

Education and Industrial Training of Boys and Girls

BY

HENRY DYER

C.E., M.A., D.Sc., LL.D.

Member of the School Board of Glasgow
&c. &c.

BLACKIE AND SON LIMITED

50 OLD BAILEY LONDON

GLASGOW AND BOMBAY

1913

Blackie's Library of Pedagogics



Education and Industrial
Training of Boys and Girls

Blackie's Library of Pedagogics

- Education and National Life.** By HENRY DYER, C.E., M.A., D.Sc., LL.D. 1s. net.
- Education and Industrial Training for Boys and Girls.** By HENRY DYER, C.E., M.A., D.Sc., LL.D. 1s. net.
- The Association of History and Geography.** By A. J. BERRY, M.A. 1s. 6d. net.
- Johann Friedrich Herbart. A Study in Pedagogics.** By A. M. WILLIAMS, M.A. 1s. net.
- The Minor Educational Writings of Jean Jacques Rousseau.** Selected and Translated by WILLIAM BOVD, M.A., B.Sc., D.Phil. 1s. 6d. net.
- Simple Lessons in Nature Study.** By JOHN O'NEILL. 1s. net.
- The Teaching of Geography.** By Prof. L. W. LYDE, M.A. 1s. net.
- The Teaching of English.** By A. E. ROBERTS, M.A., and A. BARTER, L.L.A. 2s. 6d. net.
- Colour-Sense Training and Colour Using.** By E. J. TAYLOR, Head Council School, Bacup. With Colour Plates. 1s. 6d. net.
- Health in the School.** By J. S. C. ELKINGTON, M.D., D.P.H., Head of the Department of Public Health in Tasmania. 2s. net.
- The Teaching of Latin.** By W. H. S. JONES, M.A. 1s. net.
- The Teaching of Modern Languages.** By CLOUDESLEY BRERKTON, M.A., L. & S. L. 1s. net.
- The Teaching of Grammar. ENGLISH AND ELEMENTARY LATIN.** By L. W. WILSDEN, M.A. 1s. net.
- Educational Essays.** By JOHN DEWEY, Head Professor of Philosophy in the Columbia University, New York. Edited by Professor J. J. FINDLAY. 1s. 6d. net.
- The School and the Child.** Selections from the essays of Prof. JOHN DEWEY. Edited by Prof. J. J. FINDLAY. 1s. net.
- The Education of Girls in Switzerland and Bavaria.** By I. L. RHYS, Headmistress, Liverpool High School. 1s. net.
- The Teacher's Rabelais.** Prepared by GERALDINE HODGSON, D.Litt., Lecturer in Education in the University of Bristol. 1s. net.
- Natural Elocution in Speech and Song.** By M'HARDY FLINT, Professor of Elocution, Maynooth College. 1s. net.
- Reynolds's Discourses on Art.** A Selection, edited by Professor J. J. FINDLAY, M.A., Manchester. *With Frontispiece.* 2s. net.

NOTE

This book is intended to guide parents, teachers, members of school boards, and employers in the arrangements required for the Education and Industrial Training of Boys and Girls, especially during the years of adolescence. An indication is given of the arrangements of the higher institutions, but for the details of these, reference must be made to the prospectuses and calendars issued by their governors. The references by way of illustration to special institutions and conditions are chiefly to those to be found in the West of Scotland, but they apply to other districts with slight modifications.

H. D.

CONTENTS

CHAP	Page
I. PRESENT-DAY REQUIREMENTS	9
II. TRAINING FOR BOYS	40
III. TRAINING FOR BOYS (<i>Continued</i>)	72
IV. TRAINING FOR GIRLS	90
V. EDUCATION FOR LEISURE TIME	101

Education and Industrial Training of Boys and Girls

CHAPTER I

PRESENT-DAY REQUIREMENTS

The changed industrial and economic conditions of modern times make it absolutely necessary that new arrangements should be made for the Industrial Training of boys and girls. Before the development of machine production the term "apprenticeship" was employed to signify not merely the training in the practical work of the trade, but also in its theory, so far as that was known. As the apprentices usually lived in the houses of their masters, and, indeed, shared the family life, their apprenticeship was not merely a training

**Effects
of Changed
Conditions.**

in the workshop, but also a preparation for life in its wider aspects, and it was recognized that character and intelligence were essential elements in the making of a good tradesman. All experience, both in the past and the present, proves that the spiritual is the parent and first cause of the practical, and especially the economic history of the Middle Ages shows us that an ounce of manly pride and enthusiasm is worth more than a pound of technical skill.

While nominal apprenticeship still exists in many trades, the subdivision of labour and the employment of machinery makes it difficult, and in many cases impossible, for the apprentices to learn the practical part of their trade in an efficient manner; and at the end of their term of apprenticeship they are not skilled workers in any sense of the term, and a considerable proportion of them drift into unskilled employment, as they are not able to adapt themselves to conditions different from those to which they were accustomed. As regards the theoretical side of their training, it is simply non-existent in so far as the

workshop is concerned; and even when the experience there is the best possible, under modern conditions, it requires to be supplemented by instruction in schools or classes, not only in the science and art connected with it, but also in some cases by practice in other departments than those in which the apprentices have been employed; so that they may be able to take up work of the same nature but different in kind, and be able to adapt themselves to changing conditions, which at present are often the cause of unemployment or a reduction to the ranks of unskilled labour. One of the most important problems of the day is the institution of a system of training which will not only make the workers skilled in the particular work in which they are engaged, but also give them that intelligence and adaptability which will enable them to fit themselves to new conditions. In its wider aspects that training should fit them to perform all the duties of citizenship in an efficient manner, and to take an intelligent part in the solution of the social and political problems with which we are confronted.

It is therefore evident that the industrial training of boys and girls cannot be separated from general education and training, which must form its essential foundation. We must have men and women before we think of mechanics and tradespeople; and we must have citizens who not only understand their duties and responsibilities, but also the economic and social problems arising from modern production, and who are able and willing to assist in their solution. Moreover, they must show that they are persons of high character, and that their conduct is guided, if not by a philosophy, at least by a working plan, and inspired by a religion which does not allow them to forget the ends of life while working for the means which are necessary for carrying it on.

It is, perhaps, necessary to say a few words on the general subject of training, as there is a tendency to exaggerate some aspects of the work, and to make arrangements which are neither in the interests of the students nor of industry. It ought to be recognized that the modern develop-

ments of trade and industry are tending to make the need of the higher scientific and technical training less necessary on the part of many of the men employed. Machine production is reducing many trades in great part to the level of unskilled work which may be performed by handy labourers after a very short experience in the working of the machines or in the manipulation required in manufacturing processes; and great numbers of comparatively unskilled workers are under the management of foremen who are able to give all the directions necessary for carrying out the operations. What the intelligent artisan requires is common sense and experience, much more than a smattering of scientific knowledge of an abstract kind. At the same time, every encouragement should be given to the most promising students to proceed to a higher course and fit themselves for positions of responsibility. The men who will revolutionize old industries or create new ones will, as a rule, be men who have thoroughly studied the theory of their work and made themselves acquainted with the best practice. Hence the necessity for

making arrangements for enabling those who are specially qualified by nature for such work to reach positions in which they will be able to render the best services to the community. It must, however, never be forgotten that the men engaged in every department of industry are entitled to live the highest human life which is possible for them and to act their parts as citizens. The most difficult problems of the future will be of an economic and social nature, and they will only be solved when we have well-informed and experienced leaders, backed up by an intelligent community.

Any system of training worthy of the name must not only provide for the adequate supervision of boys till they have completed their apprenticeship, but it must give the opportunities for the training, both general and special, which is necessary for efficiency, and it must lead forward to some opening in the ranks of adult labour which affords reasonable prospects of permanent employment. These conditions open up many problems and will require a great variety

of arrangements. Parents, employers, and educational authorities must supply that supervision and guidance which is especially necessary during the period of adolescence, but it should be given, not in the way of dictatorial orders, but rather of friendly advice and counsel, and it should aim at making independent, resourceful men and women who are able to do their own thinking and to adapt themselves to the conditions in which they find themselves. While in these days of extreme competition we cannot expect employers to devote very much time or money in educating their young people, a little co-operation with the educational authorities would go a long way towards solving the problems of technical education. Overtime should not be allowed to interfere with attendance at the classes, and some encouragement should be given to those who do well in them. Some employers give a small increase in wages to those who meet reasonable requirements, and in other ways they take an interest in the work they are doing, and this is a far more effective means of encouraging education than any form of legal compulsion. In

a recent speech in the House of Commons, Mr. Pease, the Minister of Education for England, in introducing the estimates for the year, said that he regretted that we have "no proper system of continuing the education of our young people", and he expressed the wish that employers would make it compulsory upon their young employees, who left school at fourteen, to attend a technical or trade class for one or two mornings or afternoons in each week—presumably at the employers' expense. It is hardly likely that this ideal state of things will be brought about until it is made compulsory upon the employers. Meantime a gradual improvement is taking place, and some employers are offering increased facilities and encouragement for attendance at continuation classes. The aim should be to make attendance at these classes (either during the day or in the evening) an essential part of apprenticeship, and the instruction to be part of the day's work, and not given when the apprentices are exhausted, and therefore unable to do justice to their work. Some of the Trades Councils are beginning to take

an interest in the training of apprentices, and among other things they have suggested the oversight of apprentices by trade committees, facilities for training in technical classes during the day, and a sufficient period of apprenticeship. All these suggestions have already been carried out in various parts of the Continent, especially in Germany. Dr. Kerchensteiner, the Director of the Public Schools of Munich, says that "we find the most encouraging corroboration of our statements in the views of employers of the most varied trades. The greatest sacrifice the employer is called upon to make, is to give the apprentice sufficient time at reasonable hours to attend the school. This sacrifice is now a matter of course. The personal attention of the organizer and his assistants, and the sympathetic pressure they exert, is a thousandfold more benefit than all the official codes and regulations put together. When the people are thoroughly indifferent they will be roused from their apathy, not by harangues, but by disinterested efforts."¹

It is many years since Carlyle warned

¹ *Education for Citizenship*, p. 45.

the people of Britain that "this that they call 'Organizing of Labour' is, if well understood, the Problem of the whole Future for all who in future pretend to govern men". In the interval, the pressure of economic forces has led to a considerable amount of organization in special industries with a view to obtaining better financial results for the capital invested. In some cases this has brought about an improvement in the conditions of the workers, but in many others the reverse has been the case, and the workers have been reduced nearly to the position of unskilled labourers. As yet little has been done to reduce the chaos which prevails in the industrial world generally to something like a rational system. The general problem is beyond our present scope, but in connection with the subject of Industrial Training it is necessary to consider briefly that part of the problem which is directly connected with juvenile labour, as by itself it forms one of the most pressing problems of the day. No solution of that general problem in this or any advanced industrial

**Organization
of Juvenile
Labour.**

community is within sight. Meantime a number of "remedies" are being applied in the shape of Insurance Acts, Old Age Pensions, Labour Colonies, and Distress Funds, but little or nothing is done to prevent the young from presently swelling the ranks of the unemployed.

