlying mechanical and industrial operations than to preparing them for entering workshops or factories at the age of 15 or 16. As compared with the Intermediate Industrial School it would put emphasis on wider and more thorough knowledge of principles, mathematics and sciences by means of its 4 year course.

In towns where there were not enough pupils for the two kinds of classes, the first year of this Department might serve the purposes of the Intermediate Industrial classes.

The Agricultural Department would give courses and training similar to those of the Rural High School. (See page 256).

The Housekeeping Department would give general vocational education for Homemaking and Housekeeping, and would prepare for admission to higher institutions.

The Fine Arts Department would work for the inclusion and realization of fine art (beauty in form, colour and composition), in the work in all the Depart-

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ments, and would also prepare pupils to enter upon occupations as designers, photographers, painters, sculptors, etc. It would also prepare pupils for admission to higher institutions.

NOTES:—

In general the training at this school would prepare pupils for entering upon occupations at 17 or 18 years of age and for admission to higher institutions.

Whether the Commercial, Technical and Housekeeping Classes should be Departments of a "Union" High School or be conducted in separate premises under separate staffs, are matters to be determined by the Local Development Board in view of local conditions.

In Germany the common practice is to have Technical Education carried on by staffs of teachers different from those who conduct general education, and usually in separate buildings.

In the United States the opinion seems to be divided between having "Union" High Schools which include the different departments, and Special High Schools for Commercial, Technical and Housekeeping instruction respectively.

In Canada careful consideration should be given to what Provisions would be necessary and desirable for Co-ordinated Technical Classes as under Division II and Middle Technical Classes under Division III 'for those who have gone to work.'

Types of Schools similar to those in this Division which should be studied from Part III in connection herewith:—

Borough Polytechnic Institute, London;

Galashiels Technical College, Galashiels, Scotland;

Technical Schools and Science and Art Classes, Ireland;

Municipal Technical Institute, Belfast, Ireland;

Technical Schools in France:

Higher Practical Schools of Commerce and Industry, at Paris;

Grenoble;

Nancy;

Lyons;

Realschulen and Oberrealschulen of Germany;

Technical High Schools of the United States:

Boston High School of Mechanic Arts;

Buffalo, N.Y.;

Cincinnati, Ohio;

Cleveland, Ohio;

Los Angeles, Cal.;

Newton, Mass.;

Providence, R.I.;

Technical High Schools at Montreal, Que., Toronto, Ont., and Winnipeg, Man.

DIVISION IV.—APPRENTICES' SCHOOLS.

Qualifications for Admission:—

Age 15 years and over;

Completion of Elementary School course or ability to read, write, draw and calculate to the satisfaction of the Principal or the Committee on Admission.

Completion of the two years of the Intermediate Industrial Classes would be most advantageous.

Separate schools for youths and young women.

*Courses:—*One to four years, depending upon the character of the trade and the established custom of the trade in regard to apprenticeship.

Types of schools similar to those in this division which should be studied from Part III in connection herewith:—

Artane Industrial School, Dublin, Ireland;

Apprenticeship Schools of France: Paris;

The School for Iron Workers and Mechanics at Winterthur, Switzerland;

The School for Carpenters at Zurich, Switzerland;

The David Ranken, Jr., School of Mechanical Trades, St. Louis, Mo.;

The Hebrew Technical Institute, New York City;

The Lick and Wilmerding Schools, San Francisco, Cal.;

New York Trade School;

North End Union School of Printing for Apprentices, Boston, Mass.,

Williamson Free School of Mechanical Trades, near Philadelphia. Pa.;

Trade Schools for Girls and Women.

NOTES:—

There is a difference between a real trade-teaching school, where apprentices learn the whole of the trade, and the so-called Trade Schools of Germany. The Trade Schools of Germany are really Technical Schools where most of the instruction is intellectual and theoretical, given during from six to ten hours per week to pupils who spend the rest of the time in workshops, learning the trade and earning wages.

The Trade Schools of England are schools which give Vocational Education to qualify young people to enter upon the learning of the trade in a workshop, or are technical institutions in which men and women, who already have acquired practical ability in the trade, attend classes to receive instructions in Mathematics, Science, Drawing and other branches connected with their chosen occupation.

There is also an essential difference between an Apprentices' School where apprentices learn the whole of the trade, and the schools for apprentices in various works and shops, such as those of Railway Companies, the General Electric Company at West Lynn, Mass., Brown & Sharpe's, Providence, R.I. In the case of these workshop schools the apprentices are taken from six to twelve hours per week in the class-room under competent instructors to supplement the experience which they obtain in the workshop practice.

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The Commission does not recommend the establishment of real trade-teaching schools in Canada to be maintained by public funds. When experience has been gained as to the suitability and effectiveness of the Co-ordinated Technical Schools under Division II, whereby the learner spends part of his time in an earning capacity at practical work and the other part in the classes of a school, the question can be reviewed to advantage.

The Commission is of opinion that where practical workshop experience can be obtained by the young learner, that is a better training for industrial efficiency than where the whole of the training is obtained under school conditions. There is a disciplinary and intellectual result to the pupil from the necessity of observing workshop hours and workshop discipline, and conforming to workshop requirements for effectiveness, thoroughness and speed of labor.

DIVISION V.—INDUSTRIAL AND TECHNICAL INSTITUTES.

Notably in Germany, Denmark and Ireland, nearly every urban community has a Municipal Technical Institute. Provision is made in these in some cases for classes from the preparatory stage upwards. In most cases the Municipal Technical Institute takes students who have already had two years of Continuation Classes at other centres.

Types of Schools similar to those in this division which should be studied in connection herewith:—

Municipal Technical Institutes in England, such as those at Manchester, Leeds, Halifax, Barrow-in-Furness, Accrington and Widnes.

Municipal Technical Institute at Belfast, Ireland, and smaller places in Ireland.

Somewhat similar in part of the work would be the Lower and Middle Technical Schools of Germany, and the Technikum at Chemnitz.

DIVISION VI.—TECHNICAL, HOME ECONOMICS AND FINE ARTS COLLEGES.

Qualifications for Admission:—

Completion of the course at a recognized Secondary School, or ability to read, write, draw and calculate, with foundation knowledge and previous training to the satisfaction of the Principal or the Committee on Admission.

Separate institutions for men and women or separate departments in the same institution.

*Courses:—*As in Faculty of Applied Science at the University of Toronto; McGill University; Polytechnic School of Laval University, Montreal; etc.

Types of Institutions similar to those in this Division which should be studied in connection herewith:—

University of Leeds;

University of Sheffield;

Imperial College of Science and Technology, London;
Central Institutions at Edinburgh, Glasgow and Aberdeen, Scotland;
Royal College of Science, Dublin, Ireland;
Institutions in France;
Technical High Schools of Germany;
Commercial High Schools of Germany;
Massachusetts Institute of Technology, Boston, Mass;
Cooper Union, New York City;
Royal College of Art, London;
Provincial Schools of Art in England:
 Bradford;
 Leeds;
 Leicester;
 Manchester;
Schools of Art, Dublin and Belfast, Ireland;
Schools of Fine Arts in France;
Margaret Morrison Carnegie School for Women, Pittsburgh, Pa.;
The Technical College, Halifax, N.S.;
McGill University, Montreal, Que.;
Polytechnic (Laval University), Montreal, Que.;
University of Toronto.
School of Mining (Queen's University), Kingston, Ont.

FOR THOSE WHO HAVE GONE TO WORK IN URBAN COMMUNITIES.

DIVISION I.—CONTINUATION CLASSES (OR SCHOOLS).

According to the needs of the community and the occupations of the pupils the Continuation Classes would be arranged for pupils to take Courses in one or more groups as underneath. There would be further differentiations in the Industrial and Technical group to meet the particular trades and callings, as in the German Continuation Classes for Building Trades, Metal Trades, Textile Trades, etc.

The groups might be as follows:—

- (1) General;
- (2) Industrial and Technical;
- (3) Commercial;
- (4) Housekeeping.

The Classes might be organized and conducted,—

- (a) In connection with the Public School System;
- (b) In separate buildings;
- (c) In connection with Municipal Technical Institutes or Schools;
- (d) By Voluntary Associations or other agencies.

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UNION ARRANGEMENTS.

Continuation Classes 'for those who have gone to work', in all or any of the four Groups, might be arranged for,—

(1) In connection with Classes or Schools 'for those who are to continue at school' and described as:—

- Division I. Intermediate Industrial Classes (or Schools).
- " II. Co-ordinated Technical Classes (or Schools).
- " III. Technical High Schools.
- " IV. Apprentices' Schools.
- " V. Industrial and Technical Institutes.
- " VI. Technical, Home Economics and Fine Arts Colleges.

(2) In connection with Classes or Schools 'for those who have gone to work' and described as:

- Division II. Co-ordinated Technical Classes (or Schools).
- " III. Middle Technical Classes (or Schools).
- " IV. Apprentices' Classes (or Schools) in Workshops.
- " V. Industrial and Technical Institutes.

When any of these aforementioned Classes (or Schools) are being arranged for, or organized and equipped, full consideration should be given to the question of Continuation Classes in connection with them.

The Continuation Classes are organized in connection with the public school system in a few of the States of Germany, in England, in Scotland, at Cincinnati, Ohio, at places in Nova Scotia, at Montreal, Que., Toronto, Ont., and Vancouver, B.C.

Continuation Classes are organized in separate buildings and under separate management in the large cities in several of the States of Germany.

Continuation Classes are organized in connection with Technical Institutes in the cities and larger towns of England, Scotland and Ireland, and also at some of the Universities, notably the Universities of Sheffield and of Leeds.

Continuation Classes are organized by Voluntary Associations and partially supported by public funds, as for example, by the Guilds of Germany, by the Council of Arts and Manufactures in Quebec, and by Y.M.C.A's.

This matter is treated in various places in Part III of the Report more particularly as follows:—

England:

Manchester;
Leeds;
Halifax;
Sheffield;
Barrow-in-Furness;
Accrington;
Widnes.,

Scotland:

Edinburgh;
Glasgow;

County of Fife;
Cowdenbeath;
Hawick Technical Institute;
Galashiels Technical College.

Ireland:

Belfast;
Kilkenny;
Portadown.

France:

Courses under Syndicates in Paris.

Germany:

Bremen;
Chemnitz;
Continuation Schools at various places such as;
Aix-la-Chapelle;
Berlin;
Cologne;
Dresden;
Frankfurt;
Stuttgart.

Also special schools for Machine and Metal Workers;
Building Trades;
Textile Industries;
Art for Industrial Trades;
Commerce.

United States:

Boston, Mass.;
Buffalo, N.Y.;
Worcester, Mass.;
Cincinnati, Ohio.

Special Schools:—

Schools for Miners;
Schools for Fishermen;
Schools of Navigation;
Schools for Tanning and Leather Industries.

(1) GENERAL CLASSES.

These would enable young persons over elementary school age, who have gone to work, (a) to go on with the general work of the elementary school, or (b) to supplement it by such education as would be given in the general department of a Secondary School.

The classes would be in the day or evening; and it is desirable that not less than 6 hours per week should be given to them.

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(2) INDUSTRIAL AND TECHNICAL COURSES.

Day and Evening Classes:—

6 to 10 or more hours per week.

Qualifications for admission:—

Age 13 years and upwards;

Completion of work of the Elementary School or ability to read, write, draw and calculate to the satisfaction of the Principal or a Committee on Admission.

Completion of two years of the Intermediate Industrial Classes would be most advantageous.

Classes for workers as follows:—

- (a) Apprentices and other learners;
- (b) Skilled workmen and workwomen;
- (c) Foremen and Superintendents.

Separate classes for boys, men, girls and women.

Courses of two kinds:—

(1) Chiefly theoretical, with special reference to the occupation of the pupil and co-ordination with the work of his occupation at the time;

(2) Chiefly practical, with at least half the time to practice in handwork and operations with tools and machines, to widen the range of skill and knowledge.

In general the Courses should be made to suit the occupations and the populations of the area served, and where practicable should be arranged progressively to continue for a period of three or four years or more.

Both kinds of Courses should provide also for studies in Literature, History and the duties, rights and privileges of citizens, and for Physical Culture and Singing.

The work in each of the Courses should be arranged as far as practicable on problems, projects or interests, each of which would become a centre for correlated study of several subjects, such as Mathematics, Science, Composition, etc. A Project-Study is not the same thing as the study of separate subjects as such.

(3) COMMERCIAL CLASSES.

These might be organized in connection with the public school system, and might be added to or developed in connection with the Commercial Department of a High School or Academy, or might be provided in separate premises.

The classes would be in the day or evening.

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(4) HOUSEKEEPING CLASSES.

These might be organized on a plan similar to the Industrial and Technical Classes. The Courses should be arranged to suit the needs and meet the convenience of the girls and the women in the area to be served.

It is highly important that Vocational Classes for young women, devoted to instruction and training for Housekeeping occupations, should be provided in all the cities and towns. Attendance at these during at least one period per week should be continued until after 18 years of age unless the girl is receiving some other form of education. Particulars regarding this kind of education will be found in Chapter X on Schools for Housekeeping.

DIVISION II.—CO-ORDINATE TECHNICAL CLASSES (OR SCHOOLS).

Qualifications for admission:—

Age 14 to 16 years and over;

Completion of the work of the Elementary School or ability to read, write, draw and calculate to the satisfaction of the Principal or the Committee on Admission.

Completion of at least one year of the Intermediate Industrial Classes would be most advantageous.

*Courses:—*Four years.

NOTES:—

The work and study should provide series of experiences at school arranged to fit in with the experiences at the workshop.

Preferably the whole of the first year to be devoted to school work. During that year the work to be done would be similar to that of the second year of the Intermediate Industrial Classes with particular regard, in the "doing things" part of the work, to the particular trade or occupation to be followed by the pupil.

The following three years to be devoted to school and workshop experience, about half time each, preferably alternating the attendance week about.

For the workers in trades in which there are periods of slackness or "no work", the alternate periods might be made to suit the conditions of the trade. For example, in some of the building trades the summer months might be spent continuously at work, and some months in the winter continuously at school.

Types of Schools similar to those in this Division which should be studied from Part III in connection herewith:—

Part-time or Half-time Co-operative Industrial Schools of United States;

The Co-operative High School, Fitchburg, Mass.;

Co-operative Industrial School, Beverly, Mass.;

The Worcester Trade School, Worcester, Mass.;

The Co-operative High School, Cincinnati, Ohio;

Smith's Agricultural School and Northampton School of Technology, Northampton, Mass.

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DIVISION III.—MIDDLE TECHNICAL CLASSES (OR SCHOOLS).

Qualifications for admission:—

Age 15 and over;

Experience of not less than one year actually working at a trade or skilled occupation;

Ability to read, write, draw and calculate to the satisfaction of the Principal or the Committee on Admission;

Assurance that the applicant will devote not less than one school term to Day Classes.

Separate classes for boys, men, girls, and women.

*Courses:—*One, two, three and four years.*Classes for workers as follows:—*

- (a) Apprentices and other learners;
- (b) Skilled workmen and workwomen;
- (c) Foremen and Superintendents.

The Courses would provide for series of experiences in proper sequence, arranged to enable the student to acquire:—

(1) A wider knowledge of the principles underlying the operations or the processes of the trade or business;

(2) A wider range of knowledge and skill in the handling of materials, the use of tools, the operation of machines and the manufacture and construction of products.

NOTES:—

The full-time classes would be as above indicated, with Continuation Classes in the day or evening for those who are at work and unable to attend in the day time continuously.

In towns and the smaller cities the Courses of this school might be given in connection with the scientific and industrial departments of a Technical High School, or they might be organized in separate premises.

It is necessary to distinguish between the kind of instruction and demonstration to be provided for adult pupils, who have had considerable experience in practical work, and the kind of educational help to be given to pupils at Intermediate Industrial Classes and Technical High Schools.

When the adult pupils meet the Instructor they know the "How" of some industrial operations. They need chiefly instruction, by way of explanations, information and study, to enable them to understand the "Why," and some opportunity to acquire wider skill and technique. On the other hand, it is desirable that the young pupils, who are without practical experience of workshops, should be put to working out problems for themselves rather than that they should receive full information in a pre-digested state.

Types of Schools similar to those in this Division which should be studied from Part III in connection herewith:—

Polytechnics and Monotechnics in London, England;

Municipal Technical Institutes:

Manchester;

Leeds;

Halifax;

Barrow-in-Furness.

Central Institutions in Scotland;

Cowden Beath Mining School, Scotland;

Galashiels Technical College, Scotland;

Municipal Technical Institute, Belfast, Ireland.

France:

Courses under Syndicates, Paris;

National Schools of Arts and Trades;

Lower and Middle Technical Schools of Germany;

The Technikum at Winterthur, Switzerland;

Lowell Textile School, Lowell, Mass.,

New Bedford Textile School, Mass.;

Schools for Miners;

Schools for Fishermen;

Schools of Navigation;

Schools for Tanning and Leather Industries.

FOR WOMEN ALSO.

A Middle Technical School should provide special Courses and Classes for Housekeeping, particularly for women who can devote from 3 months to one year continuously to attendance at classes for the purpose of qualifying as houseworkers and housekeepers for private homes or for institutions. (See Chapter X.)

DIVISION IV.—APPRENTICES' SCHOOLS IN WORKS OR SHOPS.

Types of Schools similar to those in this Division which should be studied in connection herewith:—

Classes in the shops of the Canadian Pacific Railway Company at Montreal, Que.;

Classes in the shops of the Grand Trunk Railway Company at Stratford, Ont.;

Classes in the shops of the General Electric Company, West Lynn, Mass.;

Classes in the shops of Brown & Sharpe, Providence, Rhode Island.

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DIVISION V.—INDUSTRIAL AND TECHNICAL INSTITUTES.

Types of schools similar to those in this Division which should be studied from Part III in connection herewith:

Municipal Technical Institutions of England:

London;
Manchester;
Bradford;
Leeds;
Halifax;
Barrow-in-Furness;
Accrington;
Widnes.

Central Institutions in Scotland:

Glasgow;
Edinburgh;
Aberdeen;

Municipal Technical Institutes in Ireland: Belfast; Kilkenny; Portadown.
Lower and Middle Technical Schools of Germany;
Technikum at Chemnitz, Germany;
Cooper Union, New York;
Carnegie Industrial Schools, Pittsburgh, Pa.

DIVISION VI.—EXTENSION LECTURES AND CORRESPONDENCE-STUDY COURSES.

These should be provided in connection with Technical Institutes or Technical, Housekeeping and Fine Arts Colleges, or in connection with other Central Institutions.