It is gradually being recognized that the industrial fate of many of the men under forty who find themselves among the unemployed, and even among the unemployable, was decided when they were youths under twenty. Leaving school at fourteen, they drifted into casual labour which, for a few years, paid them better than anything which led to permanent employment, but in which they were soon displaced by other boys, and then began their social and economic descent. For many boys there is an attraction in the very casualness of the work, because of its variety and in many cases its freedom from restraint. The financial inducements both to the boys and their parents are great, as they earn more money than they would do if they were learning a trade. It is sometimes said that every boy should be taught a trade, but this evidently

is impossible. There is a great deal of unskilled work in the world, and, as already remarked, the tendency of machine production is to increase that, and to make technical training less necessary to many workers. Even in trades the work is being so subdivided that a very short time is sufficient to give the necessary expertness. What therefore is required is as good a general education as possible for the boys who leave school, with every encouragement to continue their education in the continuation classes, with special instruction for those who have opportunities of becoming tradesmen.

So long as boy labour is cheap, so long will it be employed, and therefore the first reform which is necessary is raising the day-school age to sixteen, so that those who were to become tradesmen would be well-developed physically and mentally, and able to proceed direct to their trade without the intervening two years which too often have a disastrous effect both on education and character. The National Trade Congress has, on many occasions, passed resolutions in favour of making sixteen the leaving-

school age, but nothing has been done to carry them into effect or even to educate public opinion with regard to their need.

The raising of the school age would, no doubt, cause some hardships at first, not only to the boys and their parents, but also to their employers; but every improvement in social organization or manufacture has caused hardship to some sections of the community. That is inevitable when any step is taken in the direction of progress; but if it is gone about cautiously, in a very short time people would adapt themselves to the changed conditions, which would be certain to improve from a financial point of view. During the transition period, however, assistance should be given where necessary. This would be a good investment from the public point of view, as it must be recognized that unless something is done in the direction of a more rational arrangement of boy labour we are simply moving in a vicious circle, or rather a vicious curve, which leads to greater poverty and degradation.

A large part of boy labour could be dispensed with if there were a more rational

organization of industry and commerce, but there can be no doubt that this would hasten the disappearance of the small employers. It ought, however, to be recognized that economic forces are making this inevitable. Boy labour is very much employed in the work of transportation and distribution, and there can be little doubt that as boys are withdrawn, invention will be quickened. Already the motor is dispensing with the horse-boy; the telephone is reducing the number of messengers; and it is certain that much boy labour could be dispensed with and the cost to the consumer lessened by improved methods of delivering messages and parcels. Even in many trades the first two years of apprenticeship are often spent in little more than going messages and doing odd jobs, all of which could be arranged for in a more efficient manner without the employment of boys.

The subject, however, must be looked at from a higher point of view, and in the interests of the boys and of the community it must be distinctly understood that when any occupation or industry leads to physical or moral degeneration, or crushes out life

and faith in the young, we must either change the nature of the work or withdraw the young from its influence. The aim not only of education, but also of industry, should be to allow those who take part in them to live real human lives, and not to become mere tools for the increase of riches to their employers.

The selection of an occupation for a boy therefore requires great care and consideration on the part of his parents and those who are interested in him. Local committees composed of members of school boards, of the workers, and the employers in the district, in co-operation with the Juvenile Labour Exchange, would be able to render effective service. In every case it should be the aim to put the boy to an occupation which would give him a fair prospect of regular employment when he became a man, or, if that were not possible, the temporary work should only be for a very limited time. It is evident that the future of the boys depends largely on their opportunities and on their economic conditions and environment, and therefore every encouragement

and, when necessary, assistance should be given to those who are anxious to take advantage of the educational arrangements within their reach. The subject is now beginning to be discussed from the national point of view, as its importance is being recognized. A short time ago Sir A. Trevor Dawson, R.N., managing director of Vickers Ltd., threw out the suggestion that a system of State industrial apprentices should be considered, as he held that our most clamant national need is for a high-grade intellect to create new appliances, and generally to improve our industrial organization, so that we may hold our own with all competitors. He believed that true statesmanship would do much in assisting towards the discovery of the brain power and character fit to carry into effect the highest ideals of a manufacturing nation. We must, however, hasten slowly, and meantime I content myself with more moderate proposals; and when these have been carried out, I have no doubt higher ideals will come within the range of practical politics.

The further education of boys, beyond

the age of fourteen, is of great advantage, not only from an industrial, but also from a moral point of view. In the report of the

**Importance
of Adolescent
Period.**

Inter-Departmental Committee on Physical Deterioration the commissioners say: "We are impressed with the conviction that the period of adolescence is responsible for much waste of human material, and for the entrance upon maturity of permanently damaged and ineffective persons of both sexes. The plasticity of the physical organization, the power it possesses of yielding rapidly towards degenerative or recuperative influences, appears to terminate at eighteen, and the records of the years preceding that age are, in the great majority of cases, decisive for self-improvement or the reverse. Unfortunately it is a period of which too little account is taken. With the classes under consideration education in the ordinary sense of the word is over just when in its full significance it becomes most necessary. Parental direction is almost entirely absent, and in lieu of it very little supervision is exercised in any other quarter over physical or mental

development." The commission found that the boy who had been used merely as a cheap labourer, without acquiring some skill for his future work, and who was therefore unfit for adult wages, was one of the most common recruits for the ranks of the unemployed. At fourteen an entirely new period of growth and activity began to dawn, not only in the physical but also in the mental and moral development of the young person. There were awakenings taking place which might launch him into a career of the greatest idealism if placed under proper conditions; but what do we see in many cases: too often they were in the streets shedding the last bloom, as it were, of their childhood, and a still larger number were doing monotonous tasks that were giving no outlet to their constructive and aspiring lives. Can it be wondered that the reaction came when the day's work was over, and that they rushed into excitements which are demoralizing both physically and morally?

If, during apprenticeship, they had continued their education and taken part in healthy recreation and exercises, by the

time they were twenty-one they would not only be good tradesmen, but also good men, who would be an honour to their country. School boards have power to compel attendance at continuation classes till the scholars are seventeen years of age, but if employers and parents were co-operating in the matter it would be no hardship for young men to attend (to a greater or less extent) these classes until they were twenty-one, and legal compulsion would be to a large extent unnecessary. In any case, the power of attraction should be made as great as possible before compulsion is thought of. Under present conditions, unfortunately, many do not discover the need for further education until after they are twenty-one, and a few vainly endeavour to make up for lost time, under great disadvantages, however, as in the interval they have forgotten a great deal of what they learned at the day school. Dr. Kerchensteiner has remarked: "As it is impossible to give a definite direction to the character at the age of thirteen or fourteen, and as young people at that age are, without exception, selfish, our primary edu-

cation is, for the individual, and still more for the mass, a gift of the Danaides rather than a bounty from heaven. We give the people all too readily a fire which it cannot tend, a hammer which it cannot wield, and a cast of mind in which the demagogue who promises everything can work more easily than the leader who remains faithful to high principles.”¹

Roughly speaking, we have to deal with three classes of boys: (1) Those who **Classes of Students.** leave school at fourteen or under (for special reasons) with the minimum of education and who usually drift into unskilled or casual labour. These will always form a considerable proportion, and the best that can be done with them is to improve their general education and give the most promising among them the opportunity of taking up some of the special classes, and especially those of a practical and recreative nature. (2) Those who are better educated and who enter occupations which promise permanent employment, or who accept temporary work for a time, but ultimately get into per-

¹ *Education for Citizenship*, p. 12.

manent employment as tradesmen or in other occupations. (3) Those who are able to remain at school till they are sixteen or seventeen years of age, and are able to proceed direct to trade or some settled occupation which offers good prospects. The best among them and those who can afford it will proceed to a technical college or university, where they will have opportunities of studying the higher parts of their subjects, and they will obtain their practical experience in workshops or other ways as opportunities offer. The others will serve an apprenticeship, and the most enthusiastic among them will attend evening classes of different kinds. There is no regular system for practical training, but it is desirable that that should begin as early as possible, as students who are kept too long at their books before beginning practical work seldom take to that work with much heart. A few suggestions on this subject will be given later on.

The work of the ordinary schools has been much improved during recent years, and not least in **Elementary School Work** the infant departments. Kindergarten work

is now almost universal, and the faculties of the young children are developed by hand and eye work and instructive recreation and play. In the ordinary classes, while for practical purposes the three R's—Reading, Writing, and Arithmetic—are the main subjects of instruction, a number of auxiliary subjects have been introduced which are useful for the discipline they afford and the variety of means which they offer for exercising the intelligence of the children, rather than the amount of positive knowledge which is acquired from them, or the proficiency which is acquired in connection with them, although that may be considerable. We are sometimes told that the curriculum is overloaded, but if that is so it is the fault of the managers, the inspectors, or the teachers. As Sir John Struthers pointed out in a recent report: "The problem is how to use the various subjects of instruction so as to develop all the faculties of the child, to elicit his sympathies, regenerate his impulses, cultivate his faculty of observation, exercise his intelligence, and improve his powers of expression. This is a high and

difficult art, demanding for its exercise thoughtful, devoted, and well-trained teachers. Provided the art be skilfully exercised, proficiency in reading, writing, and arithmetic will be secured as a matter of course, as an incidental result, within the usual limits of school life in the case of normal children. But to aim at this incidental result principally or directly may well be to stultify the whole educational process without securing more than an evanescent, because mechanical, proficiency in the subjects on which instruction has been concentrated." If these ideals were always kept in mind by the Inspectors of the Education Department, and the teachers encouraged to aim at them, we would have far better educational results than when the test of excellence is a certain amount of knowledge which can be readily reproduced in examinations. The teachers must be allowed to take up the auxiliary subjects according to the capacities of the scholars, who are not all able to assimilate knowledge at the same rate, and the importance of the three R's should always be kept in mind. As,

however, Sir John Struthers says: "This is a high and difficult art", and inspectors too often are content to measure results which can be easily arranged in statistics, but which have little or no connection with education.