It is in every way desirable that systematic courses of instruction and study should be provided in such subjects as Industrial History and Economics by means of Extension Lectures and Courses of Reading. The work undertaken in the Oxford University Workingmen's Classes might be taken as illustrative of what should be attempted. That form of Oxford Extension work was based upon a Report of a Joint Committee of the University and Working-class Representatives on the relation of the University to the Higher Education of Workpeople submitted in 1908.

It is highly important that the natural leaders of industrial workers should have opportunities for thorough instruction in and study of the fundamental principles which underlie the organization of industries and society.

The arrangement of the several Courses of Correspondence-Study for industrial workers might with advantage follow the general lines which have been found successful in the work of the International Correspondence School, of Scranton, Pa.

The Correspondence-Study Courses should be supplemented by Travelling Instructors.

The University of Wisconsin has begun work which might be taken as a guide towards what should be included in Correspondence-Study Courses as soon as competent men are available.

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These Courses would be especially for the benefit of those who live in places where the pupils were too few to make the organization of classes practicable.

FOR RURAL COMMUNITIES.*

DIVISION I.—INTERMEDIATE RURAL CLASSES (OR SCHOOLS).

Qualifications for admission:—

Age 13 years and over;

Completion of the work of the Elementary School, or ability to read, write, draw and calculate to the satisfaction of the Principal or a Committee on Admission.

Some of the Classes separate for boys and girls.

*Courses:—*Two years of 5 to 7 months each at the school and the rest of the year at a farm or home, according to local conditions.

The kind of work to be done at the school would provide for series of experiences in proper sequence and have regard to the conditions of farming and housekeeping in the locality.

NOTE:—

In cases where the teacher is not qualified to direct and estimate the progress and value of the work of the pupils in the Farming-Projects or the Housekeeping-Projects, a committee of one, two or three should be appointed to co-operate with the teacher. The District or County Instructors provided for under Divisions III and IV, would be competent to counsel on what to do and how to do it in these educational projects. They could assist in co-ordinating the Farming-Projects and the Housekeeping-Projects with the work at the school.

In general, the teaching at this school would prepare pupils for engaging in farming and housekeeping occupations, and for admission to the 3rd year of Rural High Schools.

DIVISION II.—RURAL HIGH SCHOOLS.

Qualifications for admission:—

Age 13 years and over;

Completion of the work of the Elementary School or ability to read, write, draw and calculate to the satisfaction of the Principal or a Committee on Admission.

Some of the Classes separate for boys and girls.

*Courses:—*Four years.

During the first two years the work to be done would be similar to that in the Intermediate Rural School, with the difference that the work at this school might continue longer each year.

*For a fuller discussion of the following Provisions, see Chapter IX on Education for Rural Communities and Chapter X on Schools for Housekeeping Purposes.

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The work to be done at the school would provide for series of experiences in proper sequence and have regard to the conditions of farming and house-keeping in the area served by it.

Science subjects would be taught particularly in the relation of their application to rural work, rural problems, and the principles underlying the systems, methods and operations of farming and housekeeping.

On the literary, social and cultural side, special attention should be given to Language, Literature, History, Physical Culture, Singing and such experiences as make for the enrichment and efficiency of intellectual and social life in rural districts.

NOTES:—

In cases where the teacher is not qualified to direct and estimate the progress and value of the work of the pupils in the Farming-Projects or the Housekeeping-Projects, a committee of one, two or three should be appointed to co-operate with the teacher. The District or County Instructors, provided for under Divisions III and IV, would be competent to counsel on what to do and how to do it in these educational projects. They could assist in co-ordinating the Farming-Projects and the Housekeeping-Projects with the work at the school.

In general, the training at this school would prepare pupils for engaging in rural occupations and housekeeping and for admission to Agricultural, House-keeping and Arts Colleges.

DIVISION III.—RESIDENT OR TRAVELLING COUNTY OR DISTRICT INSTRUCTORS FOR FARMING.

These Instructors would carry on work similar to some of that undertaken at present by District Agricultural Representatives in Ontario and Quebec. It would be extended, according to the condition of the district, along the following lines:—

1. They (the Instructors) should act as advisers in co-ordinating the school work and the Farming-Projects carried on at home by pupils attending the Intermediate Rural Schools and the Rural High School.

2. They should arrange for short Courses of instruction for young men who do not attend an Intermediate School or the Rural High School.

Such Courses might be given at one place during two half days in the week.

That plan would enable the District Travelling Instructor to conduct one Course at each of three centres concurrently.

The Courses should be arranged in progressive sequence, and a Course of reading should be provided in connection with each Course.

3. They should provide systematic short Demonstration Courses in soils, crops, live stock, farm machinery, etc., etc., for the adult farming population.

4. As soon as practicable they should be associated with the work of a Neighborhood Improvement Association and an Illustration Farm for the locality, similar to those arranged for by the Committee on Lands of the Commission of Conservation.

NOTES:—

It is necessary to distinguish clearly and continuously between the kind of instruction and demonstration to be provided for adult pupils who are actually engaged in farming work, and the kind of educational help to be given to pupils at the Intermediate Rural Schools and the Rural High School.

When the adult pupils meet the Instructor they have had considerable experience in the doing of things, and know the "How" of farming operations. They need instruction, information and guidance to enable them to understand the "Why" of farming operations, and require suggestions, explanations and information concerning methods of management and the principles that underlie systems and methods of farming, such as preserving the fertility of soil, selection of seeds, controlling weeds, rotation of crops, management of live stock, etc.

On the other hand, it is desirable that the Instructor should let the young pupils work out problems in Farming-Projects as part of the Course to gain series of experiences arranged in proper sequence. His main helpfulness would come from giving the work to be undertaken as a Farming-Project a didactic or educational setting, from directing the sequence in which different Farming-Projects should be taken up, and by indicating sources whence the necessary information might be obtained. It is better in the case of young pupils that they should dig it out for themselves than that they should have full information presented in a pre-digested state in a lesson package.

One of the District Instructors might become a County Superintendent, supervising and correlating all the Industrial Training and Technical Education for development work within a county or larger area. After the first year or two, more than one Instructor would be required in an ordinary county area.

DIVISION IV.—RESIDENT OR TRAVELLING DISTRICT INSTRUCTRESSES FOR HOUSEKEEPING.

These might carry on work, for the housekeeping interests of the district, similar to that undertaken by the Resident or Travelling District Instructors for Farming.

1. As a beginning, a Travelling Instructress in Housekeeping might meet a class of women arranged for by a Women's Institute, or other similar organization in the locality, one half day per week for a term of 20 weeks.

The other half of the same day the Travelling Instructress might carry on work with the girls and teacher in the school (Elementary, Intermediate or High) of the locality.

2. They (the Instructresses) should be connected, in an advisory capacity, as Co-ordinators for the Housekeeping-Projects carried on at home by the pupils attending the Intermediate Rural Schools and the Rural High School.

3. They should provide demonstration lectures in cooking and housekeeping work, chiefly as a means of directing public attention towards channels along which systematic educational work could be conducted.

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4. As soon as practicable, they should be associated with the Short Courses of a County or District School or a County Housekeeping School.

5. As soon as practicable, they should be associated with the work of a Neighborhood Improvement Association and an Illustration Farm for the locality, similar to those arranged for by the Committee on Lands of the Commission of Conservation.

NOTE:—

It is important to bear in mind that there is an essential and fundamental difference between the kind of instruction and demonstration suitable for the women and that which would be advantageous to the girls in school. Practically what is said in Notes after Division III applies here.

After the first year or two, more than one Instructress would be required for an ordinary county area.

DIVISION V.—COUNTY OR DISTRICT AGRICULTURAL AND HOUSEKEEPING SCHOOLS.

These Schools would serve the rural population to some extent as the industrial population of the towns would be served by the Middle Technical Schools for apprentices, skilled workmen and workwomen, foremen and superintendents.

Courses:—One or two years, and also short Courses of from one to three months for special subjects and industries.

The Courses would provide for a series of experiences in proper sequence, arranged to enable the student to acquire:—

(1) A wider knowledge of the principles underlying the systems, methods, operations and processes of their special occupation;

(2) A wider range of knowledge and skill, in the actual management of soils, crops, live stock, products and homes; in the use of machines, tools and utensils; and in the making of things.

NOTES:—

It is necessary to distinguish between the kind of instruction and demonstration for those who are practically adult pupils, and who have had considerable experience in practical work, and the kind of educational help to be given to pupils at Intermediate and Rural High Schools. When the adult pupils meet the Instructor they have had considerable experience in the doing of things and know the "How" of farming operations. They need instruction, information and guidance to enable them to understand the "Why" of farming operations, and require suggestions, explanations and information concerning methods of management and the principles that underlie systems and methods of farming, such as preserving the fertility of soil, selection of seeds, controlling weeds, rotation of crops, keeping live-stock, etc.

On the other hand, it is desirable that the young people at the Intermediate Rural and Rural High Schools should work out problems in Farming-Projects as

part of the Course. To them the teacher's main helpfulness would come from giving the work to be undertaken as a Farming-Project a didactic or educational setting and directing the sequence in which different Farming-Projects should be taken up, and by indicating whence the necessary information might be obtained. It is better, in the case of young pupils, that they should dig it out for themselves than that they should have full information presented in a pre-digested state in a lesson package.

These County or District Agricultural and Housekeeping Schools would be residential schools, and would be suitable places at which to provide Short Courses and Special Courses in such branches as Dairying, Fruit, Vegetable and Flower-growing, Poultry-keeping, Bee-keeping, etc.

DIVISION VI.—YOUNG PEOPLE'S SOCIAL SERVICE SCHOOLS.

The People's High Schools of Denmark have supplemented the general education of the Elementary Schools. Their object has been to develop social and patriotic qualities of a high order in individuals and communities. The Agricultural Schools grew out of them. They help to increase the attendance at all the Vocational Schools. They are regarded by the Danes themselves as among the chief factors in conserving and promoting national prosperity and strength.

They are Schools in which the pupils are in residence. The young men attend during 5 months in winter, the young women during 3 months in summer.

The Schools, in most cases, are owned and carried on by private individuals under the supervision of the State. They receive small subsidies from the Government. They charge fees. A large number of Scholarships provided by the State are available to young men and women. These Scholarships provide about one-half the total cost to a student for fees which include board and living accommodation, etc. Ordinarily, as many as one-half of the pupils attending a School may be there on Scholarships.

There are about 70 People's High Schools in Denmark. It is estimated that about 7,000 young people attend them annually. That is equal to about one in every five of all the young people who come to 18 years of age annually in the rural population.

It would appear to be highly desirable that schools of this type should be established for the rural population in Canada. A beginning might be made by providing courses for young women at a few existing institutions, such as Agricultural Colleges, or other residential schools or colleges during summer vacation periods.

They might also be organized in connection with County or District Agricultural and Housekeeping Schools, as under Division V.

Qualifications for admission:—

Between 18 and 25 years of age;

Educational attainment and character to the satisfaction of the Principal or a Committee on Admission.

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Courses:—From 3 to 5 months.

The young men and young women would not be in residence at the same time.

The Courses should be arranged and given for the purpose of cultivating and developing a sense of responsibility for life and its opportunities, social efficiency, public spirit and devotion to the country.

Emphasis should be laid upon Canadian and British History, Literature, Ability to use Books, Singing, Physical Culture, and Social Service in the community. In this connection see extended Report on People's High Schools of Denmark in Part III.

DIVISION VII.—SCHOOLS FOR AGRICULTURAL APPRENTICES.

Such schools on the Continent of Europe, in Ireland, and to a limited extent in England, pay particular attention to the training of pupils in manual dexterity and familiarity with the ordinary operations of farm work, such as ploughing, seeding, stacking, threshing, etc. The report on the Agricultural Apprentices' School at Clonakilty, in Ireland, gives as full information as may be necessary in this connection.

Only in the portions of Canada where settlement is comparatively new are Farm Schools for the purpose of teaching the ordinary farming operations necessary. In the older districts, before a pupil is admitted to the County or District Agricultural School, he should have spent long enough at practical farm work to have learned all the operations thoroughly. At the same time it is to be remembered that the actual practice of farm work in many parts of Canada is greatly below the standard of ordinary practice in England, Scotland, Germany, France and Denmark. The remedy for this state of affairs can only be gradual and comparatively slow. It may, perhaps, best be brought about through the co-ordinated Farming-Projects in connection with the Intermediate Rural School and the Rural High School. The influence and instruction of the Travelling Instructors would doubtless also have a marked effect on the skill and effectiveness with which the farm work is done.

FARM SCHOOLS.

The proper place at which to learn farming is a farm, managed as a business concern to provide a living and competence for the owner or worker. Farm Schools, where young men would learn how to do the work of farming and the methods of management, would be advantageous for people who have come to Canada from other countries without any experience of farm work under conditions similar to those of Canada or with implements and tools like those used in Canada. Particularly in the districts which are being settled by those who come from countries whose climatic or soil conditions and farming methods are different from those of Canada, it would be advantageous if a farm such as an "Illustration Farm" could be designated to receive such people for short Courses, lasting from a week at a time up to a longer period, according to their needs.

The Commission recommends for such districts an Illustration Farm on a plan somewhat similar to those arranged for by the Committee on Lands of the Commission of Conservation. It might be the headquarters of a Travelling Instructor. To supplement the information and advice which such an Instructor could give on their own farms, he could meet the newcomers in groups from time to time at the Illustration Farm, to give illustration and demonstration of the operations and methods of farming suitable to the district and to the resources of those who are settling in it. The waste of time which often occurs, the loss of crop which sometimes ensues, and the disappointment for a period of one or more years which frequently comes to the beginner, might be in a large measure prevented. Whatever would accomplish that would be of economic advantage to the whole community not merely from the immediate saving and prevention of loss, but from the ability, knowledge and spirit resultant in these new settlers. The benefit would be to the individuals themselves, to their community, and to the business and transportation interests.

DIVISION VIII.—AGRICULTURAL AND HOME ECONOMICS COLLEGES.

The work of Agricultural Colleges in Canada is discussed at length in Chapter IX on Education for Rural Communities.

In the United States extension work and the training of teachers for Agricultural Schools and for the teaching of agriculture in Secondary Schools have become important features. The University of Wisconsin is a notable example of what may be undertaken in that respect.

Types of Colleges similar to those in this Division which should be studied in connection herewith:—

Ontario Agricultural College, Guelph, Ont.;

Macdonald College, Que.;

Manitoba Agricultural College, Winnipeg, Man.;

The Agricultural Colleges of Cornell University and of the Universities of Wisconsin and Illinois.

DIVISION IX.—CORRESPONDENCE-STUDY COURSES.

These should be provided in connection with Agricultural Colleges and Housekeeping Colleges, or in connection with other Central Institutions.

The Correspondence-Study Courses might be supplemented by Travelling Instructors, and by Reading Courses.

The University of Wisconsin, which has begun work in this field, offers useful guidance.

These Courses would be specially for the benefit of those to whom it would not be convenient to attend classes arranged for by a District Instructor.

SECTION 2: LOCAL AND PROVINCIAL DEVELOPMENT AUTHORITIES.

GENERAL CONSIDERATIONS.

1. It is important to adopt a plan which will secure the largest degree of *public confidence* and maintain the largest measure of *public interest and co-operation*.

2. It is important to adopt a plan which will preserve *Provincial control*, encourage *local initiative* and develop *local responsibility*.

3. It is important that there should be a *large number of persons* representing Manufacturing Industries, Trades, Commerce, Transportation, Agriculture, Forestry, Mining, Fisheries, Housekeeping and Education, *ready to take the initiative* in local undertakings and *able to co-operate* in making effective application to the needs of localities of financial grants and any other assistance. In the opinion of the Commission, a policy which would be applied wholly or mainly by directive authority from headquarters, leaving to local centres little initiative or responsibility, would not accomplish much for a long time.

4. It is important that there should be in each Province a *Central Body or Authority*, which could bring to bear on all proposals from local centres the wide knowledge and practical experience of *capable men and women* familiar with education and with industrial, agricultural and housekeeping problems. Such a Central Body would be able to supply information for the guidance of Local Authorities at the beginning of their work, and to furnish advisory assistance through experts of high ability. Through the meetings and discussions of such a Central Body the permanent officials charged with the administration would be kept in touch with public opinion as to the particular needs of localities, as to the *suitability and acceptability* of schemes proposed, and as to the practicability of having such schemes supported and carried out. The Central Body would also serve the purpose of a *clearing house* through which an intimate knowledge of the results from experience in one locality would be made available to other communities.

5. It is important to adopt a plan whereby the Dominion, the Provinces, the Localities and Individuals will *co-operate and each contribute* in some well-considered and equitable proportion to the cost of Development Undertakings. A plan of organization which provides for the financial support from Communities being properly articulated with financial grants from Central Authorities would tend to bring about *efficiency and stability*. A long time is required to realize upon educational work; and continuity of effort to meet recognized needs is essential. The plan should be such as would ensure concurrent progressive action in the same direction by the Central and Local Bodies. Provision should

be made for *Efficiency Audits*, in order that each Contributing Authority may be assured that the money is being used for the purpose for which it is granted, and that the work is being well done.

6. It is important to adopt a plan which will ensure that the *national interests* as well as the local points of view will be considered.

7. It is important that there should be a *Dominion Consultative Body*, through which the widest knowledge and experience could be put at the service of all the Provinces and thus be brought to bear on problems and undertakings of consequence to them all.

8. It is important that there should be a *Dominion Authority* competent to co-operate with Provincial Authorities, to provide *expert counsel* to any Province which might not be adequately organized or staffed to render service in that respect to all localities and industries within its borders, and to promote *scientific industrial research* and the diffusion of knowledge resulting therefrom.

THE COMMISSION'S RECOMMENDATIONS.

The Commission recommends that Local and Provincial Development Bodies be constituted as follows:—

I.—Local Urban Industrial Development Boards.

II.—Local Rural Development Boards.

III.—Provincial Development Councils.

IV.—Provincial Development Commissions.

The Commission further recommends the constitution of,—

V.—A Dominion Development Conference.

VI.—A Dominion Development Commission.

VII.—A Dominion Development Fund.

I.—LOCAL URBAN INDUSTRIAL DEVELOPMENT BOARDS.

DUTIES:

1. To consider by what means Industrial Training and Technical Education may be applied most advantageously to the development and improvement of workers, industries and occupations within the areas served by them severally.

2. To make proposals, applications or recommendations to a Provincial Development Council, or any other Authority constituted by the Provincial Government as competent to deal with such proposals.

3. To provide and maintain Industrial Training and Technical Education by means of institutions, classes, courses or otherwise, subject to the regulations of the Government of the Province.