At about twelve years of age the normal child passes what is called "the qualifying" examination, and he may then proceed to a higher-grade school and take the course for the intermediate and leaving certificates. The majority, however, enter what are called the supplementary classes. Formerly, in many schools, there were classes for the teaching of what were called "specific subjects", in which the beginnings of ancient and modern languages and of a number of the physical and natural sciences were given, in the hope that a number of the scholars, after having these, would continue their studies in secondary schools or evening classes, but it was found that few of them did so, and that the time spent in these classes was, to a large extent, wasted. Now those scholars who do not proceed to a higher-grade school take the supplementary classes in the elemen-

tary schools, in which some time is given to the consolidation of what has already been learned, and its simpler practical applications to the probable future occupations of the scholars are studied. At the same time their general education is carried on to a certain extent. The Code of Regulations for Day Schools contains the schedules which indicate the subjects which are taken up in these classes. The Fifth Schedule gives the subjects of instruction common to all the classes, the first part of which is taken up with the study of English, and the second with studies bearing upon matters which it is of concern that all the pupils should know, whatever their occupations in after-life are to be. The following are specified :—

1. The Laws of Health.
2. Money matters—Thrift, Investment, Insurance.
3. The Conditions of Trade and Employment.
4. The Institutions of Government under which we Live.
5. The Empire—its History, Growth,

and Trade; our Colonies, and the openings for enterprise which they afford.

6. Nature Study, Drill, and Singing.

The Sixth Schedule is divided into the following courses:—

I. Commercial Course,

II. Industrial Course,

III. Courses for Rural Schools,

IV. Household Management (Girls)

Course; and for seaboard schools a course in Navigation is outlined. These supplementary courses are very good as an introduction to the subjects, but they are evidently quite inadequate as a preparation for the work of life. The work should be continued in the evening continuation classes, or, better still, in day continuation classes, between the ages of fourteen and sixteen years. Such a course would be a good preparation for trade and other special classes, while the most promising students should be transferred to classes affiliated to a central institution, where they would study the higher parts of their subjects. The arrangements necessary for co-ordinating the work of the ordinary con-

tinuation classes with the evening classes of a central institution will be considered further on.

A school or department of a school in which there is a special staff of duly qualified teachers provided for the instruction of pupils, and in which there is a well-defined course of instruction, approved by the Department and extending over a period of not less than three years, may be recognized as a higher-grade school or department. The qualifying examination in an elementary school is the standard of admission to the first year of the higher-grade course, and the scholars may come either from the elementary department of the school or from that of other schools in the neighbourhood. As a rule, the course must provide for the instruction of all the pupils according to a well-graduated scheme in the following subjects, viz.: English (including History and Geography), Mathematics (including Arithmetic), at least one language other than English, and Science and Drawing,

**Higher-grade
and Secondary
School Work.**

according to a scheme approved for the leaving certificate examination in these subjects. Pupils who have completed a three years' course according to the approved scheme, but have qualified for the award of an intermediate certificate, may continue their studies on the lines of their previous general course, or may receive an education which is either predominantly scientific and technical or predominantly commercial, or is specially suited for girls (Household Management course). In some of the Glasgow schools the intermediate certificate course has been specialized to a certain extent by the introduction (in place of a second language usually given) of the geometrical and mechanical drawing required for entrance to the Royal Technical College. When the pupils receive the intermediate certificate they are sixteen or seventeen years of age, and by the arrangement which has been made, they are able to proceed to the evening classes of the Royal Technical College, or their equivalent affiliated classes held in other institutions.

Those pupils who continue at a higher-

grade school for two years beyond the intermediate certificate course may obtain the leaving certificate which qualifies for admission to the day classes of the Royal Technical College, the University, or other educational institution of the same standard. The courses in the secondary schools (as defined by law) are of the same standard as in the higher-grade schools, but as a rule are more literary and mathematical, and fit for the University or commercial life. The leaving certificate of a secondary school, however, is accepted for entrance to the day classes of the Royal Technical College. Allan Glen's School, Glasgow, is a science high school in which, while due attention is given to general education, special attention is paid to the science subjects; and the scholars from that school who enter the University or the Royal Technical College as a rule distinguish themselves in their classes, thus proving the efficiency of the work done in the school. The High School and the Girls' High School in Glasgow have very complete courses of study, the higher points of which fit for entrance to the

University or Technical College, or for business.

While the higher-grade and secondary schools meet the wants of scholars in towns and populous districts, **Rural Schools.** and are no doubt a great improvement on the system of specific subjects which formerly prevailed, and which led to much waste of energy and money, still there is a strong opinion among those who know the actual conditions in different parts of the country that the method of concentration has been carried too far, and that the young people in many rural districts are placed at a great disadvantage as compared with those of former days. From a recent correspondence which has been published, and from the statements made in Parliament, it appears that the Secretary for Scotland is of opinion that the power of rural school boards to give higher instruction is just the same as it ever was, and is in no way affected by the recognition of certain schools as higher-grade schools. He also points out that the financial assistance and encouragement to boards to

give such higher instruction is not in any way lessened since the establishment of higher-grade schools, provided there is a competent teacher and sufficient appliances. With regard to the latter, too much importance has been attached to the provision of special buildings and the fitting of them with special appliances. In respect to language subjects and Mathematics no special buildings are required, and the teaching of Elementary Mechanics (Dynamics) and Geometrical and Mechanical Drawing sufficient for ordinary apprentices could be very efficiently done with very simple appliances. What, however, school boards ought to insist upon is, that they have freedom to make the best arrangements possible for their districts; and if that were so there is no reason why, even in out-of-the-way districts, scholars should not get a preliminary training sufficient to enable them to enter on the practical work of all the ordinary industries. Those students who have special aptitudes and perseverance will, as a rule, have little difficulty in finding their way to the higher institutions. Many engineers are

of opinion that a healthy boy from the country, who has received a good general education, and whose environments and training have made him self-reliant and persevering, makes a far more satisfactory apprentice than one who has been brought up in a town, even although he has been crammed with a number of science subjects. The factory system applied to education will never produce good results in the making of men and women who will be able to render good service to their country, and some of the methods which are followed at the present time are more akin to the factory than to the educational institution.

CHAPTER II

TRAINING FOR BOYS

As a rule apprenticeship in the mechanical trades does not begin till the boys are sixteen years of age. Hence **Apprenticeship.** it is desirable that they should remain at school till that age, so that they may not only be fitted for the

work which they are likely to take up, but also be sufficiently developed physically to have the strength to perform it. In many of the mechanical trades, strength of body is even more necessary than a well-trained mind; and when hard work during the day is combined with hard study in the evenings, the effect is often disastrous from a physical point of view. Even when it is not so, it is too much to expect growing boys to do more than a very moderate amount of study in the evenings after a day in the workshops. When possible, therefore, they should remain at a higher-grade or secondary school till they have obtained the intermediate certificate or its equivalent, which, as a rule, they will be able to take by the time they are about sixteen years of age. Under present conditions, however, the majority leave school at fourteen, and for two years or so undertake any temporary work which offers. Those who intend to become tradesmen should, during these two years, continue their education in the continuation classes and prepare for the more specialized work required in their trade.

In certain occupations in which the work is light and of an educational nature, there are no great objections to beginning work at fourteen if it gives an opportunity of attending continuation classes and leads to permanent employment. For a considerable time the arrangements which are made must be flexible enough to meet a great variety of conditions, not only as regards the boys, but also the trades in which they are engaged.

Ordinary apprentices, as a rule, serve five years learning the practical part of their trade in the workshops, and the more studious among them attend continuation classes for a few years. It is very desirable that such class work should be made an essential part of apprenticeship, and if the employers were taking a little interest in their apprentices it could be easily arranged. At present a few employers take some interest in their apprentices, and usually the results are satisfactory both as regards the theoretical and the practical work, and the majority of the apprentices are able to get all the theoretical knowledge which they are ever

likely to require in the continuation classes and the evening classes of the Technical College. It is, however, possible to pass from these classes to the day classes of the Technical College or the University, and not a few have been able to do this and have risen to high positions in their profession.

At the same time such a course involves very hard work to the students, and when circumstances will allow it they should take part of their higher preliminary training during the day. In every case it is desirable that they should have some experience in practical work at as early an age as possible, not only because it gives them a great advantage in their studies, but also because it tests their fitness for the work of the trade. Many boys fancy that they would like to be engineers, but a little experience in the workshop proves that they are quite unfitted for the work, which not only requires a special aptitude of mind but also of body. If they spend some years at College or University after they leave school, and obtain a diploma or degree before they enter the workshops,

they are not likely to put much heart into their work.

A course which I recommend to boys about whom I am consulted is that they should go to the workshop or shipbuilding yard on leaving a secondary school at sixteen or seventeen, and take up practical work and attend evening classes for three years. If they have the inclination or the ability for higher studies they should then attend the day classes of the Technical College or the University in the winter, and continue their practical work in the summer-time. If they are not inclined to such higher study, they should continue to attend evening classes for two or not more than three evenings per week, and the advanced classes in the Technical College will, as a rule, carry them as far as is necessary.

Of course, other arrangements may be made, depending on the circumstances and opportunities of the students; but the chief point to insist upon is the necessity for practical work as early as possible, and thus save many disappointments when it is found that they are not suited to the

work. While we wish our technical colleges to be successful, we must not forget that they are not ends in themselves, but only means to an end, namely the making of good engineers and others fitted for industrial occupations. At the same time I think that the apprenticeship should be shortened for those who took full advantage of a college course, as indeed it is in some cases. With the great subdivision of labour which is now common in every department of engineering, and the universal application of machines to all kinds of work, the same amount of manual skill is not required as was formerly the case. Intelligence, knowledge, and tact will far more than counterbalance the inability to perform a great variety of manual operations. Unfortunately, not a few college students give a bad impression, when they enter the workshops, by the superior airs which they assume. A year or two in the workshops before they went to college would give them a few useful lessons in modesty.

The work of the supplementary day classes should be the beginning of the

special preparation for those who were intending to engage as artisans in industrial work of any kind, as it includes the elementary stages of subjects which are useful in all industries, but it requires to be made more complete, so that it may adequately prepare for the work of the trade classes. What are called certificates of merit are given to those who have become fourteen before or during the course of the term preceding the fixed date, who have been in regular attendance at an approved supplementary course for not less than one complete year, who are certified to be of good character and conduct, and who are shown to the satisfaction of the Inspector to have made good progress in the studies of the approved course.