4. To provide Vocational Guidance for the youth of the area by such means as they may think fit.

5. To administer any Grants received for any of the aforesaid objects.

CONSTITUTION:

As provided for by each Province by Order-in-Council or by legislation.

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SUGGESTIONS:—

Each Board to be appointed preferably by the local education or municipal Authority; or if not wholly so appointed, then to the extent of two-thirds by the local Authority or Authorities, with one-third appointed by the Provincial Authority for Industrial Training and Technical Education.

Each Board to include one or more members of the Local Education Authority and to represent:—

- (1) Employers and Employees in Manufacturing Industries, Trades, Commerce, and where they are important, Mining, Fisheries and Transportation;
- (2) Housekeeping;
- (3) Education.

Having regard to the desirability of continuity of policy, appointments to be made preferably for a term of years, a proportion of the members retiring every year, and being eligible for re-appointment.

It would likely be found expedient for each Board to constitute Committees for the more effective carrying on of its work. The main divisions would obviously be Industrial, Housekeeping, and Vocational Guidance, with such further divisions or sub-divisions as might be thought desirable.

II.—LOCAL RURAL DEVELOPMENT BOARDS.

DUTIES:

1. To consider by what means Industrial Training and Technical Education may be applied most advantageously to the development and improvement of workers, of agriculture, rural industries, housekeeping and occupations in rural communities, within the county or other areas served by them severally.
2. To make proposals, applications, or recommendations to the Provincial Development Council or any other Authority constituted by the Provincial Government as competent to deal with such proposals.
3. To provide and maintain Industrial Training and Technical Education by means of institutions, classes, courses or otherwise, subject to the regulations of the Government of the Province.
4. To administer any Grants received for any of the aforesaid objects.

CONSTITUTION:

As provided for by the Province by Order-in-Council or by legislation.

SUGGESTIONS:—

It would appear to be desirable, where local conditions permit, that a county area should be the area served by the Local Rural Development Board. In some cases it might be found expedient to combine one county with another, or with part of one or more other counties.

Each Board to be appointed, preferably two-thirds by the education Authorities or the municipal councils of the area served, with one-third appointed by the Provincial Authority for Industrial Training and Technical Education.

Each Board to represent:—

- (1) Agriculture;
- (2) Industries;
- (3) Housekeeping;
- (4) Education.

Having regard to the desirability of continuity of policy, appointments to be made for a term of years, a proportion of members retiring every year and being eligible for re-appointment.

It would likely be found expedient for each Board to constitute Committees for the more effective carrying on of its work. The main divisions would obviously be: Agricultural, Rural Industries, and Housekeeping, with such further divisions or sub-divisions as might be thought desirable.

III.—PROVINCIAL DEVELOPMENT COUNCILS.

DUTIES:

1. To consider systems and schemes of Industrial Training and Technical Education for the development and improvement of workers, industries, agriculture, housekeeping and occupations within the Province.

2. To make recommendations to the Provincial Development Commission or to the Government of the Province in that connection.

3. To do such other things as may be required by the Government of the Province in relation to Industrial Training and Technical Education.

4. To make recommendations to the Dominion Development Commission.

CONSTITUTION:

As provided for by the Province by Order-in-Council or by legislation.

SUGGESTIONS:—

Two-thirds of the members might be elected by Local Development Boards, and one-third appointed by the Provincial Government to represent:—

- (1) Manufacturing Industries, Trades, Commerce, Mining, Fisheries and Transportation, (employers and employees);
- (2) Agriculture and Forestry;
- (3) Housekeeping;
- (4) Education.

Or

Members might be all appointed by the Provincial Government to represent interests as aforesaid.

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Appointments or elections to be preferably for a term of not less than six years, a proportion of the members retiring every two years, and being eligible for re-appointment or re-election.

A Provincial Development Council would doubtless find it expedient to forward its work by means of committees, such as Industrial Committee, Agricultural Committee and Housekeeping Committee, with such further divisions or sub-divisions as might be found desirable.

IV.—PROVINCIAL DEVELOPMENT COMMISSIONS.

DUTIES:

1. To consider what may be necessary for or advantageous to the development and improvement of workers, industries, agriculture, housekeeping and other occupations within the Province by means of Industrial Training and Technical Education.

2. To co-operate with the Provincial Department of Education and with other authorities within the Province for the organization, administration, and maintenance of Industrial Training and Technical Education within the Province.

3. To provide the service of experts for advising with Local Authorities and for other purposes as might be expedient.

4. To inspect and report upon the work of all classes, schools and institutions in respect to which any grant is made from public funds for Industrial Training and Technical Education; and to make recommendations to the Provincial Government in respect to the administration of any Grants or other assistance in aid of Industrial Training and Technical Education.

CONSTITUTION:

Members to be appointed by the Lieutenant-Governor-in-Council.

SECTION 3: DOMINION DEVELOPMENT BODIES AND FUND.

V.—A DOMINION DEVELOPMENT CONFERENCE.

DUTIES:

1. To consider questions of Industrial Training and Technical Education for the development of the Dominion in respect to workers, industries, agriculture, housekeeping, and occupations, referred to it by Provincial Development Councils, or any other Authorities constituted by Provincial Governments

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in this relation, and to advise each Provincial Authority in regard to such questions.

2. To consider and report upon questions referred to it by the Dominion Development Commission.

CONSTITUTION:

Representative members:—

(a) Elected representatives of Provincial Development Councils.

Suggested basis of representation: 3 members from each Provincial Council, plus one member for each 300,000 population, or fraction thereof above 300,000, in the Province as determined by the latest decennial census.

Official members:—

(b) One member of each Provincial Government, or a Deputy accredited by him.

(c) One member of each Provincial Development Commission.

(d) Members of the Dominion Development Commission.

VI.—A DOMINION DEVELOPMENT COMMISSION.

DUTIES:

1. To co-operate with Provincial Development Commissions and Councils, Local Development Boards and any other Authority constituted by a Provincial Government for the development and improvement of industries, agriculture, housekeeping and occupations by means of Industrial Training and Technical Education.

2. To provide experts, whose services for counsel would be available to Provincial and Local Authorities.

3. To promote scientific Industrial Research and the diffusion of knowledge resulting therefrom.

4. To provide and maintain and to assist in providing and maintaining Central Institutions to supplement the work carried on by the Provincial and Local Development Authorities, if and when such Central Institutions are approved by the Dominion Development Conference.

5. To make recommendations for the administration of the Dominion Development Fund.

6. To report to the Governor General in Council, or to a Department of the Dominion Government.

CONSTITUTION:

Members to be appointed by the Governor General in Council.

VII.—A DOMINION DEVELOPMENT FUND.

The Commission recommends that the sum of \$3,000,000 be provided annually for a period of ten years by the Parliament of Canada and paid annually into a Dominion Development Fund.

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NOTES:—

1. Not less than 75% of the amount paid each year into the Dominion Development Fund, from the above source, to be divided into nine portions, in proportion to the population in each of the nine Provinces as determined by the latest census, and allotted to each Province accordingly for Development Undertakings therein. Each of the said nine portions of the Fund to be administered as the "(Name of the Province) Account of the Dominion Development Fund"; and the remainder of the Fund to be administered as the "General Account of the Dominion Development Fund."

2. Any portion of the Fund allotted to a Province which may remain unearned or unpaid at the expiration of any fiscal year, to be carried forward and remain in the Account of the Province until required for Development work within such Province.

3. Any portion of the Fund in the "General Account" which may remain unexpended at the expiration of any fiscal year to be carried forward and remain in the "General Account" until required for Development work upon the recommendation of the Dominion Development Commission.

4. Payments to be made to Development Authorities in any Province, from the funds in the Account of such Province and from the funds in the "General Account", only upon the recommendation of the Dominion Development Commission.

5. In order that a Provincial Government or Local Development Authority may be entitled to receive a payment from the funds in a Provincial Account of the Dominion Development Fund, it will be necessary:—

(a) That the *Service* (that is, the Development Undertaking proposed by a Development Authority) and the *Budget*, for the fiscal year for which the payment is intended, shall have been approved by a Provincial Development Commission or other Authority constituted by the Provincial Government for that purpose; and that a copy of said *Budget* and a copy of a certificate of approval by the Provincial Authority of the proposed *Service* shall have been received by the Dominion Development Commission.

(b) That a certificate shall have such been issued by a Provincial Development Commission or other Authority recognized by the Provincial Government as competent to make an Efficiency Audit, to the effect that the said Development Authority is administering the *Service* adequately and efficiently and in accordance with the authoritative regulations; and that a copy of said Certificate of the Efficiency Audit shall have been received by the Dominion Development Commission.

6. In any case where a Development Authority has not maintained and carried out the *Service* (that is, the Development Undertaking provided for in the *Budget*) adequately and with reasonable efficiency, the certificate of the Efficiency Audit shall state the extent to which the Undertaking was not maintained and carried out in an efficient and satisfactory manner; and the certificate

shall also state whether the Development Authority is taking any steps to remedy any such deficiencies as exist.

7. If the Dominion Development Commission is not satisfied that the Development Authority is maintaining and carrying out the *Service* adequately and with reasonable efficiency, it may at its discretion deduct such amount as it thinks fit from the amount of the Grant from the Dominion Development Fund that would otherwise be payable, and give a certificate declaring its dissatisfaction and the amount of such deduction, and in that case only the amount of the Grant so reduced shall be payable to the Development Authority in question.