The objection to the merit certificate, as at present arranged, is that it gives the impression to the scholars and their parents that it marks the end of school education. This objection is still stronger when certificates of exemption from attendance at continuation classes are granted under the by-laws which may be passed by school

boards under the powers which they have for compelling attendance at such classes to such times as they may decide, but not exceeding the seventeenth year of the scholars. Many give up all study for some years, till, in the course of their daily work, they find that they require more education. Meantime, however, they have forgotten a great deal of what they learned in the day schools, and they have to go over a great part of it again in the continuation classes. In my opinion it would be better not to grant any certificate (except perhaps of a temporary nature) until the scholars had completed a four-years' supplementary course, two in the day schools and two in the continuation classes, or, when possible, three years in the day schools. This latter arrangement is being carried out in some localities. If two full years were not taken in the day classes, the part in which they were deficient should be taken in the continuation classes before they entered the two-years' course which properly belonged to the continuation classes. For all practical purposes it is not necessary to differentiate

the subjects for boys during the two-years' day supplementary course, as the industrial course contained in the Sixth Schedule of the Code gives an education which is useful whatever may be the after-employment of the boys. It is as follows:—

1. *Geometry and Mensuration.*—(a) Construction and measurement of figures drawn to scale by the use of compasses, protractors, set squares, &c. (b) Construction and use of graphs. (c) For advanced pupils, mensuration of regular solids.

Note.—The teaching throughout must deal with concrete problems; and in the use of mathematical instruments correct methods and exactness must be looked upon as of prime importance.

2. *Applied Arithmetic.*—Including, especially, decimal operations, the metric system, and money calculations, such as occur in industrial transactions.

3. *Woodwork or Ironwork (or both).*—Workshop practice, from working drawings made by the pupils.

4. *Mechanics.*—The simple principles

of Mechanics, and with more advanced students elementary problems in Machine and Building Construction.

In a note, it is stated that it is neither expected nor desired that any attempt should be made to cover the whole programme before the age of fourteen, and in the industrial course especially it would be unreasonable to expect that more than a small portion of the work suggested should be overtaken before the age of fourteen, but it is most important that what is done should be on lines which may be followed out without any essential change in method when attendance at the more advanced continuation classes comes to be substituted for attendance at the day school.

It ought to be remembered that only a small proportion of the scholars who leave the day schools can be expected to proceed to the evening **Trade Classes.** or day classes of a central institution, and it is the duty of school boards to provide an education suitable to their needs and their circumstances. The great majority (of the tradesmen) will remain

artisans all their lives, and will never have an opportunity of applying the higher parts of scientific education, even if they had the willingness or ability to undertake it. To place before them, as the only possible course, one which they have neither the time nor the ability to follow for more than a year or two, and which, in any case, leads to a higher course which is entirely within the reach of only a few of the best of them, is unfair to the students, absurd from an educational point of view, and wasteful from a financial point of view. Subjects of an abstract nature do not appeal to students of this type. The theoretical part of their work should be confined to such parts as they can apply in the workshop. If they are ever to reach a higher standard of education, their love of study must be stimulated by observing the applications of science to their daily work. To put them into what to many of them is a blind-alley course, from an educational point of view (because it leads nowhere), is to dishearten them at their want of success, and many give up all systematic

study—a few till the wants of their trade compel them to resume it, but the majority for ever.

Four years of supplementary class work, as already indicated, would give a very good preparation for all the ordinary trades. If two of these were taken in the day schools, and two in the continuation classes, they would bring the boys to their sixteenth year, when they would begin their apprenticeship. As already stated, the best of them should be encouraged to take the courses affiliated to a central institution, but for all the others arrangements should be made to give them the applications of what they have learned in the supplementary classes to the trade which they propose to follow. Trade classes should be formed to meet the requirements of the chief industries of the district, and the employers and workers in the various trades should be invited to take an interest in the work, so that it might be kept in touch with the operations of the workshop. In fact (as has been already remarked) it should supplement these operations as far as that

is possible, not only by giving instruction in the principles and methods involved, but also by allowing opportunities for the practice of some parts of the work, as, with the existing subdivision of labour, many apprentices are kept for a long time at a special kind of work of limited application, with the result that they have very inadequate opportunities of becoming good all-round workmen, and they are thus unable to adapt themselves to changing conditions to the same extent as apprentices of former days, when the experience was more general. The consequence of this imperfect training is that many of them are thrown out of employment and become unskilled labourers.

It is not necessary to enter into details of the arrangements for the various trade classes, as these should be made to suit the acquirements and the requirements of the students, but the following course for the Engineers' Trade School, at Munich, represents the general nature of the instruction which should be given in all the classes :—

WEEKLY HOURS OF INSTRUCTION

Subjects of Instruction.	Class I.	Class II.	Class III.	Class IV.
Religious Instruction ...	1	1	1	0
Arithmetic and Bookkeeping	1	1	1	1
Business Correspondence...	1	1	1	0
Civics and Hygiene ...	1	1	1	1
Technical Drawing ...	3	2	3	3
General Physics ...	2	0	0	0
Mechanics and Electro- Technology with Prac- tical Work ...	0	3	2	4
Voluntary Practical Instruc- tion ...	0	4	4	4

It will be observed that this curriculum is not only of a very simple practical nature, but also continues the general education of the scholars beyond the standard of the day school, and it would be more than fully covered by the four-years' supplementary classes already mentioned (two day and two evening courses), while the special trade instruction would supplement the experience of the workshop. How far the practical operations of the trades should be given will depend on the conditions of the district.

Glasgow being largely an engineering centre, special attention must be given to the various departments of engineering. For artisans the following main subdivisions of mechanical engineering would, as a rule, be sufficient:—

- (a) General Mechanical Engineering,
- (b) Locomotive Engineering,
- (c) Marine Engineering.

Each of these might, however, have several subdivisions, including fitting, turning, erecting, smithy work, carriage building (for railways). For the allied trades there ought to be classes for—

- (d) Patternmakers and Moulders,
- (e) Boilermakers,

and in the building trades for—

- (f) Carpenters and Joiners,
- (g) Masons and Builders.

The applications of electricity to many departments of trade are now so numerous that it is desirable that the artisans engaged in work of this kind should have

special instruction to supplement their workshop practice. Moreover, electricity is applied in many departments of mechanical engineering, and workers in that department ought to have opportunities of obtaining a knowledge of its simpler applications.

In addition to these classes there ought to be others on the lines of the junior certificate course of the Royal Technical College, but of a simpler nature, especially as regards Mathematics. There are many students of the artisan class who would be able to take such a course who would not be able to take the College course.

The trades of plumbing and sheet-metal work are of so much importance as to require special classes, as they involve a considerable knowledge of Drawing, Physics, and Mechanics, and for some years such classes have been held with success. Instrument making, and watch and clock-making, and similar industries should all have special attention if they are of importance in the district. In short, it is the duty of the educational authorities, not only to provide adequate practical

instruction for all the existing trades in the district, but also to assist in creating new trades. The Education (Scotland) Act, 1908, placed on school boards the duty of making suitable provision of continuation classes for the further instruction of young persons above the age of fourteen years, with reference to the crafts and industries practised in the district (including agriculture if so practised, and the domestic arts), or to such other crafts and industries as the school boards, with the consent of the Department, may select. As yet this duty has been very inadequately discharged. Their first duty is to make a survey of their district, and after a conference with the employers and workers to arrange classes to meet its requirements.

While it is admitted that good work is done in the evening continuation classes as at present conducted, it must be evident that even at their best they are temporary expedients, and that gradually a better system must be introduced. It is too much to expect good results from boys

Day Continuation Classes.

who are very often tired with their work, and especially at their growing age. There is a great advantage in carrying on the practical work alongside the theoretical studies, and if the class work could be made part of the day's work and carried on, say, from 5 to 7 o'clock in the evenings (as in Germany) no great hardship would be felt. Even, however, if that were done, the arrangement would not be satisfactory from an educational point of view, and it is desirable (as already pointed out) when possible to continue the day-school education till the sixteenth year, when apprenticeship usually begins in the mechanical trades. As already stated, the course in some of the higher-grade schools in Glasgow has been modified to include the subjects required for entrance to the Royal Technical College evening classes, or their equivalents held by the school boards, and this is the best arrangement for those who are aiming at the higher engineering education. For those who are likely to be ordinary tradesmen a two-years' course, between the ages of fourteen and sixteen, would be very

useful, as they could then obtain a good knowledge of the subjects applied in their trades, and in some cases it would be possible to give an introduction to the practical work, not so much, however, in the details of special trades as in the training of hand, eye, and brain, which would be useful in any trade. It is not desirable to attempt anything like a complete apprenticeship in these classes. This should be served in the workshops, which, with all their defects, bring the students more into contact with actual conditions than is possible in any school. Even with the present arrangement of evening classes, two evenings a week in such classes during apprenticeship would not be too hard on the ordinary healthy boy, and in these the experience of the workshop would be supplemented in any direction which was thought necessary. The more complete preparation of those who had been at day continuation classes would allow more time to be given to the improvement of general education, which for the majority of the apprentices would be more useful than the beginning of

science subjects which they would never have the opportunity of applying in their work.

In Germany the standard of education of a boy depends almost entirely on his father's social position, and very few of the working classes proceed to the higher institutions. Each grade of education is in a kind of air-tight compartment. In Scotland, however, we have always made it a boast that when a boy had the necessary ability, enthusiasm, and perseverance he should be encouraged and, if necessary, helped to make his education as complete as possible, and many of our most distinguished men have risen from the ranks of the working classes. The arrangements which are made for leading from one educational institution to another therefore require very careful consideration.

**Co-ordination
with Evening
Classes of
Central
Institution.**

In the elementary day schools the scholars who pass the qualifying examination have (as already explained) the option of taking the supplementary classes or proceeding to a higher-grade school, although those who have not the probability

of remaining for at least three years in the latter are strongly advised to take the supplementary classes, where the time at their disposal would be more usefully spent. If this advice is good for the day classes, similar advice is far more necessary for the evening classes, as it is absurd to lay out courses of study leading to central institutions and expect the students to take the beginnings of them. Not more than 10 per cent (it has even been put at 7 per cent) of all the apprentices in works ever attain to any position of responsibility where anything like a scientific education will be required; and what they need is as good a general education as possible, with such simple practical applications as they will require in their daily work. The engineering trades, long the stronghold of the apprentice, are becoming more and more the homes of specialized processes, and what the apprentices require is not so much high scientific knowledge as intelligence and adaptability to new conditions. Nothing damps the desire for study so much as want of prospects, and the majority of young tradesmen have little hope

of ever being in positions in which high scientific knowledge is required. The continuation of the supplementary class work will, if properly carried out, meet the requirements of their trades in the way of preparatory study, and, in addition to the trades instruction, general education should be continued as far as possible.

At the same time it is highly desirable to give the students from elementary schools who have the necessary time, ability, and perseverance the opportunity of proceeding to the evening classes of a central institution where they will have the opportunity of pursuing a systematic course of study in the department which they have selected. By the time they have completed two years in the supplementary classes the teachers will be able to form a very good idea of their ability and of their prospects, and will be able to advise them whether they should direct their course to the trade classes or to the classes of a central institution. Those who begin the latter, and from any reasons find that they cannot go on, should be advised to enter the trades classes course or to take classes of a general

nature, as it is of the utmost importance that, to a certain extent, general education should be continued during the years of adolescence, during which, at present, the educational waste is very great.