8. Before a payment can be made for a Development *Service*, in the second or any subsequent year of its progress, a duly audited statement in detail of the receipts from all sources for the maintenance of the said *Service* and of the actual expenditure upon said *Service* for the preceding fiscal year shall have been received by the Dominion Development Commission.

9. The Treasury may accept gifts into the Dominion Development Fund for all or any of the purposes for which payments may be made from the Accounts of the Provinces or the General Account.

SUMMARY OF THE USES OF THE FUND.

Payments should be directed to secure as speedily as is practicable:—

1. The service in each Province of an adequate supply of persons (teachers, instructors, demonstrators, executive workers) properly qualified to carry on Industrial Training and Technical Education.

SUGGESTION:—75% of the cost of training, or of securing otherwise, might be paid.

2. The establishment or extension and maintenance of Classes, Courses, Schools or other institutions or means for Industrial Training and Technical Education.

SUGGESTION:—A proportion of the salaries of teachers, instructors, demonstrators and executive workers according to approved *Budgets* might be paid, varying from one-half in cities, to two-thirds in towns, and three-quarters in villages and rural districts.

3. The provision of suitable and adequate appliances, apparatus and equipment for teaching purposes, but not including school buildings, furniture, or consumable supplies.

SUGGESTION:—75% of approved *Budgets* might be paid.

4. The provision of Scholarships to equalize opportunities to young people and other workers to profit by Classes, Courses, Schools or other institutions.

5. The provision of experts with experience in Industrial Training and Technical Education whose services for counsel would be available to Provincial and Local Authorities.

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6. The service of Central Institutions, when and where required to supplement the work carried on by the several Provincial and Local Development Authorities, either by providing and maintaining or by assisting in providing and maintaining such Central Institutions.

7. The promotion of Scientific, Industrial and Housekeeping Research and the diffusion of knowledge therefrom.

CHAPTER VIII: INDUSTRIAL TRAINING AND TECHNICAL EDUCATION IN RELATION TO APPRENTICES, FOREMEN AND LEADERS.

In Germany, France, England, Scotland, Ireland and elsewhere the avowed aim of Industrial Training and Technical Education is not only to increase the working or productive efficiency of the pupil, but to develop all his powers, to prepare him for citizenship, to improve the industries, and to render the conditions of living more satisfying. The interests of the pupils, parents, employers, the community and the State are all considered. Even when compulsory attendance at Continuation Classes is exacted, there is a definite purpose of using the school as a means to raise the whole community to a higher level of intelligence, ability and goodwill.

SECTION 1 : APPRENTICES.

APPRENTICESHIP IS DISAPPEARING.

The altered conditions of industrial work, by the organization of production through factories, have revealed the insufficiency of the traditional methods of education to meet these new conditions. New means and new opportunities are required to provide for apprentices and workmen the instruction and training for their trades. The employers are no longer able to supply those as the old master did to his apprentices.

Owing to the highly organized manner in which many industries are now conducted, and the specialization of the workers upon particular parts of the factory processes, experience of workshops alone is not a sufficient teacher for industrial efficiency. In former years the apprentices, by doing a greater variety of things, acquired the wide experience which developed technical understanding as well as skill of hand. In many factories nowadays the experience of the learner is only the doing of one thing over and over again for prolonged periods.

The use of machines reduces the need for a wide range of skill in hand-work. As the division of labor becomes more and more extreme, there is less need as well as less opportunity for the training of the all-round mechanic. The all-round mechanic is master of his work to a far greater extent than the handy laborer or machine tender.

WORKSHOP AND SCHOOL NEED EACH OTHER.

Where the factory system has been developed young men, who are to work with their hands, have a less advantageous position and opportunity after school

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than they had formerly under apprenticeship. Even in a new country like Canada, where the demand for unskilled labor is usually great in summer, they begin to feel the disadvantage. Too few of them learn to do skilled work which offers security of employment at good wages.

The applications of science to industry seem to require that the workers shall possess technical knowledge for which the opportunities in the factory do not provide, although the technical training must be carried on in close touch with the practical work. Instruction in the theory, apart from participating in the actual practical work, does not qualify the young worker. Even where technical instruction is provided in school, that alone cannot make up for the absence of systematic training outside the school. What is needed can be obtained by a combination of effort on the part of the employers, the employees and the schools. The farm, the workshop and the factory may each be utilized and improved, as commercial investments and as educational means or instrumentalities. It would thus be practicable to make the most of the further application of science to industry without sacrificing the opportunity for personal efficiency of the worker. Parents, employers and State must all unite to protect young people by providing opportunities for them to develop into good workmen and good citizens.

THE SCHOOL MUST SUPPLEMENT THE SHOP.

It is a common saying that apprenticeship is now dead. That is true in the sense that the form of the apprenticeship, with a contract specifying the duties of both sides, is now the exception rather than the rule. From a study made of this question in France about ten years ago it was learned that only about one-tenth of the boys in trades had any contract at all as apprentices.

Among the causes of the disappearance of apprenticeship under a contract are mentioned the extreme division of labor, the indifference of masters who no longer require the all-round mechanic, the new opportunities of ready employment for boys at relatively high wages, and the short-sightedness or indifference of parents who are more anxious to have the boy earn as high wages as practicable, from the beginning, than to learn a trade which would serve him in his maturity. The boy himself is not, at that age, with his judgment, will, and conscience only partially developed, a good judge of what is best for himself. In this connection it seems desirable that the school authorities, or some body such as a Local Development Board or a Vocational Committee, should come to his help.

The schools in most cases have done little to direct the attention of the youth towards the occupation to be followed or to stimulate him to seek qualification for it. They have been directed towards the vocational education of teachers, officials, professional people and the leisure class. They must now adapt themselves to the needs and circumstances of existing society, most of whose members are productive or conserving manual workers or workers with machinery.

A new system of apprenticeship must make provision that apprentices, or learners of trades, will be cared for in both the employers' establishments and in the Vocational School, and that there shall be general instruction and training as well as particular training for the occupation.

THE ESSENTIALS FOR PROGRESS IN EFFICIENCY.

After a boy has begun to earn his living, his attitude towards the means of further education has much to do with its power to serve him and its success. If he sees or thinks he sees that the subjects and work are all practically useful to him, he will believe in the school, and in consequence the school can do much more for him. Such a school, while aiming directly to increase his efficiency as a worker and a contributor through work, will nourish a proper pride in his work and skill, thus making him a better citizen. From the lessons on citizenship he will be intelligently aware, not only of his rights and duties as a member of the trade or craft, but also that his craft or trade has an honorable history. From that point of view he recognizes himself as not only a worker, to obtain all the wages he can get, but as a member of an ordered community and nation, and that the well-being of all is bound up together.

While the feature of the school, which appeals most strongly to the young apprentice, is the opportunity which it provides to enable him to become a better workman and to earn higher wages, those who have organized Continuation Schools, and those who carry them on, do not neglect the information and training which make for good citizenship. The endeavor to give instruction of a general character, without particular reference to the occupation of the boys, was not successful anywhere for any large proportion of the young people. It was not until the courses of study and work were made to centre around the occupation of the pupil that the schools began to meet the situation.

For these Schools teachers are required who have special qualifications for the practical and technical parts of the work. While the qualifications of the teachers include ability, from training and experience, for giving instruction in the technical subjects and technical part of the work, it is necessary that they should possess broad general knowledge and professional spirit regarding the occupations or trades which they represent. While the curriculum should afford the student the right training for some specific occupation, the industrial and technical training for that purpose should be woven also into the course of study of the general educational system.

NATIONAL EDUCATION ASSOCIATION.

The following are extracts from the Report of the National Education Association of the United States on *The Place of Industries in Public Education*:—

"17. The basic standard of judgment should be its (education's) effect upon the health, efficiency and intellectual vigor of the youth of the nation. Until educators and school authorities are ready to accept these fundamentals, 'groping in the dark' and confusion as to essential principles will continue.

"18. With the progress of time the ideal of personal culture has been largely modified or replaced by that of efficiency. According to this aim education concerns itself with preparing for life rather than in cultivating all the powers of the child.

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"If education is to prepare for life, it must begin by preparing to make a livelihood, and the vocations of the vast majority of those whom a democratic society would educate involve forms of handwork and industry in which the school can give an extensive training. Such training is becoming increasingly necessary because of changes in the industrial life that tend to check or to destroy the apprentice system, and because this life is continually becoming more complicated and difficult to understand without specially direct study. Thus the school is being forced to take up vocational training in a great variety of occupations hitherto prepared for adequately in other ways, for the negative reason that the other ways are disappearing, and the positive one that it alone is capable of furnishing a training suited to modern needs."

WIDE AIMS OF THE SCHOOL.

The objects of the Continuation Schools of Scotland, as set forth in Circular 426 of the Scotch Education Department, embody what we found to be the dominant aim in all countries which we visited. These are as follows:—

(1) The maintenance and improvement of the health and physique of young people.

(2) The broadening and refining of their interests and sympathies by the influence of good literature.

(3) The equipping them with a competent knowledge of some craft, industry or occupation which offers a reasonable chance of providing a means of livelihood in adult years.

(4) The inculcation of the responsibilities and duties of communal life as well as of its rights and privileges.

Industrial and Technical Training alone may promote merely the egotistical or greedy and selfish side of man. It is recognized as necessary that the school work should widen the knowledge of other trades and even of other nations, and enhance the individual's appreciation of his duties as well as his rights in the community and the nation. The Elementary Schools cannot do this fully, principally because of limitation of time and the age of their pupils. The Continuation Schools can and should do it.

In addition to the regular class-room work and shop practice of the Continuation Schools, efforts are made to develop the social capacities of the pupils. The pupils are encouraged to make use of books out of the public libraries. Interesting as well as instructive lectures are provided, and there are walks and excursions for pleasure as well as for acquiring information.

APPRENTICESHIP IN GERMANY.

Germany has reorganized the old-time apprenticeship system and combined it with Continuation Schools having courses directly related to the occupations, and has also reorganized the Trade Guilds chiefly for the purpose of improving apprenticeship. In that country there is considerable conflict between the two systems of industry—the factory system for production on a large scale and the

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handicraft system for small trades. The change from the handicraft system to the factory system is looked upon by many as a real misfortune. Such persons hold that the increased volume of trade and apparent prosperity are not adequate compensation for the loss to the community in the altered character and attitude of the producing workers.

In many trades in Germany it is still the proper thing for a boy, who has his living to earn, to learn a trade and to do it in the old-fashioned way by means of apprenticeship. There, as in Canada, there is some doubt regarding the profitability of apprentices; and some shops, believing them unprofitable, refuse to take them and recruit their forces from men trained elsewhere.

Apprenticeship papers are a contract binding on both parties, which neither may break except for the most serious reason, although it may of course be dissolved by mutual consent. Apprenticeship commonly begins at the age of 14, which marks the close of the compulsory full-time school period. The term varies between 3 and 4 years. At the same time men of mature years may be trained as operators of special machines without the signing of apprenticeship papers.

TRADE GUILDS IN GERMANY.

Since 1881 there have been a succession of laws in Germany, giving voluntary Guilds of various trades a privileged position, and in some measure transferring from the State itself to the Guilds the care of the organization of labor in the small trades. By the law of 1897 the main provisions regarding trade Guilds, journeymen, and apprentices were consolidated and some important changes were made.

Persons carrying on trades on their own account can form Guilds for the advancement of their common trade interests. The chief objects of these Guilds are: (a) the cultivation of professional pride among the members of the trade; (b) the maintenance of friendly relations between the employers and their employees; (c) the assistance of unemployed journeymen to find work and aiding them during the period of their non-employment; (d) the making of all regulations and conditions of apprenticeship and caring for the technical and moral education of apprentices; (e) the adjustment of disputes between members of the Guild and their apprentices.

In seeking to attain these objects the Guilds are recommended to proceed by the following means:—

(1) Establishing and developing good standards of character and conduct (in industry and morals) of masters, journeymen and apprentices, and particularly the maintaining of technical schools and the framing of regulations for their administration;

(2) Determining the qualifications of persons who may become masters and the conditions under which they may become such and examinations in connection therewith;

(3) Creating a fund to assist members of the Guild, their families, journeymen, apprentices and helpers in cases of sickness, death, etc.;

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(4) The organization of tribunals for arbitration, to take the place of the ordinary arbitration authorities, for the adjustment of disputes between members and their employees;

(5) The formation of a general business organization to advance the trades for which the Guilds exist.

Membership in the Guilds cannot be refused to anyone fulfilling the legal and statutory requirements, nor can anyone be admitted without fulfilling those conditions. In the main the membership is limited to the following:—

(1) Persons who practise in the district on their own account the trade for which the Guild was created; (2) Those who hold the position of foreman or a similar office in an establishment; (3) Those who have fulfilled the conditions of those two classes but have ceased to work without taking up any other trade; (4) Handicraftsmen working for wages in industrial and agricultural pursuits; (5) Other persons admitted as honorary members.

THE GUILDS AND SCHOOLS.

When the Guild undertakes to maintain a technical school, the local authorities usually place a suitable building at its disposal and also heat and care for it. Usually they also give a grant towards its maintenance. The Instructors for the most part are members of the Guild who are actually following the trade. That keeps the instruction close to the actual needs of the trade. As these schools come more and more under the control of the public authorities the course of study and work is being broadened to develop the qualities of the students as individuals and as citizens.

FIRST ATTEMPTS OF CONTINUATION SCHOOLS.

As long ago as the middle of the last century many of the ordinary Sunday schools in Prussia, Wurttemberg and Baden were converted into Trade Sunday Schools, that is, schools where those who had begun to learn their trade could receive theoretical and educational instruction to supplement the knowledge which they acquired in the shops. The first results with such Continuation Schools were not satisfying or encouraging. That was due, chiefly, to the fact that the teachers were the Elementary School teachers and their methods were not suited to the more advanced age and experience of their pupils. It was only when the courses of study and work were made to centre around the occupation of the pupil, and teachers were appointed with special qualifications, that the schools began to go forward and to realize the purpose for which they were intended. Then for a time the stress laid upon the technical and occupational needs of the pupils seemed likely to prevent the schools from serving their purpose in improving the citizenship. During the last ten years more attention has been paid to providing in the schools the kinds of experience which will realize all the objects and possibilities.

THE LAW AS TO APPRENTICESHIP.

The law regarding apprenticeship shows a keen solicitude on the part of the State for the preservation of the apprenticeship system, whereby the apprentices shall be thoroughly trained for their work. It defines those persons who have the right to engage apprentices, specifies the length of the apprentice period, makes provision for the apprentice being admitted to the examination for a journeyman's certificate, and provides for the constitution of the examining boards, consisting of a president appointed by the Chamber of Trades and representatives of the Guilds and of the Journeymen's Commission. It outlines the duties of the employer in relation to the apprentice. These are chiefly as follows:—He must instruct the apprentice in all matters relating to his trade, require him to attend an industrial or trade Continuation School, make sure that he applies himself zealously and conducts himself properly, seek to guard him against the formation of bad habits and to protect him from ill-treatment. The employer must personally direct the work of the apprentice or place him under the direction of a competent person charged with his special instruction.

The Guilds provide for an Apprenticeship Commission. Its duty is to see that the conditions of apprenticeship are carried out faithfully on both sides. For this purpose they visit the shops at least once a year to satisfy themselves in respect to those matters.

This subject is dealt with more fully in the Report on Germany.

SECTION 2 : FOREMEN AND LEADERS.

DIFFERENT KINDS OF EFFICIENCY.

All the evidence which has come to the Commission indicates that workers who have been trained in a shop or factory, in connection with the instruction and experience of Industrial and Technical Courses, are more efficient than those who are not so trained. The wages which the technically educated earn are confirmation of that.

While the interests of the employer and the employee alike require efficiency in the doing of work, it is recognized more and more that there is a difference between industrial efficiency and technical efficiency. Industrial efficiency may represent ability to do work quickly and well, while technical efficiency may represent ability to plan, to understand, and so to direct the activities and operations to advantage. There is an essential difference between industrial technique and industrial intelligence, as there is between skill of hand and the scientific spirit in work. As far as possible the aim of Industrial Training and Technical Education should be to develop both kinds of ability. From them result power and willingness to render efficient service.

TENDENCY TO LEAVE MANUAL WORK.

The remark is frequently heard that Technical Education makes men desire to leave industrial and technical work which involves manual labour.

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When the desire exists it may come from ambition to reach a position which is better paid and which is generally regarded as giving a higher social status. When a man from the shops seeks to qualify for the draughting room, or a clerking position, the Technical Classes will give the requisite knowledge and training.

At the Technikum at Chemnitz the question of providing a one-year course, directly planned to improve the ability and skill of the workmen in their craft, has been under consideration for the purpose of correcting or counteracting the tendency of the two-year course to make those who take it leave the skilled occupations of the workshops. In other places efforts are being made to counteract the desire to leave the manual occupation by providing more handwork in connection with the classes, and more opportunity whereby the pupil would widen his range of skill and knowledge by the use of materials, tools and machines.

At bottom the question seems to be similar to that arising from the courses of study in Elementary and Secondary Schools. It has been urged that the absence of opportunity to participate in handwork, and to acquire ability and skill to do it well, has caused the pupils to lose interest in and turn away from occupations of a constructive and handworking kind. The remedy does not seem to be through withholding intellectual instruction, but rather through making all the studies have an evident relation to some form of constructive manipulative work in which the student is directly interested through his occupation. The only way to make a man like his work is to make him understand it thoroughly and to possess the ability to do it well.

In reply to a question as to whether the Continuation Schools made the pupils turn from handwork, Dr. Kerschensteiner of Munich said that it depends on the organization of the school. If the school is so organized that a pupil can attain more manual skill in doing artistic work, he gets to love the artistic work more and more; but everywhere schools have been too theoretical. The teacher is constantly seeking to make his instruction wider and more thorough, and thus pushes the pupil, at first unintentionally, beyond the limits of artisanship. But as it is impossible for a trade to flourish which is being automatically drained of its most intelligent members, it must be a fundamental principle, in the organization of all technical schools, to preserve the pupils' joy and interest in personal manual work. Dr. Kerschensteiner insisted that it is constantly necessary to advise the pupils on leaving school not to crowd into the offices, but to seek positions in the workshops, which stand higher in repute and are better paid than the former.

QUALITIES REQUIRED IN FOREMEN.

Of course a number of men as they gain experience are promoted upward to positions as foremen. It is through skilled labor of the mechanical sort that the majority of young men advance to and enter the rank of managerial labor. The development of aptitude and ability for management is not dependent upon formal training of any kind. Successful management requires qualities of personality, of temperament and of force of character. Training cannot produce those, although it may improve the power of them for application.