School boards have a very definite duty placed upon them by the Education (Scotland) Act of 1908 in this respect. While doing all they can for those who are able to take advantage of the longer and higher courses, they ought to make adequate provision for those who are not able to do so. There must be no hiatus between the work of the ordinary continuation classes and the evening classes of the central institutions. Taking, for example, the Royal Technical College, Glasgow, with which I happen to be acquainted, the first-year engineering course includes, in Mathematics, the leading propositions of the first six books of Euclid, algebra up to quadratic equations and surds, graphs, and plane trigonometry, including the properties of triangles and problems in heights and distances. The syllabus in Mechanics covers all the ordinary theoretical work of Elementary Mechanics, as well as work in the laboratory. It must always

be remembered that the students who are expected to take this course are engaged in workshops during the day and not infrequently have to travel considerable distances to and from College. I would ask any teacher, who knows average boys, what preparation they should have before they are expected to undertake this work and to pass the examinations in a College standard? Of course there are some boys who can do almost anything they are put to, but there will be little doubt that those who have had an education below the intermediate certificate standard have a very small chance of doing the work successfully. This is confirmed by the actual results, as very few below that standard are able to pass in all the subjects of the first year of the Technical College, and only a very small number of the students from the ordinary elementary schools complete anything like a course in the higher classes. What the majority of those who drop off require is something simpler and more practical.

As already mentioned, the intermediate certificate course in certain of the Glasgow higher-grade schools now includes the geo-

metrical and mechanical drawing required for entrance to the College, and the scholars have obtained a fair introduction to Elementary Mathematics, Mechanics, and Physical Science. Moreover, what is more important, their minds are pretty well developed, and in addition to a fair stock of knowledge they have the faculty for obtaining more. Even for those who have had this preparation the work of the first year of the College is too difficult, and a considerable number either drop off altogether or give up one or other of the classes. It must be evident that if boys from elementary schools are to have a fair chance, they must be prepared to approximately the same standard as those from higher-grade schools. As at present arranged, there is too great a break between the course which has been laid out by the joint committee on science classes and the first-year work in the evening classes of the College, and that course requires to be supplemented especially in Mathematics and Mechanics. In many cases the work of that first year should be spread over two years, and this is now being done in certain

localities. It would, however, be better to postpone a considerable part of the Mathematics and Mechanics until after the students had taken the elementary classes in Engineering, which would give them a practical interest in their work. A long theoretical course before the practical applications are shown is too much for the average engineering apprentice, and, for all except those who aim at higher positions, Arithmetic, Elementary Mathematics, and Mechanics, with a little drawing, is all that they require before they enter their trade or special classes.

It is unfair to expect of the ordinary students of engineering a standard in Mathematics which is beyond their powers and which is not required in their daily work. As already remarked, a course on the same lines as that of the junior certificate course of the College, but of a lower standard, would meet the requirements and abilities of many students who are at present excluded from all instruction of this kind till at least they are twenty-one years of age, when they can enter the college without examination, and when they have

forgotten a great part of all they ever learned. The first two years of the course in the Heriot-Watt College, Edinburgh, is of a very simple nature, and leads the students on gradually, but even with this arrangement not many students from elementary schools seem to do much good in the College classes. In the Royal Technical College, Glasgow, students from elementary schools are faced with a first-year course which is impossible to all except those of exceptional ability and strength.

There is too great a tendency, at present, to attempt to force all the students through a uniform course and to compel them to be prepared to show that they have a certain amount of knowledge, whereas the chief point should be to make sure that they have attained the faculty of learning. Any system of affiliation to a central institution which limits the liberty of the local authorities to make arrangements to meet the requirements of all classes of students should be firmly resisted, although, of course, the best students should be prepared to enter the higher classes. While all unnecessary overlapping should be

avoided, a rigid adherence to an exclusive programme prevents many young people from obtaining a knowledge of the elements of subjects which would be very useful to them. Except when absolutely necessary, attendance at evening classes in central institutions, which involves long railway journeys, should be avoided, as the travelling, study, and daily work are too great a strain on growing youths. Good health is even more essential to the success of the students as engineers than the passing of many examinations.

Reference must be made to the Calendar of the Royal Technical College for details of the courses in the evening classes, as all that our present space will permit is a mere outline. Those students who go through, in the continuation classes, the course drawn out by the Joint Committee in Science Classes, or who pass an equivalent examination, are admitted to the engineering courses, which extend over five years, in the following departments:—

- (1) Mechanical Engineering,
- (2) Electrical Engineering,

Technical College
Evening Classes.

- (3) Civil Engineering,
- (4) Mining,
- (5) Naval Architecture,
- (6) Building,
- (7) Metallurgy.

There are also courses in—

- (8) Chemical Science,
- (9) Biological Science,
- (10) Textile Manufacture.

The classes, as a rule, meet three evenings a week, but students may spread them over a longer period than five years if they find it necessary to do so. The junior certificate of the College is given to those who successfully complete the first three years of the course, and the senior certificate to those who complete the five years and attain the required standard. By a system of affiliation with country districts the classes for the junior certificate may be taken either wholly or partially in the local schools, and, if the students desire it, they may proceed to the senior certificate in the classes of the College. A great deal, of course, depends on the local conditions;

but, as a rule, students in country districts should have opportunities for taking the junior certificate course in the local schools, as the work of the classes is hard enough without being made more difficult by having to spend a considerable time in travelling, especially as the majority require to be at their work early next morning. There should be no attempt to force all the students through the course at the same rate. The average apprentice who has only been to an elementary school will have done well if he obtains the junior certificate by the time he is twenty-one. Those who have been in higher-grade or secondary schools, and obtained the leaving certificate, will have little difficulty in obtaining the senior certificate by the same age. Many students, however, are over this age before they obtain this certificate, as they have had many difficulties to overcome during their course. Many more enter the College after they are twenty-one (when no entrance examination is exacted), and when they find that they require more education in their daily work. If the arrangements for their earlier years

had not been so rigid, they would not have been prevented from obtaining all the education they required before they were twenty-one.

It is possible to proceed from the evening to the day classes of the Royal Technical College, according to arrangements which are explained in the Calendar, and a few of the best students are able to do this, but the majority of day students have been to higher-grade or secondary schools, the leaving certificate of which, or an examination of the same standard, admits to the College. The day courses of study are as follows :—

**Technical College
and University
Day Classes.**

- (1) Civil Engineering,
- (2) Mechanical Engineering,
- (3) Electrical Engineering,
- (4) Mining,
- (5) Naval Architecture,
- (6) Chemistry,
- (7) Metallurgy,
- (8) Mathematics and Physics,
- (9) Building,
- (10) Textile Manufacture.

The diploma of the College is awarded to those students who have completed any of the above courses and attained the necessary standard.

A joint arrangement is made between the Royal Technical College and the School of Art in the working of the Glasgow School of Architecture, by which a very complete course is given in Architecture and the Allied Subjects, and for which a diploma is awarded. In connection with the College there is a School of Bakery and a School of Navigation, as well as a number of special classes, for information regarding which reference must be made to the College Calendar.

The Science Department of the University affords the same kind of education as certain departments of the Technical College, and arrangements have been made by which the day classes of both institutions are recognized as qualifying for the degree of B.Sc., but for details of these arrangements reference must be made to the Calendars of these institutions. And it is to be hoped that the University Court will arrange to give due recognition to the

work done in the evening classes, as from these classes are likely to proceed the men who will be most useful in practical work.

CHAPTER III

TRAINING FOR BOYS—*Continued*

In the preceding chapter attention has been given chiefly to the training required by boys in what are usually called the mechanical trades, but there are many other occupations for which a different course of training is necessary, and to these some space may now be given.

It is beyond our present scope to enter into details of the arrangements required **Commercial Training.** for the various departments of commercial training; but as it is highly desirable that all who are in any way responsible for the management of industrial work should have some knowledge of commercial matters, and indeed, if possible, some experience in the departments directly connected with their work, it will be useful to indicate briefly the

opportunities which are available for this purpose.

When possible, the boys should remain at the day schools till they have obtained the intermediate certificate, in order that they may have a good foundation for their special work ; but if circumstances prevent them doing this, they should take the merit certificate in an elementary school and continue their general education in the continuation classes to about the same standard as that of the intermediate certificate. Thereafter they should take classes in Bookkeeping, Shorthand, Typewriting, and other subjects required in commerce. The study of modern languages should be taken up if circumstances permit. The majority will get all they require in the continuation classes, but those who are able to proceed to the Athenæum (the Central Institution for commercial subjects in the West of Scotland) should do so, and take the course which leads to the diploma of the College.

The Code of the Education Department gives a special syllabus for the supplementary classes in schools situated in rural

districts, with a special view to the education of those who are likely to be engaged in agricultural pursuits. It is as follows:—

(1) *Nature Study*, continued so as to secure on the part of the pupils familiarity with—

- (a) The rocks, soils, and plants of the district ;
- (b) The life-histories of weeds and insect pests, with the remedies against them ;
- (c) Wind and insect pollination of plants ;
- (d) Relations of air, water, and soil to vegetable and animal life.

Note.—Instruction in the above subjects must throughout be of a *practical* character. To this end school gardens must be formed and made use of, observations on bees and bee-keeping should be made where possible, and advantage taken of any agricultural experiment stations in the neighbourhood. Special grants from the Education Department are allowed for this practical instruction.

(2) *Geometry*. — As in the industrial course, but more especially in its applications to land measuring and surveying.

(3) *Study of Newspaper Reports*, with exercises and calculations based upon them.

(4) *The Keeping of Accounts*, with Woodwork or Ironwork as optional subjects.

Those who have gone through this course will be able to take advantage of the special summer courses and the evening classes carried on under the superintendence of the West of Scotland Agricultural College.

The curricula of the higher-grade and secondary schools have, for the most part, been drawn out on the sup-
position that the scholars will proceed to the Uni-
versity. As already mentioned, in certain of the Glasgow schools the course has been arranged to fit the scholars to proceed direct to the evening classes of the Royal Technical College, and a similar arrangement should be made in some of the higher-grade or secondary schools in agricultural centres. The intermediate course need

**Need for
Secondary Schools
in Agriculture.**

not be very much altered ; probably some Natural Science might be given in place of the second language, but the post-intermediate course should be specialized to meet the requirements of those who intended to follow agricultural pursuits, and those who completed it would be prepared to enter the day classes of the Agricultural College, or to continue their studies in the continuation and special classes which are conducted under the superintendence of the College. The majority of working farmers would find all their requirements met in these classes, although every encouragement should be given to the most promising students to proceed to the day classes of the College. Even those who proceed to these classes would be all the better of two or three years' work on a farm in the interval between school and college, so that they might be initiated in practical work as soon as possible, and ultimately become good farmers.

The day classes of the West of Scotland Agricultural College lead to the following certificates and diplomas and

The West of Scotland Agricultural College.

to the degree of B.Sc. in the University of Glasgow:—

I. In Agriculture.

- (a) The Associateship in Agriculture of the College.
- (b) The College Diploma and Fellowship in Agriculture.
- (c) The National Diploma in Agriculture.
- (d) The Associateship and Fellowship of the Surveyors' Institution.
- (e) The Degree of B.Sc. in Agriculture.

II. In Forestry.

- (a) The College Certificate in Forestry.
- (b) The Highland Society's Certificates in Forestry.

III. In Dairying.

- (a) The College Certificate in Dairying.
- (b) The College Diploma in Dairying.
- (c) The National Diploma in Dairying.

The classrooms and laboratories of the college are in Glasgow, and the dairy school, farm, experimental stations, &c., near Kilmarnock.

In addition to the day classes, the College carries on a large amount of extension work intended to meet the wants of working farmers who are unable to attend the day classes. Experiments are carried out (*a*) at the central experimental station, (*b*) on farms within the college area. They consist of investigations into the manuring of the more important crops, the destruction of weeds, the prevention of crop diseases, the feeding of farm stock, and other subjects. The reports on the experiments can be had on application by farmers residing within the College area. Systematic short courses of lectures are delivered in the various districts in the College area, and single lectures on special subjects in the more out-of-the-way parts. Extension work in forestry is carried on in suitable districts. Systematic short courses and single lectures are given in poultry keeping. School gardens are arranged in many

places under the superintendence of the College. All these agencies are being taken advantage of to a very considerable extent; still something more is required in order that those who are engaged in agriculture may be kept up-to-date in all the developments and improvements which are being made, and also that they may have a wider outlook than is at present too often the case.

Every school board in country districts ought to see that attention is paid to the subjects of special use or interest to those who are engaged in agriculture or in any way connected with it. The Education (Scotland) Act, 1908, puts this special duty upon them. The work of the day supplementary classes should be continued and developed, and its simple applications shown to the practical work of everyday life. The students who had gone through such a course would be in a position to benefit by the extension work of the West of Scotland Agricultural College, and the most promising of them should be encouraged and, if necessary, assisted to

**Continuation
Classes.**

proceed to the day classes of the College and take a systematic course of training.

At the same time it ought to be remembered that it is of more importance

Example of to train intelligent, self-reliant,
Denmark. and enthusiastic men than

mere technical specialists. Of all the

lessons taught by the experience of Denmark this is the most important. La

Cour, one of the greatest of the Agricultural College teachers, said: "We desire

to make human beings complete *first*, to see the personality unfold itself as the

prelude of every kind of event or reform". The most distinguished of the Danish

teachers have always insisted that in order that the students may learn about their

work they must be *prepared* to learn, and therefore they must not hasten or else

they will lose all. To be a good farmer, as to be a good scholar, one needs intelligence

and real growth; so, to begin with, practical aims must be forgotten. Memory,

imagination, reason, must first awake and expand in the right atmosphere and by

the right means. There are now seventy High Schools in Denmark, and about

200,000 men and women have passed through them. They put their seal on the whole land population of Denmark, and the proof of this is that we can hardly speak of Danish "peasantry" any more.

The effect of these schools on the agriculture of the country has been marvellous. In 1870 Denmark was a poor country; the people grew corn, but had given no attention to stock-raising or dairy work. The effect of improved education was soon seen. In 1881 the net export of bacon, butter, and eggs was £2,402,000. In 1904 it was £13,614,000. It is now said to be over £25,000,000. These figures should appeal to those who look for practical results; but a study of the methods employed shows that these results are obtained by attention to the laws of the development of the human mind, and by raising a noble patriotism among the people, and not by a narrow system of technical education, the chief effects of which is to unfit those who receive it for doing their own thinking and to make them narrow-minded specialists.

Art industries are capable of very great

development, but before that is possible the people must have a love of the beautiful and live in beautiful surroundings. In recent years great improvement has taken place in the art teaching in the schools, and the result is being seen in many ways. In some of the continuation classes something is being done in the way of showing the application of art to special industries, and in the Glasgow School of Art, in addition to the ordinary art subjects, special instruction is given to designers, craftsmen, and artisans; but in Scotland the training in art industries is *very far from what it might be and what it ought to be*, and the educational authorities ought to give it much more attention than they do. In what may be called the decorative trades connected with buildings there is a very wide field for instruction, as even in these the work is so subdivided that the ordinary apprentice has few opportunities for practice except in the section of the work to which he happens to be put. Printing and the allied trades also require some attention. A few classes have been started to supplement the work

in the various departments, but much more requires to be done.

The various departments of the clothing and bootmaking industries demand more attention than they at present receive from educational authorities, as the subdivision in each is being carried to an extreme length and the workers are becoming little more than appendages to the machines, and therefore requiring little in the way of technical knowledge for the performance of their ordinary work. A good general education is therefore all the more necessary to give them an intelligent interest in some things apart from their work, while special technical training is desirable to enable them to adapt themselves to the changes which take place in the various industries.

It is, of course, impossible even to enumerate all the various industries for which a more systematic training is desirable. Such a publication as the *Handbook of Employments*, prepared by Mrs. Ogilvie Gordon (published by the Rosemount Press, Aberdeen; price 1s.), will be found useful by those

**Clothing
Industries.**

**Miscellaneous
Industries.**

requiring detailed information. The Education (Scotland) Act, 1908, puts on school boards the duty of giving instruction and training in the crafts and industries of their districts, and in order to prepare for the discharge of this duty they ought to make a careful survey of their districts and not only meet the present wants, but also anticipate their possibilities in the future. They should co-operate with the employers with regard to the nature of the instruction to be given, so that it may supplement the experience of the workshops. At the same time it must never be forgotten, as has been already pointed out, that the chief object to be kept in view should be the cultivation of the intelligence of the students and the development of their character.

The Education (Scotland) Act, 1908, gives power to school boards to make, vary, and revoke by-laws for requiring the attendance at continuation classes until such age, not exceeding seventeen years, as may be specified in the by-laws, of young persons above the age of fourteen years,

**Circular of
Education De-
partment.**

within the district, who are not otherwise receiving a suitable education or are not specially exempted by the school board from the operation of the by-laws, and that at such times and for such periods as may in any such by-laws be specified. As, however, already remarked, the powers of attraction should be exhausted before those of compulsion be resorted to. Hitherto repulsion is a more prominent factor in the arrangements than attraction, and some of them seem almost designed for the purpose of discouraging the further education of the students.

One of the most useful and interesting of the numerous circulars issued by the Scotch Education Department was one (No. 426) issued to school boards after the passing of the Education (Scotland) Act, 1908, directing attention to some of the duties placed upon them by that Act, and especially those relating to the education of adolescents from the age of fourteen, and giving them instruction in subjects relating to their trades and crafts. It was, however, pointed out that the Act singled out for mention as special objects

of after-school instruction the following, viz.:—

The maintenance and improvement of the health and physique of the young people, the broadening and refining of their interests and sympathies by the influence of good literature, and 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 ;

and further, that there are other objects which, though not specifically stated, are closely akin to those mentioned, and may be held to be part of any reasonably complete system of training of adolescents, e.g. the inculcation of the responsibilities and duties of communal life as well as of its rights and privileges.

It cannot honestly be said that the school boards have risen to the full sense of their duties. Even when something has been attempted, it has not been done in a way best suited to meet the wants of the great number of scholars who leave our elemen-

tary schools. Three or four years' attendance at continuation classes is all that can be reasonably expected from the majority of such scholars, and this is all that is anticipated by the Act and suggested by the Education Department. A common-sense arrangement would therefore be to give such students, in the time they would attend, such an education as would be most useful to them, and not the beginning of a course leading to a central institution, which would have little or no bearing on their daily work. At the same time every encouragement should be given to the most promising students to prepare for the higher parts of the subjects in the manner indicated in the preceding pages.

In this respect the Germans give us an example which ought to be taken to heart. In their trade schools, as, for instance, those of Munich, which are probably the most complete, there is a simple practical course extending over four years (of which an example is given on p. 53) which continues the general education of the apprentices, and at the same time gives the simple theoretical instruction which

**Example of
Germany.**

they are likely to apply in the workshop. At the same time, in my opinion (as already remarked), German education is too much divided into air-tight compartments, and it is very difficult, if not impossible, for a student to pass from a lower to a higher. The most promising students should always have the opportunity of obtaining the best education of which they are capable, but we must take care not to sacrifice the greater number to the few of exceptional ability. The arrangements indicated in the previous pages would meet the requirements and possibilities of all classes of students.

In another respect we have something to learn from Germany. The Imperial Labour Law of 1897 puts on the master the duty of providing that his apprentice shall learn his trade from him, and that he shall attend the continuation classes, which, as a rule, are all held before seven o'clock in the evening, and this is the basis of the by-laws of those towns which have established compulsory attendance. The Imperial Law may thus be said to lay down the principle of the moral obligation

of the employer, and the municipal by-laws to enforce his active concurrence, and a public opinion is formed against those masters who resist the law. If we had the active co-operation of the employers of this country we would soon solve all the problems of industrial training. It would be well if that co-operation came voluntarily, and not as the result of legislation. Of this we may be sure: *come it must.*

The trade schools do not by any means form the main provision for technical instruction in Germany. For the leaders of industry and commerce there are the Technical and Commercial High Schools and Schools of Mines, which, in educational standard, are recognized to be fully the equal of the Universities. Below them are various institutions for training men for subordinate but important positions in factories and other industrial undertakings, while at the lower end there are the trade schools. The point to be noted is that the different grades of industrial employees have provided for them a training which is suited to their work, to their general edu-

cation, and to the time and opportunities which they have for study.

CHAPTER IV

TRAINING FOR GIRLS

The general education of girls in the elementary schools follows essentially the same lines as that for boys up to the qualifying examination, needlework, however, being substituted for woodwork. In the supplementary classes a very distinct differentiation takes place, and in addition to the ordinary English subjects, special attention is given to Household Management, of which the following outline is given in the Code:—

**General
Education
of Girls.**

1. *Housekeeping*.—Including—

- (a) Care of rooms, furnishings, and clothing.
- (b) Marketing and keeping of household accounts.
- (c) Cookery.

(d) Laundry work.

(e) Needlework—especially mending, darning, and cutting out.

Note.—All these subjects must be taught practically.

2. Special attention to such topics in the Fifth Schedule as bear on the health of the *Individual* and of the family.

3. *Arithmetic.*—As applied in the calculation of prices and the practical use of the common weights and measures.