Another element of managerial ability is the social product of intercourse with others, particularly the social results of games, and of participation in the activities of clubs and other organizations. A third qualification rests upon and arises from thoroughness of knowledge of all the facts which make up the situation to be managed, and of the relation between these facts and of the significance of each of them.

The qualities required in foremen are,—to get the largest output of work from the men under them; to keep the plant in good working order and as fully occupied as practicable; to maintain shop discipline and a state of goodwill and friendliness among the workers; and to carry on the work with such co-operation with the foremen in other departments, and in accordance with the instruction and policy of the full establishment, as to make for low cost of product and for quality and finish of product up to the standards required.

Similar qualities of temperament and character are required in the superintendents in addition to the knowledge, scientific spirit and power of judgment which have been developed by the course of training and study at the higher institutions for technical education or by practical experience in work. In the case of some superintendents, practical experience in the work enables them to make such use of the instructions and knowledge, obtained at Evening Classes and Technical Institutes, that the sum-total of their knowledge and ability equals or even excels the qualifications of those who have received a longer and more thorough school education but are without much practical experience of workmanship or management.

TRAINING OF MASTER WORKMEN.

A great deal of provision is made in Germany for the further training of apprentices who have completed their course and become full journeymen. These courses are provided either in connection with the Continuation Schools or other schools which go under the name of Fachschulen or Werkmeister Schools. There is also liberal provision for the further training of masters. In Prussia in 1900, the sum of 97,000 marks was provided for the organization and support of Master Courses and for exhibitions of machinery and tools for the commercial industries of Hanover and Posen. The appropriation for 1908 in Prussia, for eight institutions giving Master Courses, amounted to 767,698 marks. In the same year 40,790 marks were provided for shorter courses, and 32,261 marks for special Master Courses in the Technical Schools. The Prussian Government also contributed the sum of 142,246 marks to the support of exhibition halls containing all sorts of raw materials, fully and half manufactured materials, tools and special sorts of work, machines, etc.

The greater Master Courses continue from 4 to 6 weeks. The shorter Courses continue from 10 to 14 days. These latter are for the purpose of teaching special technique. The workmen often receive travelling expenses, and even wages, while attending these courses.

In connection with the exhibitions and industrial museums, lectures are provided by technical men at regular intervals, sometimes at the institution

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itself and in other places in the district. Travelling instructors are also provided who go from place to place giving instruction in the handicrafts.

DR. HERMANN SCHNEIDER'S OPINION.

Dr. Hermann Schneider, Dean of the College of Engineering, University of Cincinnati, is recognized as the foremost, as he was the first, leader in the movement for Co-operative or Co-ordinated Technical Education. The Commission is indebted to Dr. Schneider for much information of value furnished in discussions of the question. Part of that has been woven into the text of the Report in connection with Co-ordinated Classes or Schools. The following paragraphs are taken from his article "Education and Industrial Peace" as published in the Annals of the American Academy of Political and Social Science, November 1912.

THE LEADER.

The leader emerges from the mass. There is no known rule of heredity for personality, for intrinsic quality. There is a divine right of leadership, but it does not descend from father to son; it is conferred in utter disregard of wealth, creed, name, condition or caste—and it is non-transferable. The personality which creates leadership pushes instinctively above the dead level, above mediocrity; and the fight up through the mass is what gives the leader the strength to supplement personality.

EDUCATION AND THE LEADER.

The leaders who devise and direct in industry are usually men who left school when they were about fourteen years old and went to work at the bottom. Their schooling has consisted of elementary work in reading, writing and arithmetic. Plunged into the competitive struggle for a living, with nothing but their innate resources to fall back upon, their wits were sharpened and their natural gifts of planning for and directing others stood out in bold relief. They advanced step by step, acquiring the two main essentials for shop management, a detailed knowledge of practical shop processes and an expertness in handling men. Many of them have become well "educated," that is, well and widely informed and able to think solely by their own efforts.

It is entirely safe to say that our present system of organized education has had very little influence in the training of those who actually manage the operations in factories, except as it has furnished them material science as a tool of operation. This is not a surprising fact, for the brains and the personality necessary to leadership are just as likely to be born in the alley as on the avenue, and their chances for an accession of strength through overcoming obstacles are greater in the alley than on the avenue. And since the number of men graduating from college is almost a negligible percentum of those who grow up and work, the cause is obvious. So then our formally organized system of education has had little to do with the training of those who devise and direct industrial work. We (in education) do not train the industrial leaders; they are trained by industry itself. There are of course the usual exceptions.

EDUCATION OF THE LEADER.

Now since the leader emerges from the mass, and since he gives evidence of his leadership in industry rather than in the school, it is evident that education must seek some connection with industry to obtain him; and since the detailed knowledge of practical affairs essential to industrial management can be obtained only under industrial conditions the further need of a tie between education and industry is evident. Industry and education must work together, therefore, to meet the problem of industrial unrest, and each has its separate but co-ordinated functions. Industry through the competitive processes in its daily tasks searches out the leader and gives him his practical training. Education implants in him the three fundamental principles of sound building together with the necessary material sciences of his profession. Further, the need of this tie between education and industry is imperative since bread and butter necessities and parental misguidance drive thousands to work at an early age.

Surely education can perform no greater service to humanity than to seek out men of ability and train them to devise and direct in such a way that life, liberty, and the pursuit of happiness shall be natural results of the day's work.

SCHOOL FOR INDUSTRIAL FOREMEN AT MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

While a great deal has been said of late years of captains of industry, the efficiency of the industrial arts depends in very large measure, and probably to a constantly increasing extent, upon the capacity of its non-commissioned officers—in other words, upon the foremen. These men receive the same education today as the ordinary mechanic, and it has been thought that it would be a great benefit to the community at large if they could have some instruction in the principles of applied science, so that they might understand more thoroughly the work they are superintending, and be ready to apply improvements. It is also felt that a better educated class of foremen would be a benefit to the community socially, as an intermediary class between the employer or engineer on the one hand, and the workmen on the other. To attempt to train young men separately for the positions of foremen would be, under the existing organization of labor, an impossibility. The foremen must continue, for the present at least, to be promoted from among the workmen. In giving them such an education as is desired, it is necessary to take men who are already working at their trade. As a rule instruction can be given to such persons only in the evening.

With this object it was decided seven years ago to substitute for the advanced Courses, which had been given by the Lowell Institute for a third of a century, a School for Industrial Foremen which is open, free of charge, to young men who are ambitious and well fitted to profit by the instruction; the term "Foremen" being used in its broad meaning.

To be admitted to the first-year Course the applicant must be at least 18 years of age, and must pass satisfactorily entrance examinations in Arithmetic (including the Metric System), Elementary Algebra, Plane Geometry, and Mechanical Drawing. These examinations may be, in a measure, of a competitive nature, and considerable weight is attached to the applicant's occupation and practical experience. The Courses are open to those only who are ambitious and willing to study. The character and amount of the instruction is such that, if the student is not well fitted to take up the work of the School, it will not be possible for him to derive full benefit from the Lowell Course, or perhaps to maintain his standing.

The scholarship of the students, and their ability to continue the Courses, are determined in part by examinations, but considerable weight is given to the term's work. Those students who fail to keep well up with the work or to profit sufficiently by the instruction are informed that they are not qualified to pursue the Course advantageously. Those who complete satisfactorily the required Courses of the two years and pass the examinations are given graduate certificates.

THE COURSES OF INSTRUCTION.

The School comprises, at present, two Courses, one Mechanical and the other Electrical. Each extends over two years. These Courses are intended

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to bring the systematic study of applied science within the reach of young men who are following industrial pursuits and desire to fit themselves for higher positions, but are unable to attend Courses during the day. The subjects included in the Courses are as follows:

FIRST YEAR COURSE.

Mathematics.....	56 hours.
Physics.....	33 "
Electricity.....	28 "
Mechanism.....	34 "
Drawing.....	40 "
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Total.....	191 hours.

The schedule for the first year is the same for both the Mechanical and the Electrical Course.

SECOND YEAR MECHANICAL COURSE.

Elements of Thermodynamics, the Steam Engine, and Boilers.....	38 hours.
Valve Gears.....	10 "
Applied Mechanics.....	38 "
Elementary Hydraulics.....	10 "
Testing Laboratory (Resistance of Materials)....	12 "
Steam and Hydraulic Laboratory.....	24 "
Mechanism Design.....	12 "
Elementary Machine Design.....	60 "
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Total.....	204 hours.

SECOND YEAR ELECTRICAL COURSE.

Elements of Thermodynamics, the Steam Engine, and Boilers.....	38 hours.
Valve Gears.....	10 "
Steam Laboratory.....	16 "
Direct Current Machinery.....	12 "
Alternating Currents.....	22 "
Electric Distribution.....	30 "
Electrical Testing (Laboratory).....	24 "
Laboratory of Dynamo Electric Machinery.....	48 "
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Total.....	200 hours.

It is the aim to adapt the Courses to the men for whom the instruction is intended and to include the study of those principles with which they are not likely to become familiar in practice, and which will give them a fundamental training in those matters that will be of the greatest value to them in the work in which they are engaged.

The instruction embraces recitations, lectures, drawing-room practice, and laboratory exercises. It is given by members of the instructing staff of the Institute of Technology. Many of the lectures are fully illustrated by apparatus and experiments. Written tests are given from time to time, and problems are assigned for home work at nearly every exercise. Text books are used in many of the subjects; but in some of the work, where the instruction differs widely from available books, printed notes are supplied to the students at cost.