4. *Scale Drawing.*—As applied to the making of diagrams for cutting out (optional).

5. *Dressmaking.*—And the use and care of the sewing machine (optional).

In the higher grade and secondary schools little time is given to subjects of a domestic nature, and the majority of the scholars prepare for the intermediate and leaving certificates of the Scotch Education Department, which admit to all the classes of the University, both general and professional, to the Technical College, and other higher institutions. The preparation for these certificates is also useful

to those who take up commercial work, or who enter the Post Office Service or other departments of the Public Service.

The general literary, commercial, science and art continuation classes are open to

Continuation girls as well as to boys, and
Classes. many take advantage of them.

The commercial classes, especially Book-keeping, Shorthand, and Typewriting, are largely attended by those who are in offices during the day. Classes in more advanced and special subjects are held in the Athenæum, which is the central commercial institution for the West of Scotland. The classes in some of the more important centres in the district are affiliated to this institution, so that the requirements of girls as regards commercial education are fairly well met. The future, to a large extent, lies with the employers, who should encourage their young people to take greater advantage of the classes which are provided for them.

The domestic subjects taught in the continuation classes are chiefly Cookery, Dress-making, Millinery, and Laundry Work. These are attended by considerable num-

bers, but they ought to be taken advantage of to a much greater extent and combined with subjects of a more general nature, so that the girls may become intelligent and well-informed women, who are able to perform not only their domestic duties in an intelligent manner, but also to take an active interest in all that affects the welfare of women. The classes in physical training are very useful not only for those who are engaged in sedentary occupations during the day, but also for others who are employed in routine work, as well as those who are at home. The physical development of girls is even more important than that of boys, as on them depends, to a large extent, the future of the race.

When possible, the courses of study in domestic subjects should be made to lead up to more complete courses in the College of Domestic Science, either in the evening or day classes, so that the scholars may be prepared for positions of responsibility in domestic work, such as cooks and housekeepers in large establishments, and superintendents of dressmaking, millinery, or laundry establishments; but as very few

who attend the continuation classes will be able to take advantage of such an arrangement without financial assistance from the Secondary Education Committees or other similar bodies, special arrangements should be made for those who are likely to proceed to the central institution, without, however, making the curriculum unsuitable for the ordinary scholars. Those who can afford it will, as a rule, proceed direct from the day schools to the day classes of the central institution.

While good work is done in the evening continuation classes, they can only be looked upon as temporary, and it is desirable to have day continuation classes for girls between the ages of fourteen and sixteen or seventeen who have left the elementary schools with the merit certificate, and for those who leave the higher-grade and secondary schools before they have completed the course. There are many girls in these latter schools to whom a course of training in domestic subjects would be far more useful than the literary course which is usually given. The course

**Day Continuation
Classes for
Domestic Subjects.**

should include housework, laundry work, cookery, domestic hygiene, with the elements of physics and chemistry, first aid and home nursing, ambulance, commercial arithmetic, book-keeping and correspondence, dressmaking, needlework, hairdressing, massage, manicure treatment, design-drawing, physical exercises, and calligraphy. Such a training would prepare for various occupations in skilled household service and in public institutions, and for salaried appointments such as housekeeper, matron, mother's help, lady's maid, manageress (hotels, &c.), stewardess, &c.

The Logan and Johnston School of Domestic Economy, Glasgow, does good work in some of these subjects. In addition to the instruction which is given to ladies who are able to pay for it, free instruction is given to a certain number of girls in sewing, cookery, laundry, and household work, so that they may become useful women. Special training is also given to others who desire to be cooks, laundry maids, sewing maids, lady's maids, &c.

It must never be forgotten that the

home is the most important part of the world, and that the welfare of **Home Work.** the country depends, to a large extent, on the manner in which the women are able to discharge the duties belonging to it. At the same time the training which is given to them should fit them, not only for those duties, but also enable them to take part in those fields of women's work which should fall to every true woman. It is becoming increasingly difficult to get girls to enter domestic service, and the reasons for this are obvious. The social disesteem in which it is held by working people, and that absence of regulation which makes the conditions of each place depend upon the will of the individual employer, account, in part at least, for this unpopularity. The wish for greater freedom in the evenings makes girls prefer employment in shops, offices, or factories rather than as domestic servants. This wish is certain to increase, and the result will be that people will be required to serve themselves to a greater extent than they do at present, although probably improved organization and the use of mechanical

appliances will render the employment of domestic servants less necessary.

The Glasgow and West of Scotland College of Domestic Science is gradually being developed as the central institution for the district for instruction in domestic science

**College of
Domestic
Science.**

subjects. It provides very complete courses in Cookery, Laundry Work, Housewifery, Dressmaking, Needlework, and Millinery, and its work in these latter departments is connected with that of the School of Art, so that the students are able to proceed to the higher artistic aspects of their subjects.

The object of the College is to provide, at moderate cost, thorough instruction, theoretical and practical, in the subjects mentioned above, and in allied subjects, for those desirous of becoming experts in household management, for professional housekeepers and cooks, and for those proposing to become teachers of domestic science subjects. The latter have the choice of two diploma courses. The first course includes Cookery, Laundry Work, and Housewifery; and the second Dressmaking, Needlework, and Millinery, and provi-

sion is made by the Provincial Committee for the training of teachers in the various branches of professional training. While the training of teachers is one of the objects of the college, it is not by any means the main object. This is to improve the domestic arrangements of the people, and thus improve their health and add to their welfare and happiness.

The same conditions which have rendered trade classes necessary for the training of boys have also made them necessary for girls, but as yet little has been done in this direction. **Trade Classes for Women.** The girls, as a rule, enter the workshops and pick up their part of the work as best they can, and very often it is of a highly specialized nature which does not require much skill, and consequently is badly paid. There does not seem to be much in the way of regular apprenticeship, the girls being taken on trial and paid according to the progress they make. Some of them supplement their experience in the workshop by attending continuation classes for the subjects which they find useful. A few special trade classes have been started

by the local education authorities with the intention of making the industrial training more complete, but as yet this part of the work is in the initiatory stages. The education authorities should make arrangements to meet the requirements of their districts, and, after consultation with the employers, draw out courses of instruction to supplement the training of the workshop.

The number of occupations open to girls and women is now very large, and reference must be made to **Miscellaneous special publications with re- Occupations.** gard to them. The Scottish Council for Women's Trades issues a very useful guide, which is intended to forge a new link between the home, the school, and the workshop, and to give information to girls and their parents regarding suitable occupations. A much more complete publication is the *Handbook of Employments*, prepared by Mrs. Ogilvie Gordon, mentioned in a previous chapter (see page 83), and which contains a good deal of information useful to boys as well as girls.

The Education (Scotland) Act, 1908, places on school boards the duty of providing instruction in domestic subjects as well as trades, and the extent to which this duty is discharged will depend on the interest which the people of the district take in the industrial training of girls, as, according to the Act, when there is an effective demand for instruction in any practical subject, the school board is bound to meet it.

In recent years large numbers of women have taken University degrees in Arts, **Professional** Science, and Medicine, and a **Work.** few in Law and Divinity. In conjunction with the Provincial Committees for the Training of Teachers, the Universities give the education and training of teachers, while the Training Colleges give a shorter course which is sufficient for those who do not aim at the higher parts of the profession. In the Royal Technical College, Glasgow, theoretically, all the classes are open to women, and advantage is taken of them to a certain extent, in so far as the general science subjects are concerned; but as yet they have taken very

few of the strictly professional subjects, some of which are quite suitable for women. In the School of Art all the classes are open to women, and they are attended by large numbers. In the Agricultural College many women take the classes in Dairying, Poultry Breeding, and other departments. In the West of Scotland College of Domestic Science (as already mentioned) there are courses of training for teachers of Domestic Science.

CHAPTER V

EDUCATION FOR LEISURE TIME

It has been said, with truth, that what a man does from six o'clock in the evening to six o'clock in the morning is, from a social **Importance of Leisure Time.** point of view, more important than what he does from six o'clock in the morning to six o'clock in the evening. It is also important from an industrial point of view, because health and strength depend greatly on the use made of leisure time; for if

that use leads to physical degeneration it must impair the efficiency of the workers. The greatest defect of our present system of technical education is that it is too exclusively scientific and technical, and it is forgotten that the students should be intelligent and well-informed men and women, and not simply units in a huge industrial organization, or appendages to machines. An old philosopher truly said that "the real test of a man's education is the manner in which he spends his leisure time", and if present-day education were judged by this test it would be pronounced very unsatisfactory. The monotony and uninteresting nature of much of the work which is done causes a reaction and an increasing rush for excitements of all kinds which not infrequently have disastrous effects both on health and morals. It is a double sin to take a boy from an elementary school and keep him for some years at a purely technical training: it is a sin against the boy, as it condemns him to a very incomplete life, and it is a sin against society, as it does not fit him in any way

to take an intelligent view of his duties as a citizen, far less to perform them in an efficient manner. The working men and women are beginning to show a determination to enter into the world of thought and knowledge, and are anxious to gain, not only knowledge, but wisdom, and that determination should be encouraged, so that we may avoid the danger that with increasing wealth and knowledge we may tend to become spiritually poorer.

No education is worthy of the name which does not give an interest in good literature and in the more **Leisure-time Studies.** general aspects of some department of science or art, the selection depending on temperament, taste, and opportunities. The standard works in literature should be carefully studied, and current thought should be known by a perusal of the best periodicals. An intelligent outlook should be kept on the most important developments of science and art, and, when possible, one department at least should be carefully studied. The membership of a few societies of a

literary, scientific, or social nature is desirable in order that, by contact with other members, there may be opportunities for an exchange of opinions and a comparison of methods. A very essential part of every man's education (and indeed also of every woman's) should be instruction in all matters relating to the duties of citizenship, as part of everyone's leisure time should be spent in the discharge of these duties. The elements of these subjects should be given in the elementary and secondary schools, and the more practical applications in the continuation classes, while the higher aspects should receive attention in the Colleges and Universities.

It is beyond our present scope to enter into details of this part of the subject, but, briefly, the aim should be to give the students a sense of their duties and responsibilities as citizens, and some knowledge of the institutions of their own country and the conditions under which they live, and to interest them in some of the problems, social, economic, and political, with which they will be brought face to face in later life. The training

should be of a practical nature and prepare them to take their share, as far as may be, in helping to solve these problems. Of course, too much should not be expected of the average man; but without a knowledge of recent economic thought, and of the trend of economic conditions, it is impossible to have that intelligent public opinion without which rational legislation and efficient legislation is impossible. In every department of industry, problems of an economic nature are arising, and they will require for their solution not only knowledge but a social spirit which will allow them to be looked at not simply from a personal but also from a collective point of view, and thus help to evolve a more rational kind of society than exists at present. It ought to be recognized that the highest task of education and of religion is the development of a social organization in which it will be possible for men and women to live the fullest and highest lives of which they are capable, and therefore in which they will never be used as a means for cheap production; and until they have successfully

undertaken that task the work of teachers and preachers will be largely in vain.

A considerable part of leisure time should, of course, be spent in healthy recreation and in social enjoyment, **Recreation.** as even under the best conditions of work this is very desirable. At the same time it ought to be remembered that these are not ends in themselves, but only means to an end, namely to render us more efficient in body and mind and better fitted to perform our part in the world. At the present time there is a mad rush after what is called pleasure in many different forms, but little of it is real pleasure, and much of it leads to most unpleasant reaction if it is not directly hurtful both to health and morals. This proves that many people have few internal resources to make them independent of the external excitements which are the most ominous signs of the age. Such leisure-time studies and recreations as have been indicated would not only yield real pleasure to the persons most directly concerned, but they would also make them better men and women, who would be

able to perform in an efficient manner not only their daily work, but also to discharge all the duties which are expected of good citizens.

In making arrangements for the industrial training of boys and girls, much more attention than is the case **Health and** at present should be paid to the **Character.** development of health and character. During the period of their training they are passing through what, from a health point of view, is the most important time of their lives, when their bodies are being built up and their constitutions formed, and much of their success or failure will depend on the conditions under which they have lived and the attention which has been paid to their health. Moreover, it ought to be recognized that strict attention to what is generally considered mere utility, or the wretched policy of making so much study the measure of so much money, never yet produced a really educated man. Even from a practical point of view a man's usefulness depends much more on what he is than on what he knows, and character which includes such qualities as industry,

courage, endurance, and integrity is of much more importance than the ability to pass examinations either in general or technical subjects. As a rule the Scotsmen who have made their mark in the world have owed a great deal more to their shrewd common sense, and the steadiness and trustworthiness of their character, than to their learning. As Mazzini put it, the problem "is to regenerate man in his ideas and his sentiments, it is to elevate and enlarge the sphere of his life". In the days of the trade guilds the employers made it their duty to see that the apprentices not only learned their trade in a proper manner, but also that they were brought up as good men. In one of the indentures the apprentice is urged "to avoid the company of the Idle, the Vicious and the Profane, whose Conversation and Example cannot fail, sooner or later, to debauch your Principles and drive you into unjustifiable and destructive Practices such as must end in your inevitable Ruin. By pursuing the advice now given, you will, among other advantages, secure to yourself the Favour of your Master,

the good opinion of the World, and what is above all, the Blessing of Almighty God."

The health of school children is now receiving much more attention than ever it did, but a great deal more re- **Care of Health.**
quires to be done in the way of **Health.** educating public opinion in all that bears on health. Adequate treatment of disease should be provided for those who are unable to pay for it, while those who can should be reminded of their duty, and, if necessary, compelled to perform it. Prevention, however, and not simply cure, should be the object in view, and this will be attained only when each member of the community not only attends to personal but also to collective health conditions. The National Insurance Act compels the healthy and those who take care of their health to pay benefits to the unhealthy and the careless, conditions which remind us that we are not simply "members one of another" but really responsible for each other's health, and the day should soon come when, as Herbert Spencer put it, ill health will be looked upon as a social sin.

Our present object is not to enter into details of the knowledge which is required for the development of health, but rather to insist on its importance in every system of education, from the infant school to and including the University, where health is probably more neglected than in any other educational institution. In the early years of life special attention should be paid to fresh air and light, to breathing exercises, to sufficient sleep, to proper diet, and to the care of the teeth. Simple lessons should be given in physiology, hygiene, and the laws of health, and these should be supplemented by systematic physical training. Facilities should be given for outdoor recreation, and especially for games, in which there is not only physical exercise, but also training of eye, hand, and body. Professor Nicholas Murray Butler has truly said: "It is not too much to say that health, its provision and protection, is all-controlling in present-day educational theory, although it is unfortunately far from being so in practice. The chief reason for this discrepancy between the ideal and the real is simple ignorance."

The special attention which is given to the health of school children should be continued after the school age, through the years of adolescence, which form a critical period both for physical and moral health. In the Education (Scotland) Act, 1908, it is stated that in the continuation classes it shall be the duty of school boards to make provision for instruction in the laws of health, and to afford opportunity for suitable physical training. They have discharged this duty (if at all) in a very half-hearted manner. If they were doing it efficiently they would take care that the educational requirements in conjunction with their daily work should not be a strain on the health of the students, as unfortunately they often are at present. Further, they would take care that every boy was required to undergo systematic physical training until he was eighteen years of age; and, moreover, that he was enjoined to conduct his daily life in such a manner as to lead to good health. It is not at all necessary that this training should be of a military nature, as militarism should be excluded from our schools. With the

training which has been indicated, all who have undergone it should at eighteen years of age be prepared to discharge all the obligations which the country put upon them, whether in peace or war. By that age they would be free from the control of the education authorities, and they should be expected to take their share in all the duties which fall to good citizens. In the case of girls, attention should also be paid to their physical development during their period of adolescence.

Mr. Bosanquet has truly said that "Character is the condition of conditions". Those who had undergone an adequate system of physical and intellectual training would have got a good deal which would develop their character if the instruction had been given in a proper manner, for the effect of their efforts on the characters of their scholars should never be forgotten by the teachers. Penury of character is one of our greatest present-day dangers, as it must be admitted that there is a want of that sturdiness of character which enabled Scotsmen to leave their mark on the world.

The subject of the development of character is a very large and important one, and we cannot at present enter into a detailed discussion of the conditions which are necessary or the methods which ought to be adopted by the teachers. It must be the work not only of the school, but also of the home and the church, and both parents and ministers should co-operate with the teachers in impressing on all the young people the necessity for a high ideal of manhood and womanhood. "There are three main requirements to be satisfied before moral character can come to its full maturity. The first is good habits, rooted in strong and promising instincts; the second, that co-ordination of habits that fits a man for his life's work; the third, the sound judgment which enables its possessor, when the days of leading-strings are at an end, to stand alone in his own independent strength."¹ At the present day, people are so much absorbed in industrial development, in politics, in recreation, and even in "culture", that they are apt to neglect the end for the means, to

¹ *The Making of Character*, Professor John M'Cunn, p. 51.
(c 682)

strive after an improved environment, material, political, intellectual, moral, and to ignore the direct care of the self, the human personality, who is to be the tenant of this improved environment.

While it is desirable that those who are to be engaged in industry should have as

**Character-forming
Influence of Vocational Education.** good a general education as their time and opportunities will allow, it must

be remembered that the different forms of practical training are of great value, if properly imparted, in the formation of character. Exact experiments and the performance of skilled manual work above all give honesty to the mental development, for when one expresses oneself by making things, and not by using words, it becomes impossible to dissimulate one's vagueness or ignorance by ambiguity. Such work begets a habit of self-reliance, keeps the interest and attention always cheerfully engaged, and reduces the teacher's disciplinary functions to a minimum. Virtue cannot be learned, like arithmetic, with a pencil and slate; but honesty in thought, word, and deed is developed by hard work,

and if a scholar has attained these qualities there is little fear of them being lost; but they must be formed in the most impressionable years.

The chief problem of educationists at the present day is to graft the practical work which will fit for daily life into the main trunk of national education in all its stages, so as to bring them into organic and living connection with it, and thus prepare their pupils to some extent for their future careers and callings. The object of such training is not to turn every man into a specialist, but to preserve in every specialist the sense of humanity. While laying stress on the need of preparing every man and every woman for their lifework, it should be recognized that all sound specialization rests upon an all-round culture of the soul, the mind, and the body, not given, as heretofore, in airtight compartments, but combined, as far as possible, to form in the individual an indissoluble whole, whether the ultimate aim be directed towards bodily labour, mental expertness, or some essentially spiritual profession. In short, vocational education

should seek to cultivate on the one hand originality, individuality, and personality, while conciliating them with personal ethics and civic and social obligations. If these objects were clearly kept in mind by educationists of all grades, the results of our national education would rapidly solve many of our most pressing economic and social problems, and especially those connected with industry.

INDEX

- Adolescent Period, Importance of, 25.
Agricultural College, 76.
Agriculture, 75.
— Continuation Classes, 79.
Allan Glen's School, 37.
Apprenticeship, 26, 40, 44, 58, 60.
Art Industries, 82.
Artisans, Continuation Classes for, 46.
— Requirements of, 13.
- Boy Labour, 19.
- Central Institutions, 59.
Character, Development of, 112.
— -forming Education, 114.
Citizens, Training of, 12.
Classes, Need of, 11.
— Trade, 49.
College of Domestic Science, 97.
— Technical, 63, 67, 70.
Commercial Training, 72.
Conditions, Effect of Changing, 9, 11, 15.
— Necessary for Training, 14.
— Present-day, 13.
Continuation Classes for Artisans, 51.
— — Day, 56, 94.
— — for Girls, 92.
- Co-ordination of Classes, 59.
Curriculum, Day-school, 30.
— for Trade Classes, 53.
- Dawson, Sir A. T., Opinions of, 24. [lege, 70.
Day Classes, Technical Col-
— Continuation Classes, 56.
Denmark, Example of, 80.
Domestic Science College, 97.
— Subjects, 94.
- Education Act, 84.
— Department, 84, 86.
— Further, 27.
Elementary School Work, 29.
Employers, Duties of, 15, 16.
Evening Classes, Technical College, 67.
- German System, 59.
Germany, Example of, 87.
Girls, Training for, 90.
- Health and Character, 107.
— Care of, 109.
Home Work, 96.
- Inspectors, 31.
- Kerchensteiner, Dr., on Training, 17.
- Labour Exchange, 23.

- Leisure-time Studies, 103.
- Middle Ages, Experience of, 10.
- Miscellaneous Industries, 83.
- Munich Trade Classes, 52.
- Nominal Apprenticeship, 10.
- Occupation, Selection of, 23.
- Organization of Labour, 18.
- Preparation for Central Institutions, 59.
- Present-day Requirements, 9.
- Professional Work, 100.
- Recreation, 106.
- Rural Districts, 74.
- Schools, 38.
- Secondary School Work, 35.
- Students, Classes of, 28.
- Supplementary Courses, 34, 48.
- Technical College, 36, 57, 63, 68, 70. [30.
- Three R's, Importance of, Trade Classes, 49.
- — Divisions of, 54.
- — for Women, 98.
- Training, Wider Aspects of, 12, 14.
- Vocational Education, 114.
- Wider Aspects of Training, 12, 14.
- Women, Trade Classes for, 98.